IFRC

Climate Centre

A guide to climate-smart programmes and humanitarian operations

Using climate information across timescales to enhance humanitarian efforts

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Executive summary

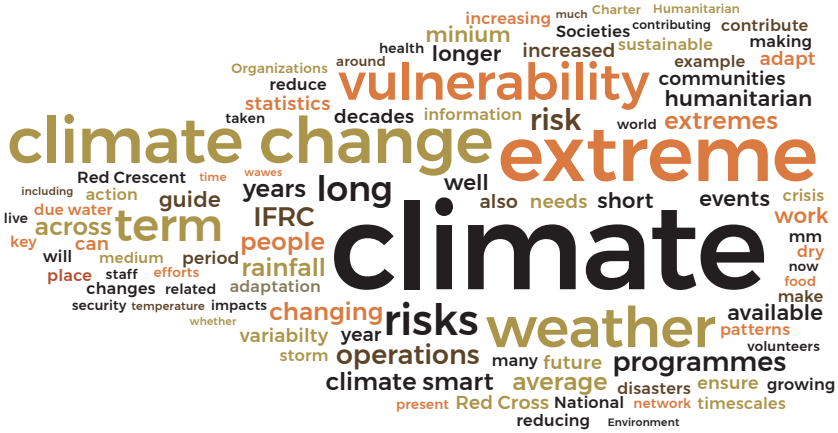
This guide supports National Red Cross and Red Crescent Societies and the IFRC in making their programmes and operations climate-smart. Climate change is contributing to humanitarian crises and IFRC made a concrete commitment that, by 2025, climate and environmental risks would be factored into all our programmes and humanitarian operations. Making our work climate-smart is the first and critical component of a much broader *Climate Action Journey* that National Societies are embarking on.

In Chapter 1 of this guide, the concept of 'climate-smart' is defined and we explain how it relates to other topics, such as environmental sustainability and green response. We define programmes and operations as climate-smart if they make use of available climate and weather information – short-term weather, seasonal forecasts and long-term climate projections – during design and implementation. In doing so, programmes and operations ensure that, at a minimum, they do not place people at increased risk in the future, considering likely new climate extremes and growing vulnerabilities; and, where possible, empower communities to anticipate, absorb and adapt to climate shocks and long-term changes.

In Chapter 2, we explain the principles of climate-smart programming and operations and describe the use of climate information across timescales. This chapter supports National Societies on how to engage with partners, especially national weather services, and explains how weather and seasonal forecasts as well as long-term climate projections should be used during the design and implementation of programme and operation activities.

Building on Chapter 2, the three subsequent chapters explain the key steps in the process to make our longer term programmes (Chapter 3), humanitarian operations (Chapter 4) and plans and strategies (Chapter 5) climate smart. The three key steps for all interventions are: 1) assessments; 2) screening of activities; and 3) climate-smart planning.

In addition to the supporting XL Notebook, the annexes to this guide offer National Societies practical tools that can be used directly.



The 100 most used words in this guide

- Making programmes and operations climate-smart does not have to be complex. This guide shows how it can be done in a straightforward way, which complements our existing work. In particular, the supporting XL Notebook that we developed on the simple application of the steps involved can help to support us in the process. Annex 1 offers a template, resources and guidance for the writing of a National Climate Risk Assessment.
- Annex 2 is a game changer when it comes to asking the right questions per work area, to reach a full understanding of how climate change might affect the activities in those areas of work. This annex proposes the mindset change that we believe is needed to become climate-smart.
- Annex 3 offers multiple examples from around the globe; a testament that we have longstanding experience with climate-smart programmes.
- Annexes 4 and 5 offer more in-depth 'how to' guidance for Chapter 2 and Chapter 4, respectively.
- Annex 6 offers a glossary of all the terms used in this guide.

1. Introduction

We live in a time where humanitarian needs are growing at an extraordinary pace, outstripping the resources available to respond to disasters and emergencies. Climate change is contributing to this rapidly changing risk landscape and the Sixth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC AR6) states that climate change is already contributing to humanitarian crises.[1] Climate change influences the patterns of threats, such as extreme weather events[2] and erratic seasons.

Around the world, Red Cross and Red Crescent staff and volunteers witness the reality of how these changing risks affect communities, including more frequent and intense climate and weather extremes such as temperature extremes (heat/cold waves), droughts, floods, heavy precipitation and storms (see Box 1) as well as slow-onset events such as sea level rise and melting glaciers. These, in turn, are leading to accelerated and emerging health risks; loss of food and water security; damage and destruction to homes and infrastructure; and situations of both short- and long-term displacement, and much more.

If no urgent action against climate change is taken immediately, the number of people in need of international humanitarian assistance annually could double by 2050 due to climate change and the financial costs could grow to 20 billion US dollars (USD) per year (The Cost of Doing Nothing 2019, IFRC).

1 *Climate Change 2022: Impacts, Adaptation and Vulnerability*, IPCC Sixth Assessment Report WGII, 2022. See the Climate Centre's summaries of 'The Physical Science of Climate Change: Seven key humanitarian insights from the latest IPCC report' and 'The Science of Climate Impacts: Eight humanitarian insights from the latest IPCC report'

2 See Glossary (Annex 6) for 'Climate and weather extremes' – for simplicity, both extreme weather events and extreme climate events are referred to collectively as 'climate extremes.'

BOX 1. IPCC classification of weather and climate extreme events, and global trends

The IPCC classifies weather and climate extreme events into six hazard categories and for each summarizes global trends for 'observed changes' and 'projected changes' (IPCC, AR6, WGI, Chapter 11).

It is essential to understand the certain levels of confidence that are linked to each of these statements as well as the regional specificity and intra-annual variability that are hidden in these global trends. It is highly recommended to reach out to experts for help in interpreting the meaning of these projections and their applicability at local and national scales.

Temperature extremes — globally, the frequency and intensity of heatwaves and heat extremes have already increased and are projected to keep increasing whilst the likelihood of cold waves and cold extremes is projected to decrease with increased global warming.

Heavy rainfall — globally, the frequency and intensity of strong precipitation events will generally increase with more global warming but the direction of this trend will vary significantly between regions. There could be a general increase in the frequency and magnitude of pluvial floods.

River floods — globally, significant changes in streamflow have been observed, with more regions projected to see an increase in river floods. This will vary between regions and catchments.

Droughts — increased evapotranspiration has contributed to an increase in agricultural and ecological droughts globally. Some regions have seen increases in meteorological droughts, but precipitation pattern changes are not the greatest driver of global-scale drought patterns.

Extreme storms, including tropical cyclones — the frequency of intense tropical cyclones (categories 3–5) is likely to increase globally, with associated rainfall also likely to increase in a warmer world.

Compound events, including dry/hot events, fire weather, compound flooding and concurrent extremes — the probability of the occurrence of compound events is projected to rise with increased global warming.

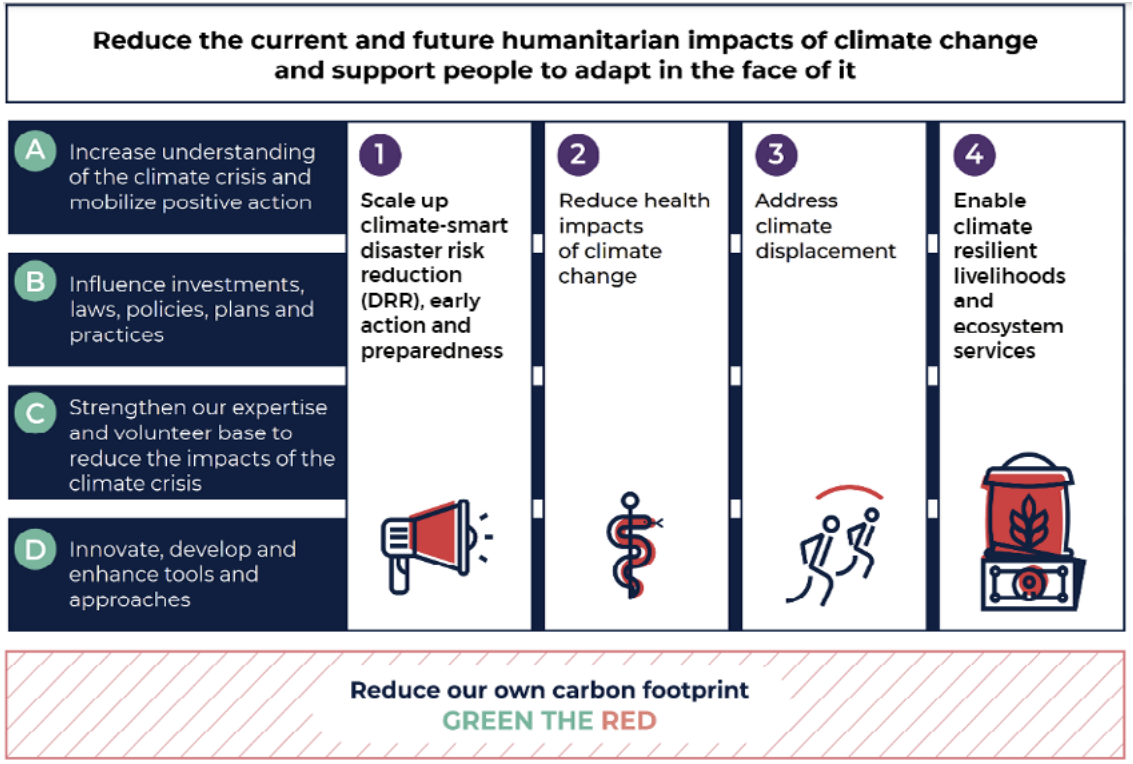
As emphasized by the Climate and Environment Charter for Humanitarian Organizations, our ability to protect present and future generations depends on whether we make the right choices now – to cut greenhouse gas emissions (climate change mitigation), to adapt to rising risks (climate change adaptation) and to minimize and avert losses and damages associated with the impacts of the climate crisis.

To adapt to climate change and reduce the risks of climate-related disasters, we need to change the way we approach prevention, preparedness, response and recovery. This involves scaling up programmes that support communities, as well as making sure that our programmes and operations are sustainable and based on careful analysis of climate risks. We need to consider changing hazards, exposure and vulnerabilities, taking into account local and indigenous knowledge as well as the best available short-, medium- and longer term climate and environmental information. This guide focuses on how to make our work climate-smart to reduce risks and vulnerabilities in the present and future.

As emphasized in the IFRC Global Climate Resilience Programme, based on the International Red Cross Red Crescent Movement (ICRC) Ambitions to address the climate crisis (2020), the scaling up of climate-smart programmes is key (Figure 1). This is echoed in the IFRC's Strategy 2030, which highlights the need to 'integrate climate risk management across all of our programmes, operations and advocacy'. It is also one of IFRC's concrete targets to operationalize the Climate and Environment Charter for Humanitarian Organizations: 'By 2025, climate and environmental risks [will be] factored into all our programmes and humanitarian operations'. This guide supports National Societies to achieve this.

Making our work climate-smart is the first and most critical component of a much broader *Climate Action Journey* that National Societies are embarking on. The Climate Action Journey is

Figure 1. The IFRC Global Climate Resilience Programme specifies four 'pillars of action' (1–4) and four 'enabling approaches' (A–D) to reach the objective of reducing the impacts of climate change.



This guide focuses on efforts to contribute to climate change adaptation. In addition, the IFRC network will also contribute to reducing the carbon footprint and promote environmentally sustainable solutions — a separate set of guidelines and tools are available (Box 4) for supporting the cross-cutting dimension of the Movement's ambitions on the climate crisis.

specifically focused on increasing climate resilience, whether in the short-, medium- or long-term through a strategic and holistic approach alongside the implementation of scaled-up and targeted, locally led climate change adaptation, with the related mobilization of funds. Figure 2 shows the additional components of the broader Climate Action Journey of the National Societies and highlights the scope of this guide – the first steps in the Journey.

1.1 What is climate-smart?

In the IFRC network, being climate-smart means *using climate information across timescales* in designing and/or adjusting all our programmes and operations (Table 1). In doing so, programmes and operations ensure that, at a minimum, they do not place people at increased risk in the future considering likely new climate extremes and growing vulnerabilities. In addition, this approach offers the initial steps in the Climate Action Journey for the National Societies (Figure 2) to identify locally led adaptation needs and support communities to anticipate, absorb and adapt to climate change. We will focus on the direct and indirect impacts of climate change in relation to weather extremes and disasters, slow-onset events and the derived challenges to, for example, livelihoods, water and food security, shelter and health. This includes ensuring that staff, volunteers and vulnerable people are not taken by surprise by predictable climate and weather extremes during the implementation of programmes and operations. Climate information is obtained and applied by collaborating closely with governments across various line ministries, climate and weather specialists, vulnerable communities and other stakeholders. A key aspect is making use of weather and seasonal forecasts (days and months) as well as longer term climate projections (years and decades). Local, traditional and indigenous knowledge should also be integrated and built upon.

Figure 2: The steps of the Climate Action Journey; note how the climate-smart programming and operations (i.e., this guide) covers the first three

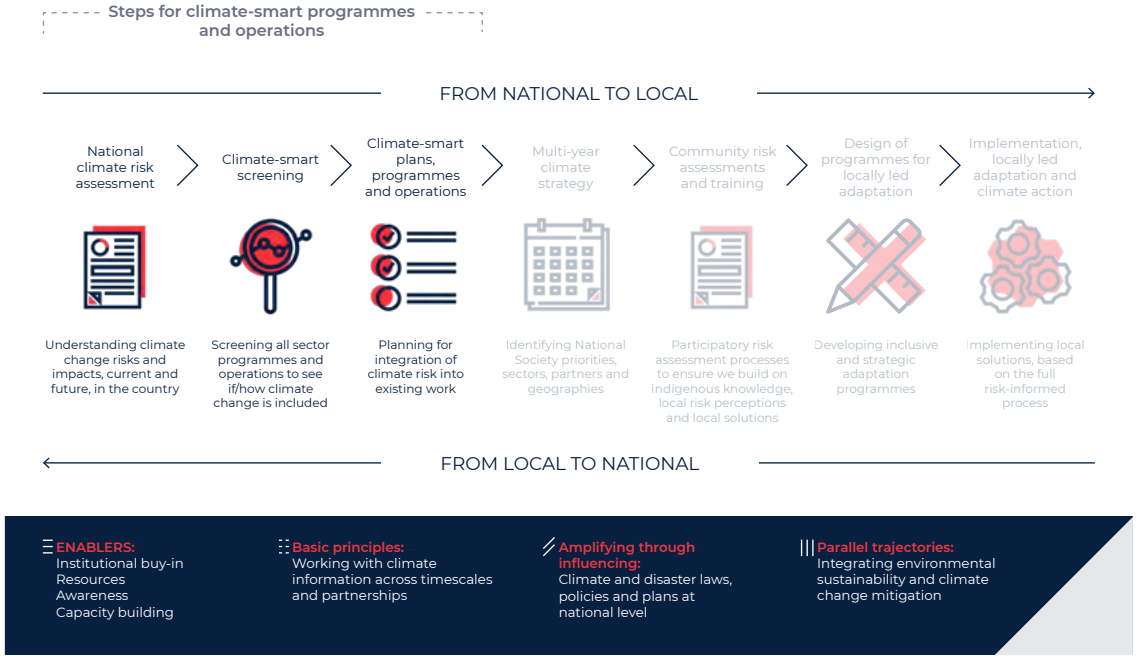


TABLE 1. Definition of climate-smart
(see Box 5 for definition of climate-smart agriculture)

Programmes and operations have made use of available climate and weather information, both:

- short-term weather and seasonal forecasts, and
- long-term climate projections

in designing and/or adjusting and implementing activities.

In doing so, programmes and operations ensure that, at a minimum, they do not place people at increased risk in the future considering likely new climate extremes and growing vulnerabilities; and, if possible/appropriate, empower communities to anticipate, absorb and adapt to climate shocks and long-term changes.

The immediate imperative for the Red Cross and Red Crescent during disasters and crises is to save lives, reduce suffering and protect and support affected people. The priority focus of this guide is on reducing the *impact* of climate change and variability on vulnerable people, throughout all programmes and operations. However, it is important to note that in all our actions, where possible, there is also a strong commitment to *reduce* climate change and our carbon footprint and promote environmental sustainability in our programmes and humanitarian operations (see Box 3), i.e., 'greening' our activities. A separate set of guidelines and tools (Box 4) are available for supporting that underlying premise of the commitments in the Climate and Environment Charter for Humanitarian Organizations. In many cases, not least in food security and livelihoods programmes, there are opportunities for win-win

BOX 2. Understanding key terms (also see Annex 6, Glossary)

Climate: refers to average weather conditions in an area over a long period. Climate statistics are usually calculated over multiple decades, where data is available. Climate statistics calculated over multiple decades are referred to as the climatology of a location or region.

Climate variability: often used to indicate deviations (fluctuations) of climatic statistics over a given period (e.g., a month, season or year) when compared to long-term statistics for the same calendar period. For example, some years have *below average* rainfall, and some have *average* or *above average* rainfall. For instance, the average annual rainfall at Cape Town Airport in South Africa is 600 millimetres (mm), but some years it is less than 300 mm, and other years more than 750 mm. The natural 'climate variability' is the result of slow shifts in ocean currents and temperatures around the world – the best-known example is how the weather patterns may shift (and can be predicted) in different parts of the globe during El Niño and La Niña events. Climate change can lead to increasing climate variability.

Climate change: relates to any change in climate over a long period of time. In principle, climate change can be due to natural processes but the current rapid global heating is, without doubt,[3] a result of human activity (greenhouse gas emissions from burning of fossil fuels). This includes changes in global temperature, rainfall patterns and in the frequency or intensity of extreme weather and climate events, such as stronger cyclones and heatwaves.

Weather: what we experience every day. Many hazards occur on weather timescales such as tropical storms, high winds, heatwaves and dry spells. The advances in weather observations (better data), weather forecast models and faster computers, means that we can predict many weather phenomena many days in advance. Good weather forecasting enables anticipatory action through early warning and early action planning.

3 According to IPCC (2021) "It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."

solutions that contribute to both risk reduction/climate change adaptation as well as 'greening'/climate change mitigation goals. Across the board, we should ensure, where possible, to align with environmental information, assessments and analyses (e.g., on ecosystem health and trends, pollution patterns etc.).

Almost all Red Cross and Red Crescent interventions can be affected by extreme weather events and longer term climate change, so planning to become fully climate-smart is relevant for all long-term resilience programmes, response preparedness and humanitarian emergency and recovery operations. Hence, climate-smart programmes and humanitarian operations of the Red Cross Red Crescent Movement are a key contribution to climate change adaptation. There will also be a need for dedicated locally led adaptation initiatives. In Figure 3 you can see how climate change affects all areas of our work across programmes and operations.

CAN ONE DRY YEAR, OR A FLOOD, BE ATTRIBUTED TO CLIMATE CHANGE?

It is important to note that, for example, several consecutive dry years is not necessarily driven by climate change. It *might* fit a longer term trend that is caused by climate change, but even without any changes in longer term rainfall patterns, a drought is often part of normal climatology. And even in areas where the long-term trend is towards increased rainfall, there will still be drought years because of climate variability. There are many places in the world where it is still unclear if rainfall patterns are changing, though almost nowhere in the world is there any doubt that temperatures are increasing.

There is rapid progress in the science behind how much climate change is currently impacting society; dedicated attribution studies investigate single extreme climate events and indicate if and how much more likely this event was made due to climate change. For instance, the 2022 floods in Nigeria were estimated to have been 80 times more likely due to climate change.[4] This indicates important messaging about the urgent need to invest in flood risk reduction in Nigeria.

With the support of climate projections and attribution (along with other pieces of) research, we obtain strong insights and warnings that urgent action is required. Long-term climate projections for a region – for instance, of more intense rainfall and, thereby, flood risks – can inform upgraded flood disaster preparedness along rivers, including awareness-raising on evacuation plans in case of warnings for unprecedented floods etc.

4 World Weather Attribution case study

People in Ahoada East, in Nigeria's River State, were moving around by boat after 2022 floods that scientists estimated were made 80 per cent more likely by climate change. (Photo: Nigerian Red Cross via IFRC)

BOX 3. How is climate-smart programming linked to other concepts?

CONCEPTS	Links to climate-smart programming	Examples
Climate change adaptation (CCA)	The IPCC defines adaptation as '*the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities*'. In other words, CCA refers to actions that reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves policies and actions specifically to address observed or expected changes in climate. Making programmes and operations 'climate-smart' contributes to climate change adaptation, although additional longer term processes and more in-depth understanding of vulnerabilities and climate risks are needed to design and scale specific locally led adaptation.	In areas that face increasingly dry conditions primarily due to climate change, the well-designed introduction of drought-resistant crops, water catchments for water security during dry spells, or conservation agriculture that are specifically adapted to changing climate conditions. On the other hand, in areas that are prone to recurrent and increased floods, improvements can be made to raise foundations and adapt homes along with critical community infrastructure to withstand the effect of prolonged water stagnation and cope with new weather patterns (improve cross ventilation, roof insulation or shading, for example).
Resilience	Resilience is the capacity to deal with change and continue to develop; the IFRC Road Map to Community Resilience has a more detailed definition of resilience as '*the ability of communities (and their members) exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without compromising their long-term prospects*'. Community resilience has also been recognized as a relevant approach for dealing with climate change risks.	Increasing resilience across programmes and operations. For example, strengthening water supply systems that help achieve Water, Sanitation and Hygiene (WASH), water and food security and livelihood goals – this can be relevant for increasing resilience to all types of shocks and stresses; including climate-specific risks such as drought in rural areas and heatwaves in cities. Please note: overall resilience investments are important, especially considering increased risks; however, not all resilience initiatives are necessarily climate focused.
Disaster risk reduction (DRR)	In recent years there has been a growing convergence of DRR and CCA, but they do not overlap completely. Broadly speaking, DRR deals with *all* hazards, including hydrometeorological and geophysical hazards, while CCA deals exclusively with *climate-related* hazards. CCA also considers the *long-term* adjustment to changes in gradually changing climatic conditions, including the opportunities that this can provide, whereas DRR is mainly interested in climate extremes leading to disasters. Also, DRR is an internationally recognized approach for adaptation, as it reduces overall risk and increases resilience to all hazards, including climate-related ones.	Reducing disaster risk by installing a river sensor with a warning system for floods (including those that are not climate-related) and ensuring people can evacuate in time when the water level reaches a threshold. The development or revisions of evacuation plans for areas that could potentially be flooded in new extreme flood events.

CONCEPTS	Links to climate-smart programming	Examples
Climate change mitigation (CCM)	Mitigation measures are directed at interventions to reduce greenhouse gas (GHG) emissions or enhance the sinks of GHGs (a carbon sink absorbs carbon dioxide (CO_2) from the atmosphere; the largest sinks are the ocean, forests and soil).	Trees store and capture in CO_2 from the atmosphere, so minimizing deforestation and investing in tree-planting contributes to mitigating climate change. Fuel saving stoves can reduce fuel wood needs and the rate of deforestation (which contributes to GHG emissions). Replacing the expensive diesel power generators for mobile clinics or water pumping with solar power can be an effective green response investment. It reduces unsustainable and polluting practices, freeing up humanitarian funds with cheaper solar power. It also contributes to reducing GHG emissions in the atmosphere.
Green Response and environmental sustainability	The focus of Green Response is to promote more environmentally sustainable programmes and operations in the humanitarian sector, including the wider infrastructure of the organization. It also includes climate change mitigation efforts (see above). The term 'climate-smart' in this handbook, does not focus on Green Response, which is about reducing the environmental impact of our operations. It is key to all aspects of our humanitarian work.	A focus on better waste management, both the waste that our activities generate as well as supporting communities to collect, sort and recycle waste where feasible. This not only cleans up the environment, it reduces disaster risks like flooding from blocked drains and could create small-scale livelihoods from the sale of plastic waste.

Italian Red Cross volunteers checking up on vulnerable elderly people in a 2018 heatwave, a hazard that is clearly attributable to climate change, but which has become increasingly predictable with forecasting and climate services provided by national weather services. (Photo: Emiliano Albensi/CRI via IFRC)

Climate risk management in all humanitarian sectors

CLIMATE IN HUMANITARIAN PROGRAMMES AND OPERATIONS

Disaster management, DRM, & DRR

More **frequent** and **extreme** weather-related **disasters** & increasingly erratic **seasons**.

Health & care systems

Human health impact of stronger heatwaves, floods, droughts & changing disease patterns.

Water, sanitation & hygiene

Changing water availability: too much or too little.

Livelihoods & food security

Effects of warmer weather and more variable rainfall on **food production & businesses.**

Shelter, housing & settlements

Emergency operations challenged by increasingly intense & frequent disasters.

Migration & displacement

Increasing displacement & livelihood loss from climate change & disasters.

Climate change adaptation

National Societies/IFRC will increasingly need to engage in **dedicated adaptation efforts.**

Other National Society activities

Many National Societies have other activities that can also be affected by climate & weather.

EXAMPLES OF CLIMATE RISK MANAGEMENT

Preparedness, response, **Early Warning Early Action & Anticipatory Action** programmes.

Scaling up health programmes & strengthening **health system resilience.**

Enhanced water resource **management, innovative** WASH interventions & **awareness** raising.

Livelihood & crop diversification, research & capacity building for **long-term sustainable adaptation.**

More c**omplex emergency** ops & building shelter/ housing in safe(r) locations (with **new extremes in mind**).

Guiding vulnerable people towards **safer areas,** assistance along routes and when settling, helping create new **livelihood opportunities.**

Increasing **expertise**, making regular programmes **climate-smart** & investing in **additional adaptation projects** that reduce the impacts of climate change from the onset.

Cross-cutting work across areas like protection, gender & inclusion, & community engagement & accountability to ensure **focus is on those hit hardest by the climate crisis and/or who are at greater risk because of it.**

Figure 3. Climate risks should be considered in all areas of work ('sectors') – very few activities are completely safe from the changing impacts of climate and weather extremes.

BOX 4.

Tools and approaches used by the Red Cross and Red Crescent network to promote environmental sustainability and help reduce our carbon footprint

Green Response: Environmental quick guide

This is the **main reference guide** to help improve the environmental sustainability of the work of Red Cross and Red Crescent National Societies. As part of the Green Response initiative it provides ideas and inspiration for more sustainable options that can improve the environmental impact of our work. The Quick Guide can be used during the planning phase of the project cycle, and will support the process of environmental screening.

The Nature Navigator

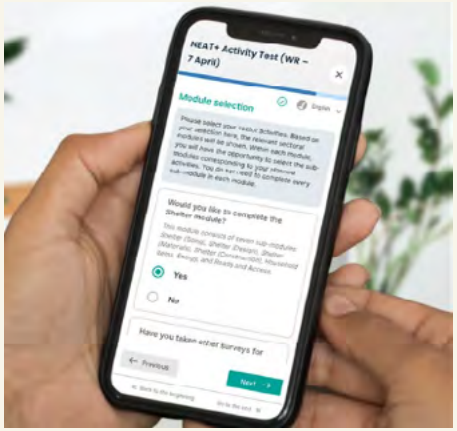
Nature-based Solutions (NbS) are increasingly being recognized as an effective and cost-efficient way of reducing disaster risks, as well as helping people adapt to climate change and building community resilience.

The guide helps National Societies effectively navigate working with nature to reduce risks and build resilience linked to the IFRC Road Map to Community Resilience opposite. Almost half of the Nature Navigator is devoted to 'solution factsheets' with a vast set of illustrative examples from most work areas (sectors) of the IFRC network. It also links to supporting training material and points to further resources.

IFRC Road Map to Community Resilience

The Road Map provides step-by-step guidance on how to operationalize the IFRC Framework for Community Resilience (FCR). The road map emphasizes how climate change adds to local risks and points out most important entry points for integrating climate information.

NEAT+: Nexus Environment Assessment tool (USAID, UNHCR, NRC, IUCN, WWF, UNEP and OCHA)

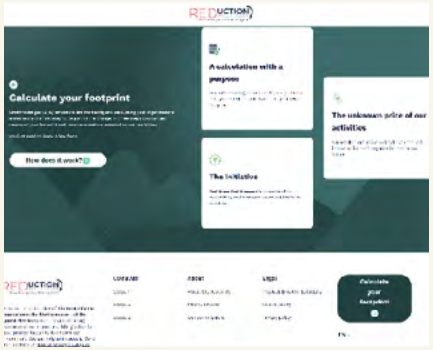


An important first step can be an 'environmental screening.' Many National Societies are successfully working with the NEAT+ tool, which is maintained by UNEP/OCHA. It supports rapid and simple project-level environmental screenings for humanitarian operations.

[Shelter Cluster Tip Sheet for HRP Environment and Climate Change Mainstreaming] (Global Shelter Cluster).

This tip sheet, developed by the Global Shelter Cluster, outlines specific recommendations for operations teams to green their shelter and Humanitarian Response Plan (HRP) activities.

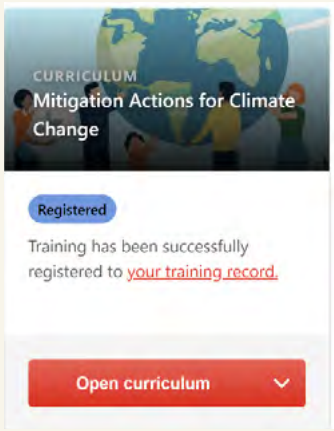
Carbon calculators for climate change mitigation



REDuction is an online tool developed by Spanish Red Cross Centre for Mediterranean Cooperation to help calculate your organization's emissions. In three steps you can get results of your footprint and recommendations tailored to your National Society's activities. This is the first practical step to start reducing the carbon footprint of the organization and contribute to climate change mitigation.

Another comprehensi ve Humanitarian Carbon Calculator wasreleased in 2023. It is a tool to calculate the full scope of a humanitarian organization's carbon emissions, including those from programming. It has been developed by an inter-agency project led by ICRC.

[Training modules on Mitigation Actions for Climate Change]



A training module available at the IFRC Learning Platform (registration/login required) was developed by the Spanish Red Cross Centre for Mediterranean Cooperation. It is a self-learning course on climate change mitigation action aimed primarily at young people (18–30) at Red Cross and Red Crescent National Societies – with a focus on conditions in the Mediterranean. It helps to clarify, in simple terms, the differences and overlaps between climate change adaptation (CCA) and climate change mitigation (CCM) with exercises and examples in four modules, leading to a final (fun and challenging) evaluation test.

German Red Cross Integrated Climate Change Adaptation programme in Teso and Karamoja sub-regions. (Photos: Denis Onyodi/ URCS-DRK-Climate Centre)

BOX 5. Climate-smart in sectors: alignment and differences in definitions around climate-smart livelihoods and climate-smart agriculture

When it comes to definitions, 'climate-smart agriculture' and 'climate-smart livelihoods' are often treated as the same thing. This is because most climate-smart livelihood interventions currently carried out by National Societies are centred on agriculture. Although all livelihoods are affected to some degree by climate variability and change, the impacts on agricultural livelihoods (including crops, livestock, forestry and fisheries), particularly in developing countries, are inherently complex. This complexity is mainly due to a heavy reliance on agriculture, such as cropping and livestock grazing decisions, as well as production levels and quality of land, water and other natural resources, which are particularly susceptible to climate change impacts. Additionally, even though the number of people projected to be living in urban areas is expected to increase rapidly, most of the world's poorest people will still live in rural areas until 2040, relying largely on activities within food systems for their livelihoods – predominantly through primary production. For these reasons, IFRC's climate-smart livelihoods programming will focus primarily on climate-smart agriculture as defined by the Food and Agriculture Organization (FAO).

IFRC definition of climate-smart livelihoods: Climate-smart livelihoods (including agricultural livelihoods) operations and programmes use climate information across timescales, including both short-term weather and seasonal forecasts and long-term climate projections in designing and/or adjusting interventions. This definition does not divert from the overall definition in this guide.

Definition of climate-smart agriculture – FAO/World Bank: Climate-smart agriculture is an integrated approach to managing landscapes – cropland, livestock, forests and fisheries – that addresses the interlinked challenges of food security and accelerating climate change and enhances achievement of national food security and development goals. Climate-smart agriculture aims to simultaneously achieve the following objectives:

1. Sustainably increase agricultural productivity and incomes: Produce more and better food options to improve nutrition security and boost incomes, especially of the world's poor who live in rural areas and mainly rely on agriculture for their livelihoods.

2. Adapt and build resilience to climate change: Reduce vulnerability to drought, pests, diseases and other climate-related risks and shocks; and improve capacity to adapt and grow in the face of longer term stresses like shortened seasons and erratic weather patterns.

3. Reduce and/or remove GHG emissions, where possible and without undermining the livelihoods of poor and marginalized households: Pursue lower emissions for each calorie or kilo of food produced, avoid deforestation from agriculture and identify ways to absorb carbon out of the atmosphere.

The definition of climate-smart agriculture from the FAO and the World Bank are broader than the definition applied in this guide for other sectors. For this part of the work, we can align with the definition of the World Bank and FAO. As we support agricultural activities mostly in vulnerable, poor and high-risk communities in the global south, we should note that our priority is not to solely promote climate change mitigation (emission reduction) in this area of work, as these activities are emitting much less than highly industrialized nations. Nevertheless, it remains an important focus area, especially if it can result in win-win outcomes for both mitigation and risk reduction/adaptation agendas.

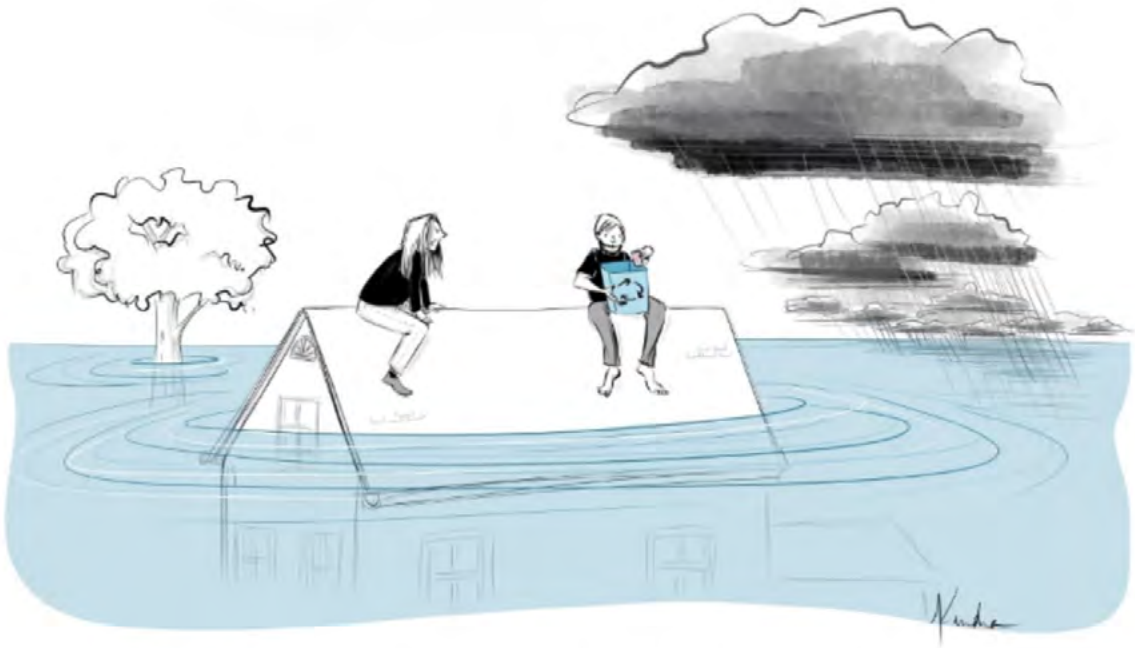
Efficient use of natural resources includes avoiding unsustainable slope agriculture as here in Uganda where it was the only option for landless people.

Crop diversification combined with scaling up traditional water harvesting/ retaining methods in Sudan. (Photos: Danish Red Cross)

1.2 Why is it important to make programmes and humanitarian operations climate-smart?

Climate change is a multiplier of existing risks and can add additional stress to the current vulnerabilities of societies, communities and individuals. As a result of climate variability and change, climate- and weather-related hazards like droughts, floods, heatwaves and storms are expected to become more frequent and/or more intense. Climate change may also bring hazards and risks to parts of the world where such events have not yet been experienced. This means that the capacity and resources of National Societies to respond to disasters will be challenged, emphasizing why these aspects should be considered from the start with climate-smart programmes and operations.

Climate change and climate-related disasters can also wipe out hard-won investment gains and throw people back into poverty. Therefore, it is key that all long-term resilience-related programmes should ensure that all their interventions can withstand climate shocks and stresses for multiple years to come, so the interventions can remain effective over time, and are addressing the types of hazards that will pose increasing risks in the future. For instance, DRR programmes are not considered to be climate-smart when the interventions fail to address, for example new record-breaking flood levels (caused by more intense rainfall patterns over time), because they were designed to withstand historic flood levels. It might also mean, for instance, that National Societies used to purchasing a standard number of emergency kits per year, might find their stocks depleted in the first quarter of the year due to the increased number of extreme weather events. If interventions fail to be climate-smart, yet people continue to rely on them as effective protection against disasters, a false sense of security could be created.



"It's not that I don't appreciate your recycling, Leo, I'm just suggesting it's not the only thing we should be doing right now."

Source: Kendra Allenby/ CartoonCollections.com

The climate crisis is bringing more frequent extreme weather events and long-term trends that impact sites of ongoing emergency operations. For example, a flood or storm occurring during an ongoing humanitarian operation (Box 6) could result in secondary displacement, damage to internally displaced person (IDP) camps or the destruction of stock. To prevent or reduce the risk faced by target communities in the future, humanitarian operations should place camps in areas not at high risk of flooding (based on analysis of climate and weather data) or tailor shelter options to be more storm-resistant if there is a high/increasing risk of storms. This in turn means improved standards for materials, adapted relief packages and making programming choices that consider balancing quality, quantity and costs for weather-informed shelter response.

In sum, without considering climate and weather information to inform our programmes and operations, we risk implementing a response that may put communities at increased risk, which is maladaptation (see Box 9). This guide offers the 'how to' as well as the limitations of the use of climate information across timescales – which, of course, is only one of the pieces of information for successful operations and programmes.

Combined risks and domino effects: compound and cascading risks

Climate-related disasters don't usually happen on their own. Disasters are often a complex combination of risks, with climate-related hazards interacting with other risks like pandemics, violence and sociopolitical or economic challenges. The interaction of these different types of risks informs the way that people experience the climate-related disaster. That's why we need to consider all these risks together when creating climate-smart programmes. This means that we need to first understand the root causes of risk for a population or community to develop

BOX 6. Another disaster during the recovery phase of a previous disaster – an example from Mozambique

Mozambique is highly vulnerable to climate change and its impacts. The country is experiencing an increasing frequency and intensity of extreme weather events such as droughts, cyclones, floods and tropical storms. The country is one of the world's poorest and has the lowest development indicators in the world, with few resources to invest in climate change adaptation. In 2019, Mozambique experienced two major cyclones – Idai and Kenneth – with the first making landfall in March 2019 and the latter striking about six weeks later. This cyclone episode set significant modern records: 1) it is rare and only in recent decades that multiple tropical cyclones hit the country in the same season; and 2) Kenneth was the strongest Indian Ocean cyclone on record to make landfall in Mozambique (EM-DAT). A climate change attribution study conducted in 2022

Cyclone Idai, Mozambique, aftermath, 15-16 March 2019. (Photo: Denis Onyodi: IFRC/DRK/Climate Centre)

plans that consider multiple types of hazards, like extreme weather events, diseases, and infrastructure failures.

We also need to think about 'compound risk' and 'cascading risk'. Compound risk means that two or more hazards happen at the same time, interacting with vulnerabilities from the socioeconomic and environmental context, which can make things much worse. For example, if there is a severe flood during a pandemic such as COVID-19, in an area where there is a high percentage of informal housing due to internal displacement and economic vulnerability, the challenges multiply and make it even harder for people to recover. Cascading risk means that one hazard triggers another hazard, like a domino effect. Having one hazard occur after another, increases exposure to harm, especially when thinking about how these interact with other risks, like economic vulnerability, environmental degradation or exposure to gang violence, all while experiencing multiple hazards in a row.

We're already seeing these kinds of risks happening more frequently. For example, we're experiencing more extreme rainfall and flooding events, which can be followed by droughts and heatwaves. This is taking place in contexts where rising prices are increasing economic vulnerability; for example, higher prices for food and energy, means more people are unable to access adequate food or cope with extreme temperatures. We're also seeing how sea level rise and stronger cyclones can cause more damage from storm surges along coastlines, notably in urban areas, in contexts where people are living in informal settlements or have already been displaced due to violence and conflict. To be ready for these kinds of risks, we need to understand the root causes of risk along with climate trends and hazards, to create climate-smart plans that help people stay safe and recover quickly. In addition, we need to invest in social protection, urban resilience and settlement planning efforts to

points out that intense rainfall associated with tropical cyclones in southern Africa is consistent with future climate projections and that climate change indeed increases the likelihood of more intense and impactful cyclones in this part of the world.

When Cyclone Idai hit, the Mozambique Red Cross Society was just about to finalize its early-action protocol (EAP), which outlines the anticipatory actions for a cyclone hazard. Having an EAP with readily accessible funds, allowed for a timely response – making more specific use of the cyclone warnings – in the next cyclone season. In December 2020, the Mozambique Red Cross Society activated its cyclone EAP 72 hours ahead of the expected landfall of Cyclone Chalane and implemented the following early actions to assist 7,500 people in Sofala Province:

- distribution of, and demonstration of how to use, shelter kits to reinforce houses built of local or natural materials to reduce the impact of strong winds on vulnerable houses
- reinforcement of primary schools and distribution of reinforcement kits to strengthen school buildings against strong winds
- distribution of emergency supplies for hygiene and sanitation, and demonstration of water purification methods to reduce the risk of water-borne diseases.

Even though the damage from Cyclone Chalane was less than expected, the activation of the EAP ensured that 1,500 households could be reached by humanitarian assistance. Longer term efforts by the Mozambique Red Cross Society in shifting from reaction to anticipation was recognition that record-breaking and compound disasters will continue to occur more often. In a changing climate, it is important to prepare for the impact of climate extremes, instead of waiting for the cyclone to hit.

minimize exposure to risk from the start. Understanding all the elements of compound and cascading risk highlights the importance of coordinating and collaborating across organizational sectors, to provide an integrated response.

1.3 Who is this guide for and how can we use it?

If you are looking for answers to the question 'what do I need to do differently in the design of my programmes and operations, or during the implementation of my work, to consider climate risks and climate change?' then this is the right guide for you. This guide offers a practical 'how to' for the IFRC network – both National Society and IFRC staff – to either start or improve existing programmes and operations by including the use of climate information across timescales during the various steps of programme development or intervention planning. Main users include:

- heads and technical staff of disaster management and operations (including operation managers and their teams on the ground)
- disaster risk reduction and resilience programming staff, branch coordinators and volunteers
- technical staff from National Society departments, e.g., Health, WASH, Disaster Management, Livelihoods, Shelter & Urban, and Operations.

Please note: this guide does not provide direct technical recommendations to 'tick off' that make projects climate-smart, nor will it tell you, for instance, which crop to sow or which tree to plant. Instead, it provides guidance to work with experts, relevant

Source: Kuper/CartoonStock.com

questions to consider, and guidance on a process to make better use of climate and weather information. Ideally, it will guide users in seeking more information and technical advice by working with local specialists who can help find the best possible climate-smart solutions in your context.

Climate-smart programmes and humanitarian operations is all about asking the right questions: Annex 2 offers examples of such questions for all areas of our work; the questions are also available in a supporting XL Notebook[5] to guide you through the subsequent steps (see Box 19). We hope this handbook establishes a mindset change – 'how to think climate-smart'.

This guide builds on the experience of many partners in the Red Cross Red Crescent Movement and should, in general, be applicable in any context; but, of course, specific interventions need to be tailored to the local context and climate. As indicated in the Introduction, making your work climate-smart is one of the components of the broader Climate Action Journey.

Chronic drought in Afghanistan got more publicity in 2022 and had wider impacts, but in this picture Afghan Red Crescent personnel provide cash relief to people affected by unseasonal *floods* at the end of July in the Spin Boldak district of Kandahar province. (Photo: ARCS via IFRC)

5 Link opens the file in a browser; to download your editable version, click 'File' –> 'Save as' –> 'Download a copy'. The file will be revised, so always download the latest version prior to use.

2. The basic principles: working with climate information across timescales and the collaborations needed

In this chapter, we explain the key principles for climate-smart programmes and operations for Red Cross and Red Crescent National Societies. In Chapters 3, 4 and 5 we will explain the concrete steps that National Societies can take to integrate climate considerations in their programmes (3), their operations (4), and plans and strategies (5).

2.1 Collaboration with stakeholders

Climate-smart interventions rest on the use of combined knowledge and information from various experts and sources – for the coproduction of climate-smart interventions (Figure 4).

Making our work climate-smart will require us to work with different partners: climate and forecast experts (including for quality control of our assessments and decisions), communities, technical specialists and others to help adjust or design our interventions. Some of the most important partners include:

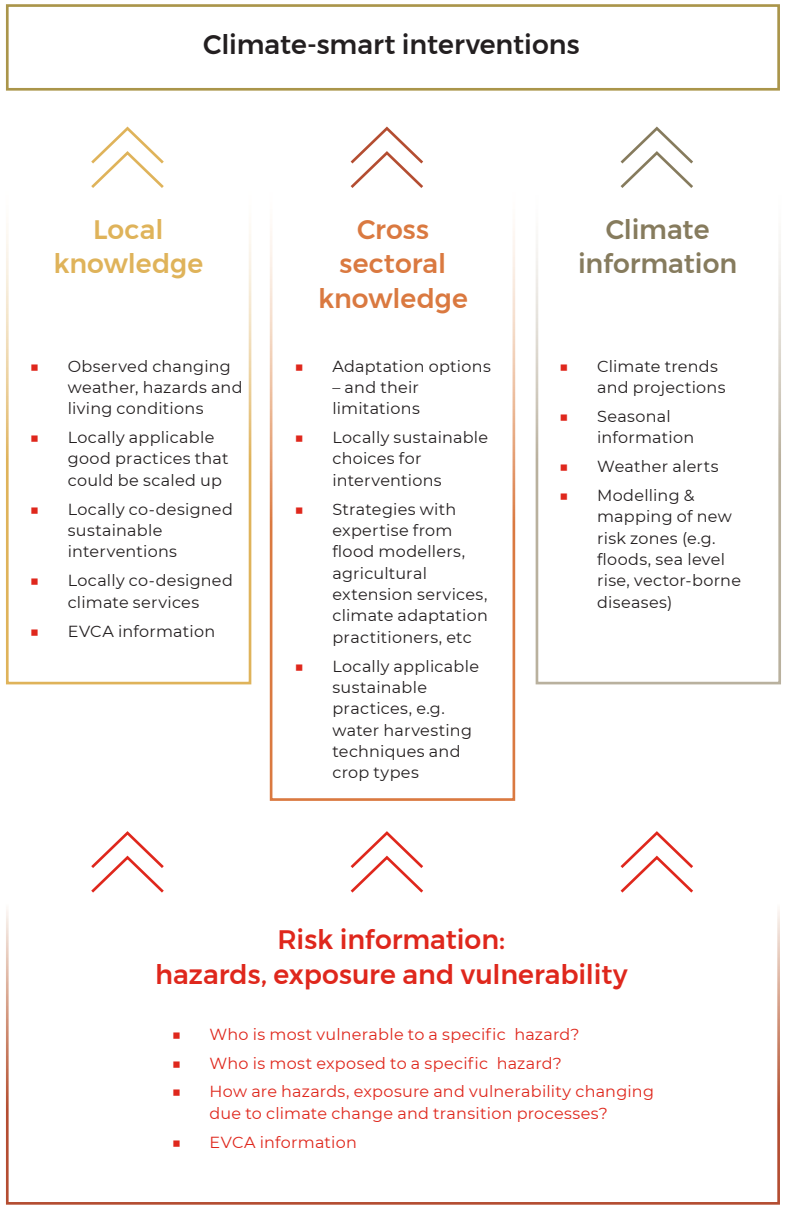


Figure 4: Combining knowledge to inform climate-smart programmes and emergency operations: Designing climate-smart activities cannot rely on climate information alone; ideally, local knowledge of 'good practices' that can be scaled up, and experiences from other organizations and research, can inform the improvements needed to design climate-smart activities.

NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES

Key for climate-smart programmes and operations is to reach a structural collaboration with your National Meteorological and Hydrological Services (NMHS). These climate information service providers can help us to understand and use climate- and weather-related information to inform decision-making related to the design of our activities within programmes and operations. Sometimes an NMHS also has sub-national offices. In the next section, we provide further details on how to collaborate with the NMHS, complemented by a further 'how to' in Annex 4 (including an example of a collaboration agreement between the National Society and the NMHS). Lastly, the Red Cross Red Crescent Climate Centre (Climate Centre) team and IFRC climate focal points are available to further support this process.

Scientific inputs from the NMHS are especially important when planning forecast-based actions, where specific interventions are defined in standard protocols and activated when weather forecasts indicate certain predefined levels of risk (see section 4.2 on Anticipatory Action).

VULNERABLE COMMUNITIES

Communities and vulnerable groups are also the main allies in climate-smart programming. Traditional knowledge and local perception of changes in weather and seasons are the building blocks on which we can add scientific climate information across timescales. Communities should be supported to understand future long-term trends and projections, so they can make decisions, especially in relation to their livelihoods. With regards to brokering scientific connections for communities, it is important to think about this as the co-creation of products and tools that can help to save lives, assets and livelihoods, tailored to context and audience (see Annex 4). Scientific insights will complement existing local knowledge, especially on warnings and future trends.

LOCAL GOVERNMENTS AND LOCAL KNOWLEDGE PROVIDERS

Local governments have important information with regards to risks and vulnerabilities and may even have carried out climate risk assessments or have local adaptation plans under way. They often have information on people and assets exposed to climate extremes, e.g., through social support programmes, disaster management, health and water, economic information, land-use planning, agriculture (especially agricultural extension services, regional outlook forums and local climate centres – e.g., FEWS).

CIVIL SOCIETY ORGANIZATIONS (CSOs) AND UN AGENCIES

As previously, collaborations with like-minded organizations can offer valuable joint analyses of climate and weather information and changing vulnerabilities. In particular, UN agencies (e.g. FAO, WFP, WHO, UNDP, OCHA, UNEP, WMO and UNICEF country offices) and CSOs may provide specific technical advice on 'good practice' options for 'climate-smartening' National Society activities, including within specific sectors. Exchanges on climate-smart programmes and operations with other National Societies can also be helpful.

RESEARCH & ACADEMIA

Universities and their students can be a significant asset to climate-smart programmes. They can, for instance, support analyses of climate and weather information, tailor the application of climate and weather information to local contexts, enhance risk analyses, collaborate on climate-related research questions in-country or help to combine national-level data and projections with local knowledge. Please note that this type of know-how is also available within the Red Cross Red Crescent network: the IFRC and reference centres can offer support on risk information (including through various global institutional collaborations with science providers). Formalizing collaborations with your National Meteorological and Hydrological Services (NMHS)

Formalizing collaborations with your National Meteorological and Hydrological Services (NMHS)

Many National Societies are already collaborating with their NMHS (please note that *meteorological* and *hydrological* services are sometimes separated into two institutions). If such collaboration between the National Society and the NMHS is not (yet) in place, or if the NMHS cannot provide what is needed to enhance our decisions in programmes and operations, we need to:

1. keep the conversation going with them about our information requirements (advocate for this)
2. try to connect the dots with funding to make that information flow possible
3. consider organizing training and capacity-building initiatives for/with the NMHS.

The NMHSs are usually legally mandated as the sole organization in the country that can disseminate forecast information and early warnings. Sometimes, this may be done by the disaster management authorities. Therefore, it is important to clarify the role and opportunities for the National Society as an auxiliary in data dissemination and other uses of climate information. National Societies can play an essential role in making sure that the early warnings disseminated by these authorities reach all vulnerable communities and groups, and then lead to early action – in communities and in the National Society's own operations.

A good way to consolidate a national level collaboration with your NMHS is through a Memorandum of Understanding (MoU), especially between your National Society and the national weather service and/or hydrological service (that are generally responsible for monitoring the state of rivers and providing information on what could happen when rain hits the ground). The roles and

BOX 7. Enhanced coordination with the national weather service saves lives in Ethiopia

The Ethiopian Red Cross Society (ERCS) convenes interdisciplinary meetings that gather together local authorities, professional forecasters and humanitarian responders to work out ways to collaborate better and make forecasts that explain the danger or the level of risk more comprehensibly. In the Somali region of Ethiopia, drought and floods are among the major drivers of vulnerability and a three-year ERCS project in nine *kebeles* (wards), supported by the Netherlands Red Cross, has enabled climate-smart interventions. One component of the project enhanced coordination around using seasonal forecast information.

SEASONAL CONFERENCES

In April 2018, the ERCS convened an Early Warning Early Action workshop in Addis Ababa for regional- and woreda-level local disaster authorities, meteorologists and ERCS disaster managers from the Somali and Harari regions and Dire Dawa city. On the agenda were internal communications, annual seasonal conferences, the content and presentation of warnings and alerts, and inter-agency coordination.

The meeting bore fruit the very next day (9 April 2018) when a highland village near East Imi, in the Shebelle River area of Somali, was successfully evacuated by the Disaster Prevention and Preparedness Office with no casualties, after the national weather service (NWS) issued a flood warning. Later in April, the NWS and ERCS organized a seasonal conference in Jijiga to discuss the current seasonal forecast that is updated monthly and complemented by more detailed ten-day forecasts. At the meeting participants discussed previous years with similar meteorological profiles to see what lessons could be learned.

IMPROVED COOPERATION

> "Local media coverage of the seasonal conference helped people to realize the importance of this information and the resources that are available at local level,"

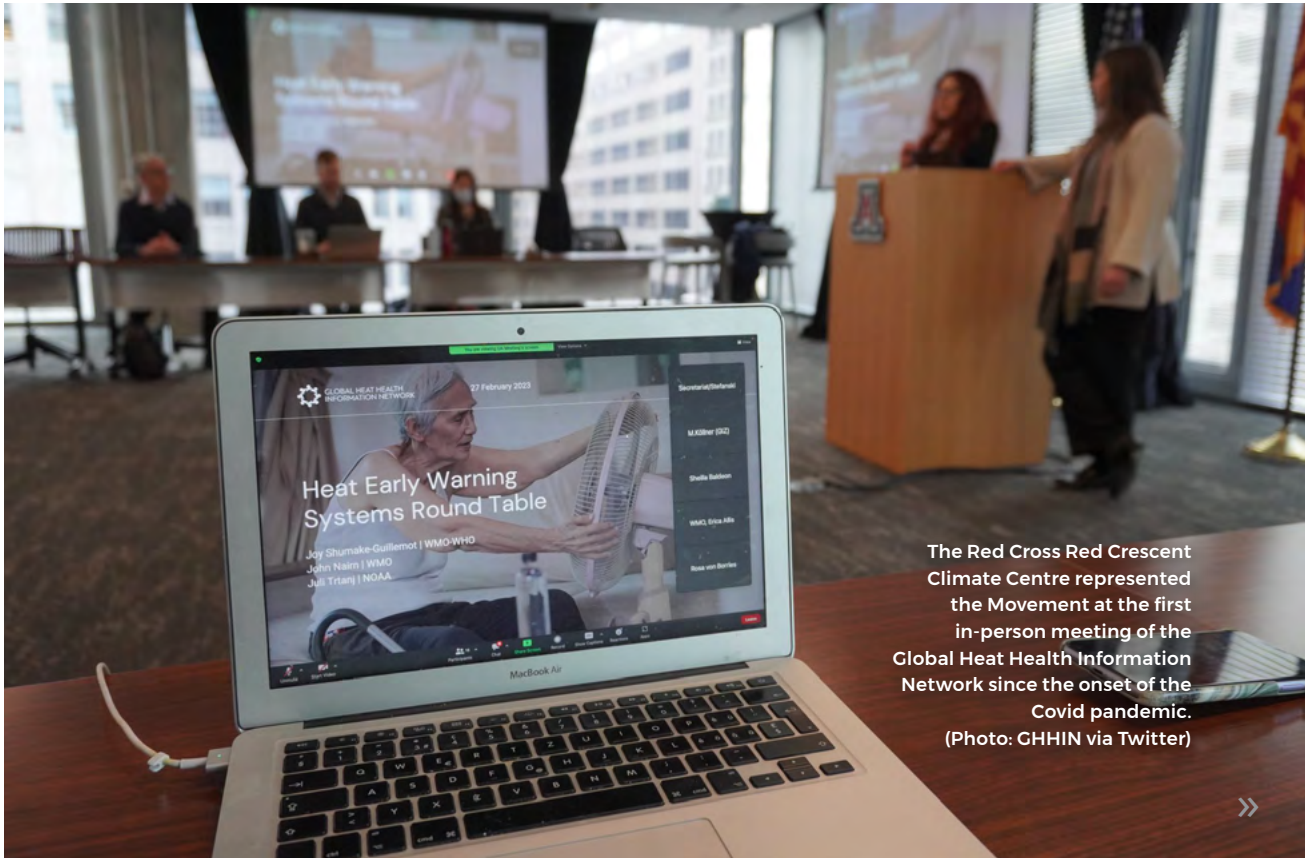
said Tayib Muhummed, ERCS Somali Region branch coordinator.

responsibilities of the national weather service can vary across different countries and there may also be significant differences in how they work or what they can deliver. The MoU should be sensitive to the mandates of the service provided. In Annex 4 we present a template with example elements for a collaboration agreement between a National Society and a national weather service. In the run up to such a collaboration, it can be helpful to set up a variety of stakeholder engagement workshops, which can help strengthen and tailor such a collaboration to spur the climate-smart programmes and operations process.

We recognize that it is complex to get the type of information from your national weather service that you can use in your work, and in Annex 4 we offer specific guidance on how to collaborate on this. Also, when you do not receive information that is either understandable or accessible, we offer tips on how to go about addressing this. In the following sections we explain which forecasts you can use and discuss with your national weather service.

Lastly, another way of structuring collaborations around forecasts can be to propose or advocate collaboration around seasonal planning sessions with a wider set of partners, including your national weather service. Dialogues with like-minded partners and local (disaster) authorities can be held in, for example, existing national DRR platforms or in seasonal conferences. Such dialogues can support sectors and organizations to advance preparedness and risk reduction, considering upcoming weather and seasonal forecasts and climate projections. Implications of the forecast and the coordination between partners and institutions can be discussed, which helps to reach the scale needed (see Box 7).

> "The coming weeks are the first cropping season, the *belg*, and the information we provide can help people plan better"
>
> The ERCS Somali Region branch says it is joining forces with the NWS on an international project to agree possible forecast triggers for humanitarian intervention, planning to match them with specific actions early next year.
>
> "We work closely together now,"
>
> says Tayib Muhummed.
>
> "The training convened by the ERCS allowed us all to coordinate and communicate much better. Before there was not enough. The importance of improved cooperation among the chain of actors to operationalize 'Early Warning Early Action' is very clear."



The Red Cross Red Crescent Climate Centre represented the Movement at the first in-person meeting of the Global Heat Health Information Network since the onset of the Covid pandemic. (Photo: GHHIN via Twitter)

2.2 Working with climate information across timescales

Weather and climate information comes at different timescales, and all of this information can be important for our interventions: weather forecasts provide reliable information of risks on *short* timescales of days to weeks; seasonal forecasts can help to prepare for the coming 3–6 months; and, at the longest timescale, climate projections give us information about the coming years to decades, which allows long-term planning for hotter and more variable weather conditions, changing vulnerabilities and new extreme weather events. National Societies have a role in making sure that the information they receive leads to action at various timescales. For example, weather warnings should lead to early action and reach all vulnerable people; seasonal forecasts should lead to seasonal preparedness measures being taken; and longer term climate projections should guide the prioritizing, design and planning of activities.

This section explains the basic terminology and highlights a few important things to keep in mind while working with climate information. Annex 4 will further zoom into the 'how' and offer alternatives if the access to useful information from the NMHS is limited or restricted.

Different timescales with different levels of certainty (see also Figure 5):

- **Weather forecasts** describe what the weather is likely to be up to the next ten days, often with good accuracy for the first five days, depending on the location and the hazard of interest. Weather forecasts can help us prepare for adverse events hours and days in advance, so we are not taken by surprise.

- **Weather forecasts** can be more precise than seasonal forecasts and climate projections. Working with forecasts helps us to

BOX 8.

Enhanced collaboration on seasonal forecasts for humanitarian action in the Pacific

More intense and frequent rainfall increases health and WASH-related risks in Indonesian communities, including vector-borne diseases, which offers opportunities for taking early action based on seasonal forecasts. (Photo: Climate Centre)

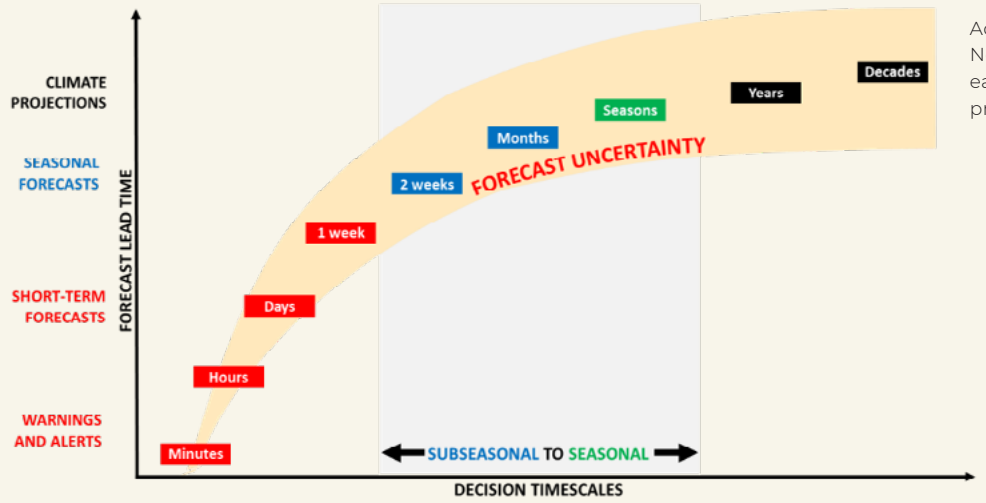
In 2013, the IFRC and Climate Centre along with the Pacific National Societies have been involved in shaping the content of the Pacific Islands Regional Climate Outlook Forum (RCOF), promoting the potential for humanitarian use of the prediction information. Fruitful collaboration is helping to enhance action between the disaster management sector and NMHS at national level. In Fiji, Papua New Guinea, Samoa, the Solomon Islands, Tuvalu and Vanuatu this partnership brought the development of an 'Early Action Rainfall Watch' (EAR Watch), which was tailored to the climate information needs of the humanitarian sector. EAR Watch presents seasonal rainfall predictions and drought advisory information in the form of simple colour-coded alerts that sectors can use to develop protocols for early action to prepare for prolonged dry or wet conditions.

Picture: A humorous animation was developed in the Pacific by Red Cross Red Crescent organizations in partnership with regional technical institutions and the NMHS. The animation is called "Climate Crab" and has an accompanying toolkit, which provides an overview of La Niña/El Niño impacts and possible adaptation measures.

strengthen our preparedness and readiness for response; it also allows us to design and set up Anticipatory Action initiatives, with dedicated EAPs. Further guidance on Anticipatory Action (including Forecast-based Financing) is available at the website of the Anticipation Hub.

- **Seasonal forecasts** predict climate variations for the coming 3–6 months and provide a probability for certain weather to occur, measured as 'above normal', 'normal' or 'below normal'. The accuracy or skill may vary depending on location, season and hazard, but it has potential for Anticipatory Action if carefully evaluated. This type of information can be useful for seasonal preparedness activities (Boxes 7 & 8) and Anticipatory Action for slow-onset hazards. At the seasonal timescale, forecasts can help us anticipate "good" or "bad" seasons and put in place measures to reduce the impacts (e.g., disburse financial support to farmers likely to be impacted by drought, initiate vector-control campaigns prior to a likely wetter period) or take advantage of opportunities (e.g., plant particular crops in likely favourable seasons to create surplus for the seasons that are less good). As with short-range forecasts, it is important to understand the skill of the forecast and the limitations of seasonal forecasts, particularly because these longer lead times mean more uncertainty and less scaled-down information. During a strong La Niña or El Niño,[6] there may be better skill in certain areas as well as better understanding of humanitarian impacts than at other times. It is better to compare two or more seasonal forecasts and seek support from the Climate Centre or other experts to help with further interpretation of this information, especially if the various forecasts differ a lot.

Figure 5. Timescales, lead times and uncertainty – and examples of potential climate-smart actions to take at different timescales.



Adapted from Next generation earth system prediction

SECTOR EXAMPLES at different timescales

Red: examples of actions with a forecast and a lead time **up to a week**

Blue: examples of actions with a forecast and a lead time **from two weeks to a couple of months**

Green: examples of actions with a forecast and a lead time **up to seasons/ months**

Black: examples of actions with a projection and a lead time **up to years, decades**

6 El Niño and La Niña (the Southern Oscillation – ENSO): an anomaly in sea surface temperature and atmospheric pressure in the tropical Pacific Ocean that occurs roughly every four to seven years and can lead to changes in seasonal rainfall in certain regions of the planet (large parts of Africa, Latin America, South East Asia and the Pacific). An ENSO cycle includes the two phases El Niño and La Niña.

- **Climate projections** are not forecasts but estimates of changes in the climatology over future decades (e.g., 2040–2060) to centuries (e.g., 2100). These longer term projections are the longest type of 'early warning' we can possibly obtain. The projections are more uncertain than shorter term forecasts (see Figure 5) and instead provide us with insights about increased risks, including new weather extremes and types of hazards to prepare for. They also enable planning for longer term resilience, preparing communities for longer term uncertainty and change along with the different adaptation decisions that may need to be taken.

Adaptation Futures 2018, Cape Town. (Photo: Climate Centre)

Lead time	Sector: **WASH**
1 day to 1 week	Emergency WASH interventions, local solutions and Emergency Response Unit (ERU) deployment in case of an imminent disaster
2 weeks to 2 months	Pre-emergency distribution of water purification tools and ERU units in case of potentially upcoming heavy rainfall
3 months/seasons	Plan for equitable safe water access and allocation during drought or flood in case of a potentially erratic season
Years, decades	Plan for rising water stress: Invest in landscape-scale solutions to ensure water availability through improved water efficiency and the conservation, restoration, and/or sustainable management of watersheds and aquifers, based on long-term projections of prolonged drought episodes Build capacity at local RCRC branches, institutions and communities to: • expand green and grey local water storage infrastructure • manage efficient water storage.
	DISASTER MANAGEMENT
1 day to 1 week	Activate site-specific warnings and evacuation plans in case of a cyclone warning
2 weeks to 2 months	Public awareness refresher campaigns and messaging for actions to take prior to cyclones with high risks of storm surge causing floods Pre-emergency positioning of personnel and relief items etc. for potentially upcoming cyclones Alert local population and disaster management units of heightened risks
3 months/seasons	Campaigns to increase cyclone preparedness Prevention campaigns for likely potential disease outbreaks after cyclones
Years, decades	Plan, advocate and raise awareness for increasing frequency or intensity of cyclones and initiate partnerships to lobby for long-term coastal investments that can reduce the impact of cyclones Identify new risk zones and safe areas for floods

All of this information – if available and accessible – can inform our decision-making and help to save lives. But… *don't use climate information in isolation*

The better use of climate information is the starting point to understand how to more effectively anticipate and respond to weather- and climate-related risks. However, climate information alone will not be enough to adjust your programmes. The elements that together contribute to risk are hazard, vulnerability and exposure. We can add to this the response capacity in a country, which are the human interventions that can help reduce risks, but that could also – if not planned well – increase risks (see Figure 6). In addition to the better use of climate information, we need to understand and address underlying vulnerabilities and exposure to hazards in a societal context. Limited use of climate information, as a sole decision-making source, can be misguiding and could lead to maladaptation (see Box 9). Climate risks assessments, EVCAs and environmental screenings are key to bringing in the full risk and impact information needed for climate-smart programmes, complemented by climate information across timescales.

The National Society, of course, already has a great starting point with the EVCA and the community health processes to ensure risks are addressed appropriately, with the focus on different risk factors (see Chapter 3).

Lead time	Sector: **LIVELIHOODS**
1 day to 1 week	Alter specific timing of harvesting, fisheries, business activities; evacuate livestock
2 weeks to 2 months	Alter period for harvesting, fisheries etc.
3 months/seasons	Invest in seasonal planning for most resilient crop diversification and water management
Years, decades	Long-term planning for sustainable agriculture and businesses (including diversification, education)
Lead time	Sector: **SHELTER**
1 day to 1 week	Emergency shelter interventions and prioritize the relief items based on anticipated losses and damage Plan and prepare for mass evacuation sites, base duration of stay on weather forecasts; awareness campaign with messages on weatherproofing (roof anchoring, bracing, reinforcements etc)
2 weeks to 2 months	Adapt shelter typologies and construction materials to withstand climate patterns; improve ventilation and insulation of roofing elements for better weatherproofing
3 months/seasons	-
Years, decades	Map neighbourhood level climatic stresses, notably in urban areas (heat island, flood prone areas) and plan integrated programmes that can address these climate changes and build urban resilience
Lead time	Sector: **HEALTH**
1 day to 1 week	Emergency health interventions and ERU planning
2 weeks to 2 months	Health information distribution and public awareness efforts to preserve individual health before, during and after emergencies (e.g., dengue/malaria campaigns based on seasonal forecasts)
3 months/seasons	-
Years, decades	Addressing the drivers of health and climate vulnerability at the community level Advocacy around changes in health patterns due to climate, e.g., vector-borne diseases

Figure 6: Interactions of risk drivers: hazard, vulnerability, exposure and response to climate change. This figure explicitly recognizes that human responses to hazards are also a key determinant of risk.
(Source adapted from: Simpson *et al*,2021.)

HAZARD: Information on climate and weather hazards can come from the national weather service or other specialized weather centre in your country. Interpretation or additional information can come from climate specialists in the IFRC and Climate Centre where needed.

EXPOSURE: Information on exposure is essential to understanding what and who is in harm's way. National Societies can use various data sets or collaborate with local data providers to get a good understanding of the exposure for populations or infrastructure at risk (risk zones).

VULNERABILITY: Embedding information on (changing) vulnerability during the assessment phase helps National Societies to identify why certain populations and/or assets are more likely to be impacted than others. For instance, looking into underlying causes of vulnerability such as poverty, inequality and environmental degradation can help to design appropriate interventions to adapt to climate change.

COPING CAPACITY: In countries and regions with high levels of poverty, corruption and difficult governance situations, the coping or response capacities are often very low. This is especially the case in conflict-affected areas. This means that urgent measures and investments needed to protect vulnerable groups against the adverse impacts of climate change are lacking, increasing the risk.

BOX 9.

The risk of doing it wrong – avoiding maladaptation

One of the biggest challenges is deciding exactly what to do to make interventions climate-smart. Climate-smart decision-making is about managing uncertainty and builds on imperfect information, so things can go wrong – sometimes creating conditions that worsen the situation, so some people become even more vulnerable to climate change. This unintended consequence is called maladaptation (see further in Glossary, Annex 6). Examples would be if farmers in a region with an expected dryer future climate *shift entirely* from their normal crops to only drought-resistant varieties – instead of diversifying varieties to fit the more variable seasons. Or if a current lack of water in an already water-stressed area was addressed only by drilling for more water instead of investing in more effective water management practices and watershed management as one step towards facing long-term dwindling water availability. Avoiding maladaptation can include ensuring that the best available information is used to guide decision-making and aiming for 'low' and 'no regret' options, meaning interventions that will be helpful under all or most conditions.

3. The steps to get to climate-smart programmes

Having explained the importance of working with climate information and collaborating with others throughout the design and implementation of your work in Chapter 2 (the enablers), we offer three basic steps that can help to mainstream climate in programmes. While these generic steps are similar for any kind of intervention, Chapter 4 provides guidance tailored to emergency operations and Chapter 5 explains how to make National Societies' plans and strategies climate-smart.

The three steps described in detail below are generic for all types of work:

1. **Assessment:** Understanding the hazards and likely impacts of climate change and climate variability for your country and specific target areas; this involves identifying (changing) vulnerability and likely impacts in relation to different sectors, e.g., disaster management, WASH and livelihoods.

2. **Screening:** Reviewing the implications of climate change, weather extremes and changing seasons for specific National Society project activities. This includes screening the activities in *existing* projects or strategies, as well as the *draft* activities proposed in the initial stages of a new project or strategy process. This screening step also includes the identification of existing good practices, malpractices and lessons learnt to build on in relation to climate.

3. **Climate-smart planning:** Identifying options for how to adjust the activities (making use of climate information at different timescales) so they are geared to face increasing risks coming with climate change.

Lebanese Red Cross/Y-Adapt. (Photo: Lebanese Red Cross)

The practical steps are summarized in Figure 7; please note that a supporting XL Notebook is available where users can go through each step, take notes and tick off the answers to sector-specific questions (see Box 19). Please note that two levels of assessment are proposed: 'basic' for those with limited resources (human, financial and time); and 'in-depth' which requires more resources and focuses on a better understanding of risk and the design of more robust climate-smart programming.

Figure 7. Overview of steps for national-level climate risk assessments (3.1), screening of strategies, programmes and operations (3.2), and prioritizing climate-smart interventions (3.3). Two levels of assessment are proposed: basic and in-depth.

3.1 Climate risk assessment

Consider climate information at **all timescales**

- **Weather forecasts** (up to max. 15 days)
- **Seasonal forecasts** (3–6 months)
- **Climate projections** (decades to century)

Basic

A. Check weather and climate information in:
- IFRC Climate Factsheets
- Relevant IPCC regional factsheets
- World Bank Climate Change Knowledge Portal

... and take notes in supporting XL Notebook (sheet 3.1.A):
Recent changes in temperatures and rainfall
Projected changes in climate patterns and associated drought, flood and heatwave risks etc.

B. Assess, with relevant sector colleagues:
- How could the changing climate impact existing vulnerabilities and the exposure in your target area? – take notes in XL Notebook (3.1.A)
- How would different sectors be impacted (disaster management, livelihoods, WASH, shelter etc.)? Use *Sector Impact Check* (Annex 2 or XL Notebook 3.1.B) and insert your notes

In-depth

A. Review weather and climate information by:
- Consulting a range of sources (Annex 1)
- Collaboration with weather service experts
- Use the template provided (Annex 1)

... and compile report on:
Recent changes in temperatures and rainfall
Projected changes in climate patterns and associated drought, flood and heatwave risks etc.

B. Assess, with representatives from all NS departments and key external stakeholders:
- How could the changing climate impact existing vulnerabilities and the exposure in your target area? – take notes in XL Notebook (3.1.A)
- How would different "sectors" be impacted (disaster management, livelihoods, WASH, shelter etc.)? Use *Sector Impact Check* (Annex 2 or XL Notebook 3.1.B) and insert your notes.

3.2 Screening of strategies, plans and projects

1. **Select and review all issues you ranked as 'relevant'** (green) in *Sector Impact Checks* (Step 3.1.B)
2. **With notes from 3.1.B in mind, review activities in your strategy, project plan or emergency operational plan, appeal etc.** and insert notes in the XL Notebook (3.2–3.3):
   - Potential climate-related risk to manage
   - Existing good practices, needs and missed opportunities in the previous interventions

3.3 Prioritize and design climate-smart interventions

1. **Based** on the notes compiled in step **3.2**., continue to the next column **(3.3)** in XL Notebook (3.2–3.3); for **each of your strategy, project plan or emergency operational plans, appeals etc.** insert:
   - Recommendations to make the planned activities for each intervention climate-smart
2. Consolidate the recommendations with all partners and National Society leadership
3. Operationalize the intervention – with the climate-smart activities embedded

Note: Exactly how to adjust project activities or strategy objectives may require consultations that have' different specialist with local context knowledge (no generic checklists possible).

Conduct these steps jointly with specialists relevant for each of the documents you screen:

- **Always** involve sector-specific expertise from the National Society
- **Where feasible** bring in external partners from the Movement or beyond

3.1. Step 1 – Climate risk assessments

This section explains the relevance of national climate risk assessments as well as sector-specific climate assessments and reflects on local participatory risk assessments, including the Enhanced Vulnerability and Capacity Assessment (EVCA) and Community-Based Health and First Aid (CBHFA) and how they can integrate climate knowledge and information. In Annex 1 we provide a template for a national climate risk assessments along with relevant information sources and writing tips.

Climate risk assessments are the foundation that provide general knowledge to inform our work and decision making. At national level, depending on resources, you can either do a light national climate risk assessment with a climate lens; or a more in-depth national climate risk assessment, focused on understanding how climate risks will affect your country and future programming.

At local level, various participatory assessments are conducted, for example:

- EVCA and community health assessments for long-term resilience programming
- Emergency Needs Assessment (ENA) processes for emergency operations
- Participatory Approach for Safe Shelter Awareness (PASSA) to build resilience through the habitat/living environment, which uses activities around the frequency/impact of hazards and reviews indigenous building practices that best withstand such risks (safe and unsafe shelter)
- At sub/national level in relation to contingency planning

In addition, the Preparedness for Effective Response (PER) approach supports different types of institutional assessments (primarily PER self-assessment, simulation, operational and post-operational assessments) and promotes use of the results of other relevant assessments, including national climate risk assessments. In this chapter, we summarize how to gather and use climate information for planning.

Please note that it is also important to conduct 'environmental screenings' in our programmes, which can be conducted with tools like NEAT+ (Box 4). This guide will not expand on environmental screenings, but there will be overlaps in the application of these environmental impact assessment tools, as they cover environmental issues broadly, but (obviously) touch on climate change as well.

1. National climate risk assessment

A national climate risk assessment is the first step for your National Society to take stock of the relevant climate science, current climate-related risks and vulnerabilities in your country. It will help you to understand and assess how those risks are impacting different regions in your country; different sectors in general; as well as, critically, vulnerable people and different vulnerable groups; and how risks may change due to climate variability and/or longer term climate change. Insights gathered from community-based activities (see Chapter 4) can, of course, inform the national climate risk assessment too.

The national climate risk assessment provides the basis for assessing the humanitarian implications of changing climate risk and, thereby, the relevant entry points for climate-smart programmes and humanitarian operations. This process can build on the understanding and collaborations around climate and weather information described in Chapter 2.

The climate risk assessment will subsequently help your National Society adjust, design and (re)prioritize programmes and strategies. In the longer term, it can be a starting point to help identify partners along with new priority initiatives for locally led adaptation and funding opportunities (Figure 2).

See Annex 1 and the accompanying XL Notebook for more specific guidance on compiling a national climate risk assessment (see Box 19); the XL Notebook also supports checking the impacts within different work areas/sectors of the National Society's duties as described in Annex 2.

What should a national climate risk assessment summarize?

In short, the assessment should summarize:

- historic, current and future climate trends and weather conditions
- current and expected changing levels of vulnerability and exposure, with a focus on vulnerable groups that are likely to be disproportionately affected by climate change, especially women and girls, children, the elderly, marginalized groups, indigenous groups, migrant workers etc.
- impacts of climate change within different sectors (livelihoods, DRM, WASH, Health, etc), including compound and cascading impacts across sectors (combined risks and domino effects)
- impacts of climate change on different regions of the country
- capacities to deal with increasing risks
- overview of key stakeholders in-country working on climate
- a brief overview of existing national policies and initiatives on climate.

An educational workshop for Javanese fishermen where young Red Cross volunteers helped them and their relatives interpret online forecasts and information on waves and fisheries. (Photo: Raja Siregar/IFRC-PfR)

BOX 10. My National Society has already conducted a feasibility study for Anticipatory Action – do I still need to conduct a national climate risk assessment?

Feasibility studies for Anticipatory Action/ Forecast-based Financing offer a good starting point to understand current and historical climate extremes and the impacts of selected hazards (including some non-weather-related) to determine who and what is likely to be impacted by different hazards and why. It should be noted that long-term climate trend information is not included in these reports, and that these often focus on the prioritized hazards, rather than on the scoping of several long-term climate risks as meant in this step. If they are available, these studies can be used as part of the national climate risk assessment, while the information on weather and seasonal forecasts can be very useful for later steps in climate-smart programmes and operations.

For a more detailed description of what to include in a national climate risk assessment, see the template questions provided in Annex 1; the Annex also provides further information on relevant sources, tips and tricks for the writing process. Keep in mind that there's no need to reinvent the wheel; most of the information you need is readily available. Please see Box 12 on what the process could look like with your team to undertake a national climate risk assessment.

If funding is very limited, it is recommended to conduct a basic national climate risk assessment. A few dedicated people can gather easily accessible climate information in the supporting XL Notebook, rather than conducting a full analysis (see Figure 7). You can focus on the main climate impacts in your country and talk with your colleagues about how it might affect key National Society work areas. If resources are available, you can conduct a more in-depth analysis with support from external specialists (see Figure 7).

2. The relevance of sector-specific climate risk assessments

While the national climate risk assessment will already touch upon the sector-specific impacts of climate change, it may still be valuable to have different departments of your National Society invest in sector-specific climate risk assessments where possible, for example, in health, WASH, DRM, livelihood and food security, shelter and settlements, migration and displacement – depending on which sector(s) are most relevant for the National Society (Box 12). In Box 11 we provide examples of climate, health and livelihoods assessments. In Annex 2 (and XL Notebook step 3.1.B), we offer specific sector-based questions (see Sector Impact Check) as guidance for sectoral climate risk assessments.

TABLE 2.
Overview of examples of relevant issues to consider for sector-specific assessments

Sector-specific focus	Examples of assessment needs
DRM	Changing risk zones with new climate extremes and sea level rise; more frequent high-impact weather-related disasters; early warning systems, awareness-raising and contingency planning for new and larger areas; logistics challenges in more frequent/ severe disaster events.
Health and WASH	Shifting/increasing disease patterns due to climate change, including vector-borne diseases; increased risk of disaster-related diseases; impacts of climate change on potable water and nutrition; heat-related illnesses; mental health impacts of climate extremes and trends; gender and inclusion analysis (including on sexual reproductive health and rights); impacts on health systems, access to healthcare services, impacts on health supply chains; impacts on long-term treatment plans.
Livelihoods and food security	Livelihoods zones[7]; agricultural analysis & seasonal calendar; climate change impacts on livelihoods activities (agriculture, livestock, fisheries, etc.) production regions, productivity; socioeconomic groups, coping and adaptation strategies, market trends; gender and inclusion analysis.
Shelter, housing and urban settlements	Population density and mapping of 'hotspots' (congested urban areas, flooding, heat) and how these evolved over time; assessing local building adaptations to withstand the effects of climate change (insulation, better ventilation, energy uses, weather-proofing etc.) at household, street and neighbourhood levels. Existence of cooling centres, shading elements and nature-based solutions (green/blue corridors etc.), adapted street designs and site mitigation measures (coastal erosion protection barriers, flood mitigation etc.). Impact of extreme events on houses /community facilities/energy supply/roads.

7 Livelihood zone: Livelihood zone maps define geographic areas of a country where people generally share similar options for obtaining food and income and similar access to markets; see examples at fews.net.

Training for integrated risk management was carried out in several Indian states like here in Gujarat's Navsari district as part of the Netherlands-supported PfR project, shortly after the Indian Red Cross signed an MoU with the government to share meteorological information and data to assist community resilience. (Photo: PfR)

BOX 11. Example of risk assessments on climate, health and livelihoods

In 2021, sectoral risk assessments were conducted to assess the impacts of a changing climate on health and livelihoods in Afghanistan, Fiji, the Maldives, Mongolia, Myanmar, Nepal, Pakistan and Timor-Leste, and on health in a further three countries: Ethiopia, Kenya and Malawi.

While the direct health effects of climate extremes lead to increased morbidity and mortality, climate change also harms human health indirectly through ecosystem changes that negatively impact the livelihoods of those most vulnerable with the least capacity to adapt. In Afghanistan, for example, heatwaves are expected to increase in duration and severity due to climate change, with accompanying health impacts, such as heat exhaustion and heat-related deaths. This will in turn affect people's ability to work during the daytime and to sleep properly at night, affecting their productivity. Populations in urban areas are at increased risk of heatwaves because cities are more prone to the urban heat island effect, as a product of the built environment, such as sealed surfaces and dense buildings trapping heat, placing stress on infrastructure and negatively impacting city dwellers' health (NEPA 2017). These more in-depth assessments can offer specific recommendations to address the health and livelihoods impacts of the climate crisis, including how to better support marginalized and disproportionately affected groups.

BOX 12. Process for national and/or sectoral climate risk assessments (see Figure 7)

1. Set up a **climate working group** in your National Society. The group could be comprised of e.g., different project leads or managers across departments and technical thematical focal points.
2. Identify a **lead (author)** and discuss the needs of the scope of your assessment together.
3. Jointly **map** the names of **key stakeholders and experts** in your country for potential consultations and interviews.
4. Check if there is already **existing climate** risk assessment **information** for your country: from Red Cross and Red Crescent sources as well as from external sources.
5. Review the template for the national climate risk assessment provided in Annex 1. Modify/simplify where appropriate, depending on the context of your country. The supporting XL Notebook can be useful in these steps.
6. Conduct **a desk survey** and fill in XL Notebook step 3.1.A (climate information and main impacts) and 3.1.B (sectoral impacts checks – see example below; also see Annex 2). This is ideally coordinated by the lead author, working with the climate working group throughout the process.
7. From the XL Notebook, pull the key points into a short report – if relevant, use the national climate risk assessment (modified) template provided in Annex 1.
8. Share a first draft for the **consultation and review** of relevant colleagues (including key partners, where relevant). Pending funding availability, this can either be a short, basic compilation of data, based on the XL Notebook, or a more elaborate assessment which can be published online with a solid analysis of impacts across the country.
9. Address the comments provided in the first round of the review. Decide if a second round of review is necessary.
10. Conduct a **validation workshop** with all relevant cross-departmental staff members and external experts to discuss the findings.
11. Consolidate and publish the report or findings as appropriate (web announcement, social media campaign etc.).

- **Estimated time for an in-depth assessment:** 2–3 months
- **Estimated budget for an in-depth assessment:** 10,000 Euro (salaries, meeting rooms for workshop, interviews)
- **Estimated time for a basic assessment:** 3 days – consisting of 16 hours to conduct the desk study and a meeting with various staff members from different departments; and 8 hours to write the assessment (with a review round for colleagues).
- **Estimated budget for a basic assessment:** three days' salary for national staff, plus a few hours per department

3. Importance of local participatory risk assessments

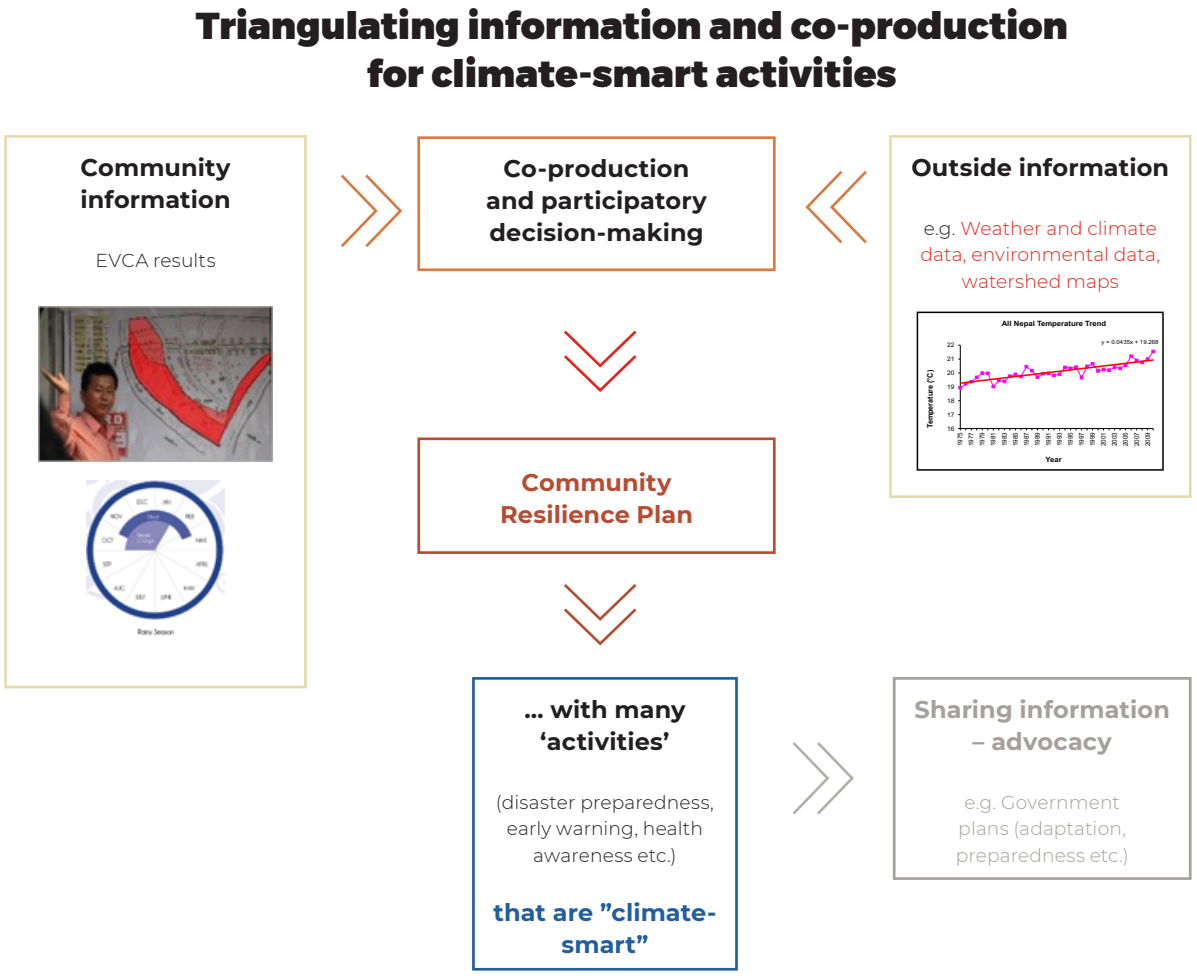
It is essential within climate-smart programmes that the community is fully involved (see Table 3 and Box 13). If people are not yet fully aware of the causes and impacts of climate change, you will need to explain this carefully. However, it is all too easy for communities and stakeholders to blame everything on climate change, so it requires a careful dialogue.

IFRC's Enhanced Vulnerability and Capacity Assessment process is a good starting point to understand the existing local knowledge on climate variability and change (Figure 8). One of the tools for EVCA facilitators preparing for community facilitation is the Review of Secondary Sources. If your National Society headquarters has already conducted a national climate risk assessment it will be the main 'secondary information source' on climate impacts. The national climate risk assessment also provides the general climate information needed when "changes" and "climate change" emerges among the issues identified in the EVCA process or other local assessments and consultations.

Climate aspects are also integrated in some of the key facilitation tools – seasonal calendar, historical profile and mapping offer opportunities to identify how risk patterns may be changing – so the key points that will come naturally if an EVCA is carried out by using the recommended tools. By triangulating the scientific information with the local knowledge from the EVCA, you can facilitate the process of developing a climate-smart community resilience plan.

To help EVCA facilitators collate and rank or score community risk information and ending with a plan of action, IFRC has developed a comprehensive Reporting Format XL file. While that reporting format is the main tool for EVCA reporting, it is

Figure 8 : Triangulation and co-production of climate-smart activities in community resilience plans. Note that in addition to the direct community activities, the process also generates information to be used in advocacy for prioritizing local adaptation needs.



not explicit on the climate-smart aspects, so a ***separate*** *supporting* XL Template (IFRC CSPO – TEMPLATE for Climate-Smart Community Action Plan.xls)[8] offers a format for steering the discussion and the planning process. It helps the community to consider climate aspects when defining the specific activities in the community action plan. In the process, technical support from in-country partners (e.g., local agricultural extension services, flood forecast modellers, etc.) or from the IFRC network can be important to design the relevant measures to be climate-smart.

While climate change effects might be obvious in relation to heatwaves and extreme rainfall events, the derived impacts like flooding and drought can also be strongly influenced by other factors; for instance, changing land use and settlement practices, including deforestation, urbanization, farmland and water resource management. These aspects are, to some extent, also covered in the EVCA tools, but it may be valuable to also pre-read the 'Foundations' chapter in IFRC's Nature Navigator (2022) and already align processes by conducting an environmental screening (e.g., with the NEAT+ tool mentioned in Box 4).

In the process of conducting an EVCA, it will be an asset to involve the national weather service/NMHS (a local chapter, if available) who can usually help to get some level of information on local climate trends (e.g., what are the trends in rainfall or drought indices at the nearest weather station?). The implications of this information can then be discussed in participatory workshops with community representatives, other stakeholders and technical partners and used in the final design of the community plan. The co-production, interpretation and planning around climate and weather

TABLE 3. The minimum standards for local climate-smart disaster risk reduction
(Climate Centre, 2013)

MINIMUM STANDARD FOR COMMUNITIES

- Community is aware of changes in weather patterns, climate change-induced slow-onset events and recognizes that some weather-related risks in the future are likely to be different from the past.
- Community receives and understands locally available climate and weather information (including projections, seasonal forecasts and daily weather forecasts), and households know appropriate actions to take when inclement weather is approaching.
- In places where skilful medium- and short-term forecasts are available, the community has a reliable relationship with an organization that can help access and make use of the forecasts.
- Community carries out an EVCA, incorporating observed changes in weather, seasonality and hazard patterns and uses the information to develop or adjust local action plans.
- Community monitors and evaluates approaches to DRR and learns from experience to adjust plans to adapt to climate variability and change.
- Community advocates for its adaptation needs towards appropriate climate-related authorities and stakeholders.

8 Link opens the file in a browser; to download your editable version, click File > Save as > Download a copy

information is key to inform and identify good practice solutions for the community resilience plan (see Box 7 with a good practice example from Ethiopia); the process of combining local knowledge and scientific information for co-production towards climate-smart activities are summarized in Figure 8 on page 38 as well as in Figure 4.

There are several methods to combine climate hazards, exposure and vulnerability information to understand who and what is at risk and where climate action should be prioritized. More information can be found in the Anticipation Hub Multi-Hazard Risk Analysis Methodologies.

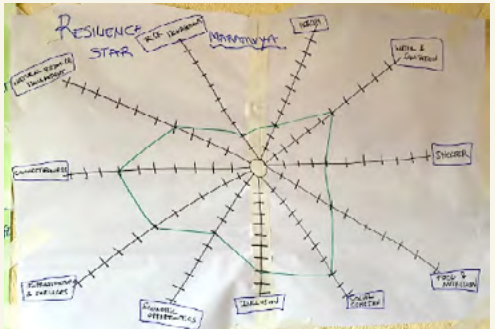
Depending on scale and scope, assessments can also be conducted at city and neighbourhood levels, in the form of multi-hazard analytical profiles (see Box 13), which serve as baselines to understand the trends and impacts (see UN-Habitat or iMMAP urban profiles).

For community-level programmes, the ambition is to meet the minimum standards in Table 3.

BOX 13. Example of Burundi assessment beyond just climate information

Climate and risk information is crucial for a national-level risk analysis process. In the 2022 World Bank-led programme, downscaled climate projections were used for the first time. A multi-model ensemble (regional climate models from the Coordinated Regional Downscaling Experiment – CORDEX) was applied at two different timescales: 2030 and 2050. This was complemented by a historical risk analysis to identify the key areas affected in the past by different hazards (such as floods, heatwaves, landslides and storms). A detailed hazard exposure analysis was conducted to identify landslides, land degradation and flood risks. This was followed by a cascading analysis of hazards to understand the interactions between hazards and their impacts. Burundi is a country that suffers from the impacts of armed conflict and migration, so in addition to the above assessments a detailed analysis of historical conflict hotspots was developed by using opensource datasets and interviews with key actors. Understanding which areas have been affected by conflict is a significant component of vulnerability.

Over the last few years, Burundi has also experienced high levels of displacement due to disasters. Therefore, an additional migration and displacement analysis was conducted to understand displacement hotspots. The INFORM index was used partially as the framework for risks analysis; key vulnerability information was included in the analysis along with climate change projections and hazard information to identify which 'collines' are facing the highest risks and which should be prioritized for climate action investments. The Burundi Hotspot map – developed by the Red Cross Red Crescent Climate Centre, the 510 data initiative of the Netherlands Red Cross and Stanford University – can be found here. This process is part of a climate action process that comprises community validation of a risk analysis, community action plans and budgeting, which are key steps in the Government's climate plan for Burundi, financed and supported by the World Bank.



Participatory community (colline) meetings identified local knowledge and the perception of risks – in the 'resilience star' on the right picture – and priority adaptation options. (Photos: Climate Centre)

3.2 Step 2 – Screening of activities in programmes

Building on the understanding of national (and sectoral) climate risk assessment(s) as developed in step 3.1, a screening of the activities within National Society strategies, plans and programmes helps to identify the entry points for climate-smart approaches and interventions. The screening process helps a team to understand if and how climate risks may specifically affect activities in a particular programme or plan, by looking at geography, sector and the design of a programme or plan in relation to the changing climate-related risks. The screening can offer a valuable baseline, identify good practices, missed opportunities and potential entry points for your National Society to adjust its strategies, plans and programmes to make them climate smart.

In this step, the design or adjustment of activities to make them climate risk-informed is central. It means ensuring that activities can withstand shocks and stresses and that they do not aggravate risks or vulnerabilities in the face of likely hazards now and in the future. It also means identifying additional priorities that can help avert, minimize or reduce the impact of climate extremes or erratic seasons during humanitarian operations or recovery.

Also, with the application of tools to conduct environmental screenings (e.g., from NEAT+) there are steps to conduct programme screenings. Upfront it can be relevant to check the alignment of both environment and climate assessment and screening processes.

BOX 14. Climate-risk screening of ICRC delegation plans

The climate-risk screening was first implemented by the Climate Centre and International Committee of the Red Cross (ICRC) delegations in 2019. By 2023, 35 delegations will have completed a screening. The screening outputs include a national climate-risk profile, summary of findings from the document review, recommendations and a national stakeholder mapping.

For example, in Sudan, 73 project documents were screened by a multi-disciplinary team with the aim of ascertaining how climate and hydrometeorological conditions (present and predicted) are considered in ICRC programming, and how Sudan's changing climate might affect ICRC's programming, prioritized areas and the climate–conflict nexus generally. An example from Sudan is the support to water supply systems in towns hosting a large, displaced population. In these activities, the delegation already included projections for population growth in the next ten years within the design. The screening identified that climate projections (notably on temperature and rainfall) should be included as an additional trend to ensure the sustainability of the infrastructure. The recommendations further detailed what type of information could be used, and what process project designers could follow.

»

The sector impact checks (Annex 2 and sheet 3.1.B in the accompanying XL Notebook also supports this subsequent screening of interventions (strategies, plans, appeals etc.).

The following screening questions help guide you through the process:

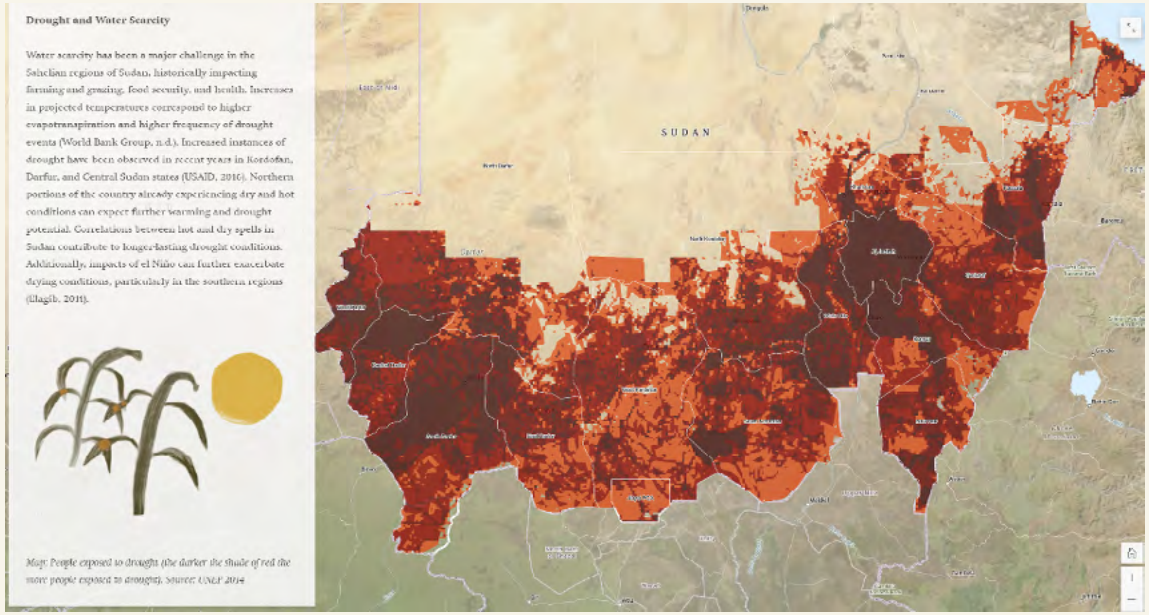
1. Which activities can already be considered climate-smart?
2. Where may climate risks affect desired outcomes negatively?
3. What are the recommendations for how climate risks can be integrated in particular projects/activities?
4. What are our key action priorities going forward for the department/organization (for example, specific training, recommended collaborations, tweaks to activities, key gaps that should be explored with additional activities/research/advocacy and with whom)?
5. How we can link this with existing knowledge/approaches in the Movement?

Please note that this screening process is applicable to existing work activities. For new, dedicated adaptation projects, the broader Climate Action Journey is relevant (see Figure 2), which supports with different pieces of guidance along the Journey, including design and development of new locally led adaptation projects.

The results from the screening activities can be synthesized into short reports for National Society staff across different departments, with the aim of supporting them with climate-smart adjustments for the implementation of their projects. Try to synthesize the climate risks identified for different types of

The screening process is a collaborative approach that needs to be tailored to the organization – the team composition, screened documents and types of outputs are determined based on the priorities of the delegation. For example, in Mali the delegation wanted to better understand the potential use of available forecast information for floods in their programmes, while in Georgia the delegation prioritized understanding what other actors are already doing in the context. Team composition is also adjusted based on these priorities; for example, screenings with delegations that have mainly protection activities compared to a delegation with mainly water and economic security activities require different expertise.

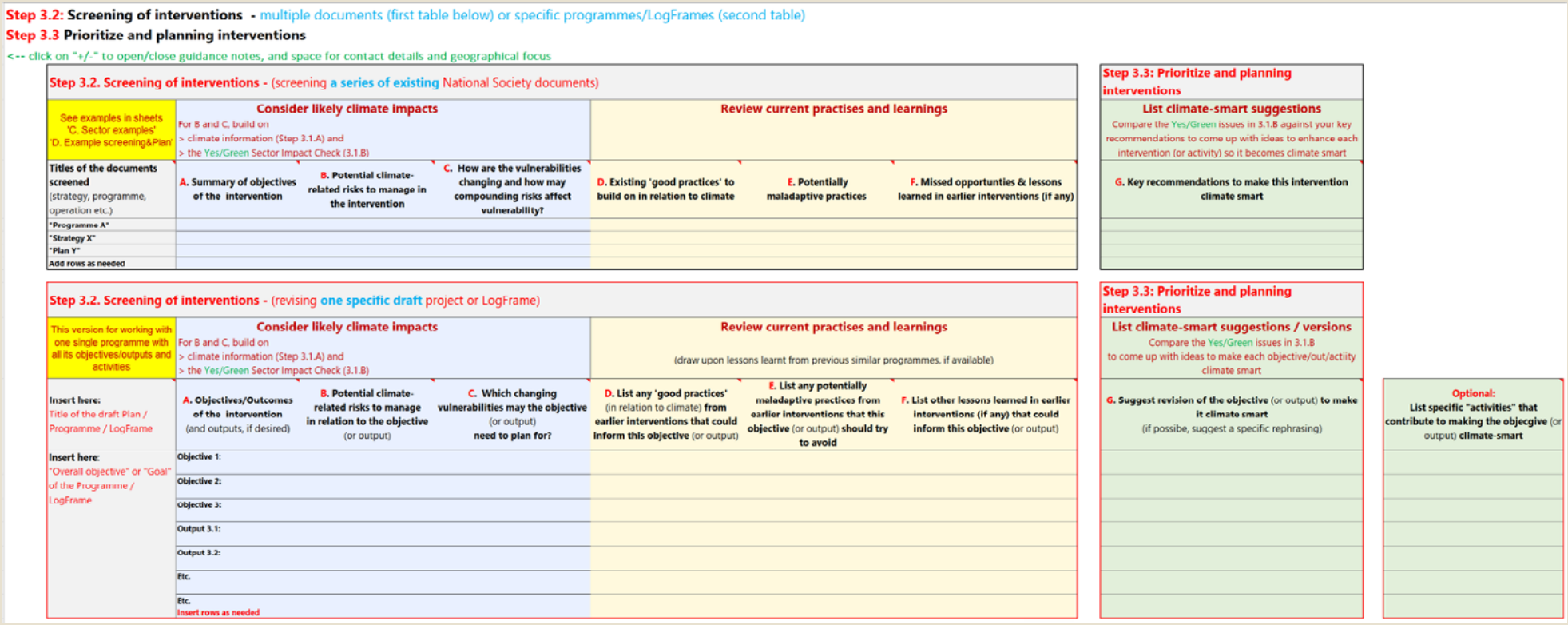
For Sudan, the ICRC climate-risk screening is available as a visual summary (see sample screen below).



projects, offer specific climate-smart recommendations and resources that emerged during the screening discussions, and outline the link from each of these to climate-smart principles. Whilst doing the screening, various institutional and general operational recommendations may arise, as well as areas that require further research, which can also be highlighted in a report.

The priorities will be different depending on the sector and the activities, so it is important to screen a well-balanced selection of documents from national-level work plans and strategies and from plans and project documents from different departments within the National Society. It is also important to keep different timescales in mind: long-term resilience programmes and

TABLE 4. Elements of the climate screening and planning (tab 3.2–3.3 screening and planning in the IFRC CSPO – NOTEBOOK for National Assessment, Screening and Planning Excel file)



Step 3.2: Screening of interventions - multiple documents (first table below) or specific programmes/LogFrames (second table)
Step 3.3 Prioritize and planning interventions
<-- click on "+/-" to open/close guidance notes, and space for contact details and geographical focus

Step 3.2. Screening of interventions - (screening a series of existing National Society documents)

See examples in sheets 'C. Sector examples' 'D. Example screening&Plan'	Consider likely climate impacts For B and C, build on > climate information (Step 3.1.A) and > the Yes/Green Sector Impact Check (3.1.B)			Review current practises and learnings			**Step 3.3: Prioritize and planning interventions** List climate-smart suggestions Compare the Yes/Green issues in 3.1.B against your key recommendations to come up with ideas to enhance each intervention (or activity) so it becomes climate smart
Titles of the documents screened (strategy, programme, operation etc.)	**A.** Summary of objectives of the intervention	**B.** Potential climate-related risks to manage in the intervention	**C.** How are the vulnerabilities changing and how may compounding risks affect vulnerability?	**D.** Existing 'good practices' to build on in relation to climate	**E.** Potentially maladaptive practices	**F.** Missed opportunities & lessons learned in earlier interventions (if any)	**G.** Key recommendations to make this intervention climate smart
"Programme A"							
"Strategy X"							
"Plan Y"							
Add rows as needed							

Step 3.2. Screening of interventions - (revising one specific draft project or LogFrame)

This version for working with one single programme with all its objectives/outputs and activities	Consider likely climate impacts For B and C, build on > climate information (Step 3.1.A) and > the Yes/Green Sector Impact Check (3.1.B)			Review current practises and learnings (draw upon lessons learnt from previous similar programmes, if available)			**Step 3.3: Prioritize and planning interventions** List climate-smart suggestions / versions Compare the Yes/Green issues in 3.1.B to come up with ideas to make each objective/out/actiity climate smart	
Insert here: Title of the draft Plan / Programme / LogFrame **Insert here:** "Overall objective" or "Goal" of the Programme / LogFrame	**A.** Objectives/Outcomes of the intervention (and outputs, if desired)	**B.** Potential climate-related risks to manage in relation to the objective (or output)	**C.** Which changing vulnerabilities may the objective (or output) need to plan for?	**D.** List any 'good practices' (in relation to climate) from earlier interventions that could inform this objective (or output)	**E.** List any potentially maladaptive practices from earlier interventions that this objective (or output) should try to avoid	**F.** List other lessons learned in earlier interventions (if any) that could inform this objective (or output)	**G.** Suggest revision of the objective (or output) to make it climate smart (if possibe, suggest a specific rephrasing)	**Optional:** List specific "activities" that contribute to making the objecgive (or output) climate-smart
	Objective 1:							
	Objective 2:							
	Objective 3:							
	Output 3.1:							
	Output 3.2:							
	Etc.							
	Etc. Insert rows as needed							

preparedness as well as shorter term emergency operations with subsequent longer term recovery phases are addressed within each area of work (e.g., emergency shelter versus long-term recovery housing programmes, or emergency health activities versus long-term community-based health programmes).

It is recommended that the screening process is led by the same group involved in the risk assessment phase. Sectoral experts from outside the organization (including specialists from the IFRC, the IFRC-Livelihoods Centre, the Climate Centre or from like-minded CSOs in your country) can complement the review process, offering different experiences or knowledge that can help identify good practice (see Box 15).

The core group can do the initial screening of interventions and exchange insights on the key topics arising. After this initial screening, follow-up discussions with staff from the respective programmes/sectors (including the manager and coordinator) is needed to discuss preliminary findings and to refine recommendations. It is important to make this process as participatory as possible: the selection of documents, presenting the key findings and follow-up should all be participatory. After these discussions with the key programme staff, present the key messages to a wider audience in the National Society, including management, department heads and staff, to build momentum, share progress and initiate the next steps.

The XL Notebook offers examples of diagnozing the (departmental) strategic plans with (missed) opportunities to make it climate-smart. The Notebook has two sections – one for screening several documents and adding recommendations for adjustments, and another section to handle a single programme or project with multiple objectives, outputs and activities (Table 4).

Our advice is to do the screening for *existing strategies and projects* and all *new* programmes in the future. If this becomes a routine procedure for new programme design, it can sustain the work of the National Society to stay climate-smart.

Screening the different sector plans involves considering a range of questions on how weather or climate projections may affect vulnerability and the associated sector planning; see the range of sector-specific issues to consider in programme screening in Annex 2. In this section we will provide some examples of climate-smart programming in humanitarian operations.

Assam, India. Jyoti Prasad Doley, a volunteer for the Indian Red Cross Society in September 2020 dealing with floods amid ongoing Covid risk. (Photo: Indian Red Cross Society)

3.3. Step 3 – Climate-smart planning

This step is a collaborative process that helps to distil all the information from the risk assessment, stakeholder engagement and internal screening (step 3.2–3.3) to prioritize and define a coherent set of climate-smart interventions for your National Society's programmes (see tabsheet 3.2–3.3 in the XL Notebook).

This step is about the prioritization and planning of actions needed to enable the adjustment of activities within programmes. In general, the approach is based on a decision-making process with the technical sectoral experts (within the National Society as well as key partners in-country) – this coproduction process is not based on concrete science, but a sense-making and decision-making process considering the analysis at hand (see Figures 4 & 8). Due to the different contexts and uncertainties about the anticipated impacts, this cannot be a "one-size fits all" process. It is necessary to build the identification and selection of solutions on assumptions. However, they should be dealt with in a transparent and inclusive way.

Typically, this process already starts at the presentation of the screening (step 4.2), where participants can reflect on the findings. After the screening is finalized, the recommendations can be consolidated and need to be reviewed – and this will already lead into step 4.3. This is done, for example, through a workshop or in discussions with department heads (see Box 15) and can also engage external experts to consider:

- What are the priorities for the National Society in the near future?
- What gaps currently exist that limit climate-smartness in our work?

Kiribati Red Cross volunteer Esther Nabuti reads her poem *My Beloved Island* at the end of D&C Days for COP 23 in Bonn in 2017, representing all the small island developing states in the Pacific. (Photo: Alex Wynter/Climate Centre)

- What would we like to do to address these gaps?
- How do you sustain the use of climate information in your programmes in the future?

In Annex 3, we offer multiple concrete examples of climate-smart activities to serve as inspiration.

Reviewing progress

The three steps of assessments, screening and planning are intended to become a repetitive process for National Societies. As part of this cycle, it is key to measure the effectiveness of such efforts.

Especially after a climate-related disaster which occurred during project implementation or emergency operations, it is valuable to discuss with the teams if the activities were able to withstand the impact of the disaster and/or if you would have done anything different had you been aware in advance that this could happen during the implementation of your activities. It is an effective moment to reflect on what happened, and how well prepared your teams and the communities were to deal with extreme weather events.

Beyond the standard IFRC methods to measure impact and evaluate the effectiveness of climate-smart programmes and operations in general, there are additional participatory options to evaluate if the steps taken towards climate-smart interventions are resulting in robust, sustainable programmes and operations. One such approach is the stress testing of revised programmes in a participatory workshop, based on various climate scenarios for the future (ranging from 'best case' to 'worst case' scenarios). For each of these narratives, the participants would ask themselves "What would happen if this were the climate in five years' time?";

BOX 15. What can the process look like to conduct step 3.2 and 3.3 (to develop or review climate-smart programme activities)?

- The same core working group for step 3.1 should try and obtain as many programme workplans (with specific identification of planned or implemented activities). These workplans need to be collected and reviewed prior to a first workshop together with the programme (or thematic) leads.
- For the screening process, a workshop is often a good way to get this discussion started. Ask the identified group members and different programme (or thematic) leads to join this workshop or explore through a consultation process how climate projections and potential impacts can affect the different programmes of the National Society. Sitting together with your colleagues to discuss their existing workplans or programmes is important. This can be done by going through the supporting XL Notebook filling in both step 3.2 and 3.3. A brainstorm with experts in the different fields of work can support with (innovative) ideas.
- This discussion can be used to define goals and list actions. For each step: determine the timeframe of the activity (number of years); the desired output; and a brief description of the rationale. Actions can focus on capacity building, research, specific changes to ongoing activities, new activities and establishing partnerships.
- After consolidating all discussions from the screening workshop (either reflected in the XL Notebook or a dedicated report), it would be good to organize a validation workshop with external experts and cross-departmental colleagues. This can lead to a joint reflection on the proposed tweaks to activities to make them climate-smart and can bring new and innovative ideas to the table from outside the organization.
- Afterwards, invite the project managers and staff to validate or review the final plans.

Estimated time: reserve time from different programme leads to engage in the process. Reserve 15 days for the climate-smart components (across different people/ departments)

Estimated budget: 15+ days of staff time, meeting rooms for two workshops and interviews

Estimated time for the whole process: 4–5 months

or “If we experience such an extreme weather event, will this intervention still be relevant and keep us safe?”. In such a workshop, experts in climate science, adaptation and sectoral experts should come together to evaluate whether the revised programme would maintain its intended function and outcomes under these various climate scenarios. This is specifically for programmes to be robust to climate impacts, by using climate information to: a) understand risks to intended activities; and b) show how tweaks enable robust programmes.

Lastly, it is useful to set targets in advance as to how many projects you will make climate-smart and how many communities will be reached with climate-smart programmes. These figures will support the monitoring of international commitments made by the IFRC Strategy 2030.

Kenya Red Cross early-action seeds, harvest. (Photo: Denis Onyodi/KRCS)

4. What does climate-smart mean for emergency operations?

Emergencies and disasters do not happen in isolation. Disasters disproportionately affect vulnerable people and geographies. We are looking at emergency operations in a broader context, understanding the historic and potential futures of affected communities. This chapter reflects on the climate-smart enablers and steps in the different phases of the DRM continuum relevant for emergency operations: 4.1) Preparedness; 4.2) Anticipatory Action; 4.3) Emergency Response; and 4.4) Recovery. We highlight a few examples and reflect on existing approaches and tools used by the IFRC and National Societies across the DRM continuum before, during and after the impacts of disasters and/or crises.

The chapter will repeat elements of previous chapters, so it can read as a standalone chapter. Nevertheless, references to various sections and annexes are included.

It is increasingly urgent to make operations climate-smart, witnessing how additional disasters sometimes It is increasingly urgent to make operations climate-smart, having witnessed how additional disasters sometimes batter the already affected. Making our humanitarian operations climate-smart aims to make our operations withstand extreme weather events and even prepares people in these at-risk areas for longer term change. Also here, a basic principle is to consider and use climate information across timescales during the design and implementation of operational activities and the collaborations required to do so.

As explained in Chapter 1, this guide focuses solely on the climate (change) risk dimension, yet environmental sustainability and

TABLE 5. Climate information across timescales relevant for operation teams

Short-term weather forecasts for the coming ten days, often with good skill up to five days: Monitor weather forecasts relevant for the operational area (e.g., from daily and five-day weather forecasts) from the closest weather stations of the national weather service. Use the weather forecast where needed to modify or add to operational activities.

Seasonal forecasts for the upcoming three to six months: When available, monitor seasonal information relevant for the national and operational area from the national weather service and compare these with international secondary sources, such as from the World Meteorological Organization (WMO) and with support from climate specialists in the IFRC and Climate Centre. Seasonal forecasts can vary between different climate service providers, so a comparison of different sources is needed. Use the consolidated information to update your operational activities.

Long-term climate projections for the next decades up to the end of the century: This information can be taken from your National Climate Risk Assessment, if in place. Alternatively, this information can be collected as outlined in Chapter 4.1 (after the 'lifesaving emergency phase' of the operation). This information is relevant for the Operational Strategy and can support longer term risk reduction interventions.

climate change mitigation (reducing our environmental and carbon footprint) are important aspects that must be considered in parallel, where feasible. Separate guidance on this part of the work can be found in the Green Response guidance materials (see Box 4).

Basic principles of climate-smart operations

If a National Society has already established collaboration with the national weather service around the use and interpretation of forecast information, it can be much easier to receive updated necessary information during a humanitarian emergency. In section 2.1 we explain how a collaboration with the national weather service can lead to a structural partnership towards this process.

In section 2.2 we elaborate on the use of forecasts and projections, and we explain several important things to keep in mind while working with this information. Of course, climate information is just one of the many necessary information flows that are relevant during an operation. (And, as a side note, often risks are blamed on climate change, while there may be other main root causes – for instance, ecosystem mismanagement / deforestation).

With regards to monitoring climate and weather information (see Table 5), it is essential that this is done together with the national and/or local weather service in your country. They have the legal mandate to disseminate forecasts or warnings (sometimes this might be the disaster management authorities instead), but it is important to get the information from them. When necessary, secondary sources of information can be used (for instance, from other weather agencies or the WMO). Experts from the IFRC and Climate Centre can support the process of accessing and interpreting such secondary information, which can only be used internally for planning purposes – as we have no legal mandate to disseminate weather information.

BOX 16. Example of incorporating weather information in an Operational Strategy: The Türkiye Earthquake 2023

Anticipated weather and climate related risks and adjustments in operation

Based on the information from the closest weather station (in Sanliurfa) of the Turkish State Meteorological Service (MGM), February average temperatures range from 2.6–11.7°C, and this is typically one of the wetter months of the year with 71.2 mm of rainfall or 12.5 rainy days on average during the month. The five-day weather forecast in the area (also available for Diyarbakir and Adana weather stations) indicates whether temperature and rainfall are forecast to remain below normal, above normal or near seasonal average. The MGM also publishes a two-, three- and four-week forecast in local languages. Currently, the forecasts indicate below seasonal averages for both temperature and rainfall conditions, which calls for continued monitoring especially of the five-day weather forecast to anticipate cold temperatures and any snowy or icy weather. This will allow for timely anticipation of potential extreme temperatures and rainfall conditions that can hamper the operation or increase risk for affected people. After the immediate needs are met, long-term climate projections and other environmental considerations will inform longer term interventions.

	**Risk Reduction, Climate Adaptation and Recovery**	Female > 18: **115,384** Male > 18: **114,581**	Female < 18: **58,552** Male < 18: **61,483**	**CHF 13,976,000** **Total target: 350,000**
Objective:	To reduce the affected people's vulnerability to future disasters and climate change impact s			
Priority actions:	• Identifying climate-related risks, threats and vulnerabilities and developing a strategy for climate resilience • Integrating climate-risk information into the emergency needs assessment process and planning for short-, mid- and long-term risk reduction actions • Building on or expanding the partnership and collaboration with the MGM and sub-national meteorological services; strengthening the use of weather and climate information, and developing a simplified early action protocol based on an assessment of which prioritized hazard needs to be addressed by anticipatory action • Raising awareness on the concept of climate-smart operations, and practical actions that can be taken together with organizing training as appropriate • Working with vulnerable urban communities to build their resilience to future shocks and similar disasters, with specific focus on people living in informal settlements, urban poor and marginalized • Capturing important lessons learned to improve and update the IFRC tools, guidance and learning on urban preparedness (community and NS), working with urban communities and building urban resilience • Delivering risk reduction and resilience activities for community centres • Deploying a recovery assessment team to inform a recovery plan		

In Box 16, we included the example of the Operational Strategy of the Emergency Appeal for the earthquake in Türkiye in 2023. During emergency operations continuous monitoring of short-term forecasts is important as additional floods, heat, cold spells, etc. might pose serious risks to the already affected populations. In the first section, we included weather information for the immediate response operation. Links were made to the national weather service and to local weather stations in the affected areas, which allowed for further engagement and/or continued monitoring of potential extreme low temperatures (cold spell) and extreme rainfall conditions in the short-term, but also for signals of potentially erratic seasonal forecasts.

As time passed by, and the country moved into a new season, it was relevant to prepare for new changes that might affect the population yet again. We witness how additional disasters during ongoing operations seriously jeopardize our work and the affected population, so preparedness for a disaster within a disaster has become a reality. Also unfortunately in Türkiye, this is exactly what happened: the affected population in tents also had to deal with widescale floods in the earthquake-affected area. So now we find ourselves asking, as we move to summer, what will be the impact of extreme heat for the displaced population that is still staying in temporary shelter such as tents?

The priority actions identified in the Operational Strategy for Türkiye are the actions that can be taken once the immediate humanitarian needs are addressed. These actions can support longer term interventions to increase overall climate resilience and can feed into the long-term operation and recovery phase.

Throughout an emergency operation it is recommended to pay attention to:

1. **Assessment:** The Operation Manager(s) should have a good understanding of the hazards and the impacts of extreme weather along with the climate variability and climate change trends for the target area of the operation. Weather forecasts are important to ensure operation teams are not taken by surprise in our operational areas. Extreme weather can strike again (even in unprecedented ways) and harm the already highly exposed people who were affected by the first disaster. If your National Society has a National Climate Risk Assessment in place, it can provide further information about climate risks and impacts, both from the historical and future perspectives. If such an assessment is not (yet) in place, this information can be gathered easily during a later stage in the operation (after the immediate lifesaving phase), in collaboration with your national weather service. This longer term vision will be important if the disaster will lead to a long-term/protracted operation that probably turns into longer term recovery and resilience-building efforts. As a practical step, it will be helpful to share a one-pager of relevant climate and weather information from the past, present and future (sometimes some of this information is already available in a climate factsheet for the National Society). This one-pager could be shared as part of the procedures with all the leads and sectoral coordinators before their arrival at the affected area.

2. **Screening:** If we received weather warnings or warnings of upcoming erratic seasons, the operations teams will need to 'translate' this information by adjusting or adding to the proposed emergency operation activities. This screening will be a repetitive cycle that runs parallel to the monitoring of the forecasts. For likely longer term operations, climate change projections and impacts will ensure that the design and implementation of longer term risk reduction interventions will be climate-smart.

3. **Climate-smart planning:** This step builds closely upon the previous step. What is needed to ensure the step is 'translated' into a climate-smart activity? For instance, are additional resources necessary? One can think of the extreme example where boats instead of trucks may be needed to deliver the assistance to an affected community, given additional flood risk in the already affected area.

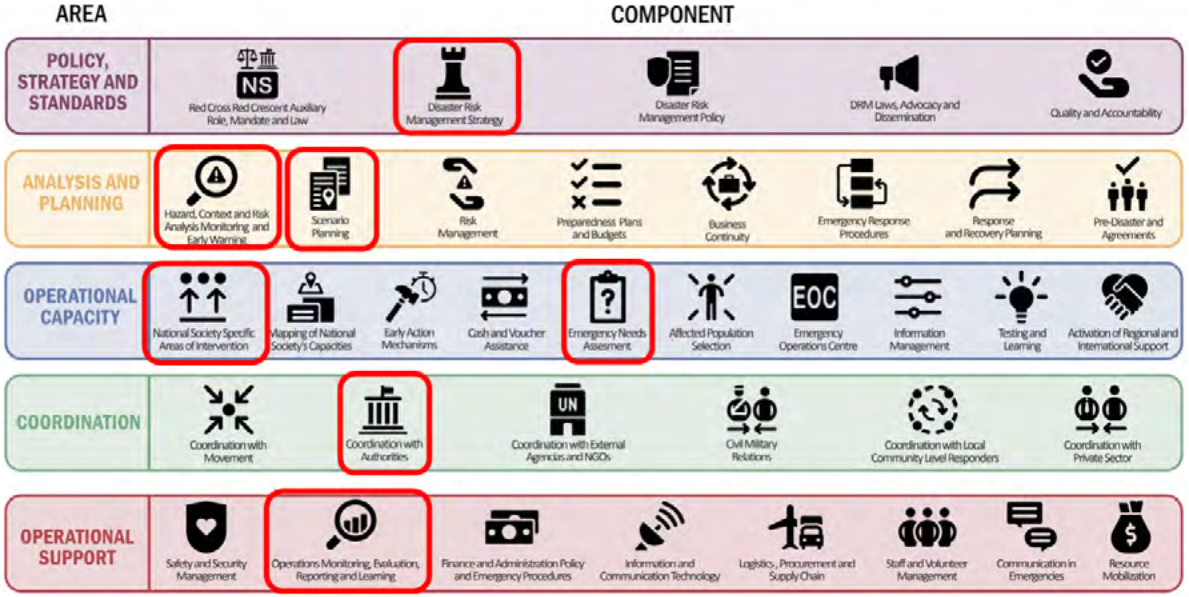
4.1 Climate considerations in Preparedness for Effective Response

The Preparedness for Effective Response (PER) mechanism[9] helps to prioritize and invest in the core components of National Society preparedness within the five thematic 'areas' shown in Figure 9: Policy, Strategy and Standards; Analysis and Planning; Operational Capacity; Coordination; and Operational Support. The five broad areas of work are further divided into 37 'components'.

PER components with benchmarks

Climate considerations are already part the PER mechanism guidance (with further updates expected in 2023) – the most relevant components are indicated with red squares in Figure 9, such as the Disaster Risk Management Strategy, Scenario Planning and Emergency Needs Assessments. This section provides one example on climate integration in a PER component, while Annex 5 contains further examples from the remaining seven relevant components marked in Figure 9.

Figure 9. The PER mechanism consists of five 'areas' with 37 'components'. For the components marked with red squares, the table below and in Annex 5 provide examples of how climate risks are, and could be, considered. The PER guidance also includes climate and environment considerations for other components.



9 Additional information and essentials of the Preparedness for Effective Response Approach and https://go.ifrc.org/preparedness#global-summary

PER supports National Societies to identify the strengths and gaps within their preparedness, anticipatory action and response system/mechanism. The mechanism considers all hazards and in the 'considerations' section it explains how **climate-smart and environmental sustainability considerations** can be jointly integrated. These two areas of work are merged in PER, because it makes a lot of sense to consider them in parallel. However, be aware of difference between 'climate-smart' and 'environmental sustainability' (following the definitions of this guide).

The numbered *components* and *standard benchmarks* (only some relevant benchmarks included) in the table opposite, and in Annex 5, are direct quotes from the current IFRC Preparedness for Effective Response Mechanism Guidance.

The PER components with benchmarks and climate considerations require access to basic climate information; if a National Climate Risk Assessment is place, ideally supplemented with a structural collaboration with the national weather service, the considerations/ benchmarks should be relatively easy to achieve. Please note that climate-smart activities are marked **red** and the sustainability-related activities **green**.

In summary, some key preparedness-related climate considerations turned into questions include:

- Does the DRM Strategy acknowledge the importance of using climate information across timescales in designing/adjusting activities and does it give direction to adjust hazard and risk analysis and operational strategies where needed, based on the most recent climate change projections for the country and region?

EXAMPLE of climate elements included in a PER Component (see Annex 5 for further examples)

Analysis and planning

Component 6: Hazard Context and Risk Analysis, Monitoring & Early Warning

Description: Describes how the NS monitors and maps past, present and potential hazards, disasters and crises (e.g. hazard, vulnerability assessments, gathering information from communities and government authorities) and systematically evaluates the damage that could be caused by a potential disaster/crisis, as well as the frequency and severity of the impact, and then alerts the relevant areas to scale the preparedness actions to reduce population vulnerability.

Standard Benchmark 6.4: Early warning system is established and includes thresholds (including for slow-onset disasters) and required mechanisms to communicate and activate early action.

Standard Benchmark 6.5: Updated national multi-hazard risk analysis and maps (including changing risks patterns) shared with all branches at least once every two years.

Climate and environmental considerations:

- The NS monitors weather and seasonal forecasts and receives weather warnings or warnings of the upcoming season, especially in high-risk areas.
- The NS has conducted an assessment or collected an existing analysis of the major climate and environmental issues within the country, such as most recent climate change projections, climate change impacts within different sectors and geographies, and information on deforestation, freshwater pollution, natural resource exploitation.
- The NS includes climate and environmental considerations into its multi-hazard risk assessments including mapping locations of potential high vulnerability to climate change impacts and of environmental hazards such as landfill sites, tailing dams, chemical and fertilizer factories or stores, hydro-carbon fuel storage depots and sewage treatment plants as well as the possible presence of environmentally hazardous materials in buildings or manufacturing operations such as asbestos.
- The NS has conducted or collected physical mapping of key environmental assets such as natural protected areas, key natural resources (and their health/status) and culturally important sites.

- Are weather and seasonal forecasts monitored and weather warnings or warnings of the upcoming season received, especially in high-risk areas? Has a National Climate Risk Assessment/Analysis been conducted/compiled? Does scenario planning consider that extreme weather can strike in an unprecedented manner (and harm highly exposed people who were already affected)? Would contingency plans need to be revised with new worst-case scenarios in relation to future risk levels and extreme events?

- When conducting an Emergency Needs Assessment, are the national weather service and specialists contacted with impact-based forecast questions, especially relating to elevated risks in specific operational areas in the coming days and months?

- Are the impacts of climate change, especially likely weather and climate extremes in relevant National Society Specific Areas of Intervention assessed and this information 'translated' by adjusting or adding to the proposed activities?

- Is there coordination and collaboration with the national weather service and civil protection agencies (that are mandated to disseminate weather forecasts and early warnings)? And with other key departments and ministries on other relevant climate information?

- Have learnings related to use of climate information across timescales in operations been captured, including choices made as well as the implementation of actions?

The PER climate considerations aim to enhance the systematic, evidence-based information on the National Society capacity to use climate information across timescales and show how the use of climate information is relevant across the DRM continuum. Based on the information collected during the PER assessment

BOX 17. Urban heatwave action

People living in urban areas are amongst the hardest hit when a heatwave occurs because where they live is hotter than the surrounding countryside. In cities the impacts are more concentrated due to the high population density. Therefore, National Societies in many countries have stepped up their actions in urban areas to address this rising risk, potentially affecting any city on the globe. The urgency to address this issue is particularly pronounced in Asia and Africa, where cities are growing rapidly as well as in Latin America and the Carribean, where approximately 80 per cent of the population now lives in cities.

In Bangladesh, Nepal and Vietnam, National Societies together with Local Governments for Sustainability (ICLEI) have engaged in widespread awareness-raising campaigns around heatwaves in cities. These National Societies are working on the anticipation of heatwaves and supporting municipalities to draft Heat Action Plans. They are also recommending impact-based forecasting systems for extreme heat along with early actions ranging from the establishment and running of in-situ and mobile cooling centres as well as household cash assistance.

A specific example from Hanoi, Viet Nam, illustrates how the National Society engaged

Local cyclist in a Red Cross cooling centre refreshes his face to recover from heat exposure. (Photo: German Red Cross)

in forecast-based actions: Like many other cities, Hanoi is faced with multiple challenges, including heatwaves. The city's outdoor workers, older people, children under five years old, and individuals in care centres and hospitals are among the populations most vulnerable to heatwaves. The Viet Nam Red Cross Society and partners are working with

phase or a readiness check, the National Society may decide that it needs to work either on the foundational elements (collaboration with the national weather service and/or on the National Climate Risk Assessment), or work on integrating the use of climate information into prioritized preparedness components and enhancing the National Society's capacity to keep the climate information updated.

4.2 Climate considerations in Anticipatory Action

Anticipatory action is defined by the IFRC as

> "a set of actions taken to prevent or mitigate potential disaster impacts before a shock or before acute impacts are felt. The actions are carried out in anticipation of a hazard impact and based on a prediction of how the event will unfold. Anticipatory actions should not be a substitute for longer term investment in risk reduction and should aim to strengthen people's capacity to manage risks"

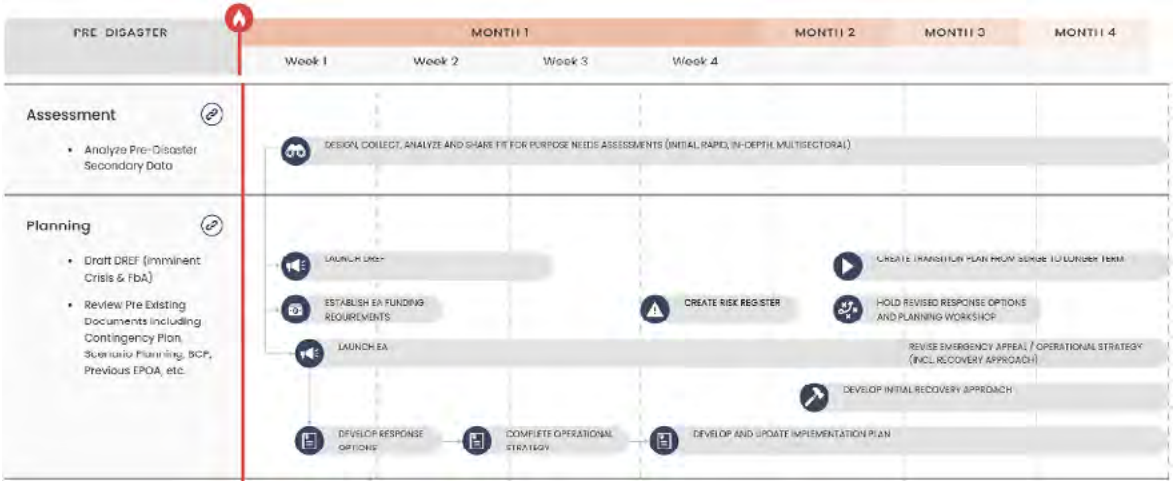
(Anticipation Hub/World Disasters Report 2020).

Within the network, National Societies develop Anticipatory Action programmes allowing them to act based on a forecast of an extreme weather event. These programmes are written into Early Action Protocols (EAPs) which, when validated by an independent group of experts within the IFRC, allows access to the Anticipatory Pillar of the Disaster Response Emergency Fund (DREF). These funds are then automatically disbursed to National Societies when triggers are reached, and pre-determined actions are rolled out before the shock hits. Anticipatory Action then feeds directly into

the Vietnam Institute of Meteorology, Hydrology and Climate Change to co-create heatwave forecasts for the city. In addition, the Red Cross in Viet Nam has conducted an extensive knowledge, attitude and practice survey to understand the current capacity of the population to cope with heat risks. The survey was supplemented by a comprehensive stakeholder analysis to identify potential partners as well as with geographic information system mapping to show the locations of vulnerable people. Working with healthcare providers and local communities, the Red Cross in Viet Nam has also identified cooling centres for communities and household retrofitting (e.g., shading tin roofs with white plastic tarpaulin and using sprinklers during the daytime) as well as providing cooling fans with ice tanks for night-time use for the most vulnerable households as some of the early actions needed to reduce heat-health impacts.

This case study is taken from the Heatwave Guide for Cities. More in-depth information from the Viet Nam case study is available here at the Anticipation Hub and German Red Cross Heatwave Early Actions Test in Hanoi. More urban heat case studies are compiled in City Heatwave Guide for Red Cross Red Crescent Branches.

Figure 10. Operational timeline toolbox (go.ifrc.org/deployments/operational-toolbox) – first parts only (Assessment and Planning).



emergency response and recovery. For more information about Anticipatory Action, and how it relates to climate and climate change, visit the Anticipation Hub website and in the Climate Action Framework for Early Warning Early Action (EWEA).

Note that National Societies can also access DREF funds slightly before or at the very early stage of disasters through the Imminent DREF pot of funding – this does not require a validated EAP but a DREF application.

Long-term projections and short-term forecasts in Anticipatory Action

While it is clear that Anticipatory Action mostly consists of short-term actions prior to a disaster, it can be an important contribution to the overall risk reduction agenda. A strong connection, however, is then needed between long-term risk reduction interventions and the identified short-term or anticipatory actions prior to a disaster. Investigating how longer term interventions can potentially reduce the need for short-term interventions and how anticipatory actions could (undermine or) strengthen long-term actions is important (including avoiding maladaptation, as we work across the full disaster continuum (see Figure 11). More efforts are needed with short-term actions prior to disasters, if risks cannot or have not been effectively reduced through long-term investments.

Investment in Anticipatory Action should not be done at the expense of investment in efforts to reduce risk. National Societies should seek to tailor anticipatory actions to the national and subnational DRM contexts, in close collaboration with government agencies and other stakeholders.

Rwandan Red Cross personnel distribute relief to some of the thousands of people affected by the exceptionally heavy rainfall in May around Lake Kivu. A WWA study out today says increased investment in meteorological services would help improve early warning of events like last month's in which hundreds of people died. (Photo: Rwanda Red Cross)

4.3 Climate considerations in emergency operations

In the initial phases of an emergency response operation, operation managers and colleagues involved in the operation must be aware that hazards may strike again during the operation, or the first hazard has not even reached its peak. Therefore, short-term weather forecasts (and seasonal information, if available, and with some skill for the affected region) are essential pieces of climate information to inform the planning of the operation. If the collaboration between the National Society and the national weather service is already established (see Chapter 3), it can help to obtain this information more easily.

In addition, the emergency response team should have a good general understanding of the climate variability and risks in the country (the potential occurrence of extreme weather events in the areas). If a national climate risk assessment is in place, this information should be available there. When the humanitarian operation might take longer than three months and lead into recovery phases, information from climate projections can be added later to an updated Operational Strategy and Implementation Plan.

Weather and climate information is already requested as part of the standard IFRC templates for emergency operations. It is often complicated, however, to directly translate the implications of the weather forecast and climate projections into the actions. For example, would weather warnings of more intense rainfall in the coming weeks lead to further flooded and blocked roads, jeopardizing access for relief supplies to already affected populations? Or might the seasonal forecast of a likely intense cyclone season call for reconsidering the selected temporary shelter locations and planned WASH interventions? Brainstorming with colleagues in the area can support the better understanding of the

TABLE 6. Examples of how climate is (already) part of emergency tools

Emergency Needs Assessments

The Emergency Needs Assessment (ENA) process framework outlines the various assessment stages and timeframes. In the initial phases of an emergency response there is limited time to gather information. However, relevant climate information is often already compiled – either in the **Country Climate Factsheets** or, if the National Society has undertaken one, in the National Climate Risk Assessment. If such factsheets or assessments do not yet exist, a fast collection of weather- and climate-related information should draw on secondary data and, where possible, through collaboration and interviews with the national weather service and other experts. In the immediate aftermath of a disaster, the information gathering should, of course, not be conducted through participatory community assessments.

The types of climate risks to consider, and the level of detail to include, will differ in each assessment stage.

Initial assessment (Time frame: 0–48 hours)	Both secondary data and information from the national weather service, and to the extent possible primary data, can inform the launch of DREF within 24 hours and/or possibly an Emergency Appeal soon after. Critical information includes concise data on identified pre-existing climate- and weather-sensitive problems, vulnerabilities and risks and potential additional extreme weather conditions. It is also useful to assess the functioning of early warning systems in the affected areas.
Rapid assessment (Time frame: 48 hours–14 days)	The rapid assessment which, if it is used, is focused on identifying both current and projected humanitarian needs of vulnerable groups. The assessment report will inform the more detailed plan of action and the operation's strategic priorities, response options analysis and impact on long-term programmes and investments. At this stage, it is recommended to start considering how available climate- and weather-related information – for the geographical area of the emergency – can inform the overall design and planning of the operation. The aim is to understand which climate- and weather-related hazards could occur in the area of operation, and to analyse how these hazards can hamper your operation and aggravate vulnerability.

implications of extreme weather in the affected areas. This in turn can help the adjustment of operational plans over time. Annex 2 (and the supporting XL Notebook) provides sector-specific questions to help assess of impacts of likely weather and climate extremes and promote climate-smart adjustments to planned activities. The questions can help to translate the implications of a forecast into concrete outcomes that can influence the operational activities.

In the first days and weeks of a disaster – what do we want to know?

In the earliest phases of planning an emergency operation, check the weather forecasts for the coming days, weeks and months by browsing the national weather service's website – and contact the service to ask the specialists:

1. What is the weather forecast for the coming days and weeks? Are there any imminent strong weather events like storms, heavy rains, heat or cold waves to be expected in the areas of operation? In case of any emerging hazards, follow up questions need to be posed that are preferably impact-based, such as: 'Which areas may be affected by this forecast? Which potential cyclone paths, associated wind speed and storm surges are likely? What is the risk of snowfall/avalanche risks?'

2. What are the normal weather conditions expected during the upcoming season? Are there any seasonal forecasts of the increased likelihood of hotter, drier or wetter than normal conditions expected for the coming 3–6 months?

3. In the specific area of operation, are there any at-risk zones where projected (new) extreme weather events like heavy rains could cause flash floods or water source contamination – which could help determine where temporary shelter and WASH facilities may be safely established?

In-depth multi-sector assessment (Time frame: 14–90 days) and continual assessments (30 days onwards)

The in-depth assessments focus on different sectoral needs to support more detailed programming for updating the Plan of Action and Emergency Appeal. It combines information from sectors and cross-cutting areas into one overall assessment, and describes the varying needs of the affected communities, based on the best possible understanding of the different ways that men, women, boys and girls in all social groups are affected by the disaster or crisis.

For assessments during humanitarian operations, the climate and weather information gathered during the rapid assessment may, in some cases, be enough. However, since the in-depth multi-sector assessment often sets the stage for longer term recovery efforts, there will be a need to deepen the understanding of how potential hazards and their impacts can hamper recovery – to inform 'build back better' scenarios. For this longer term planning we refer to Chapter 3 on climate-smart programmes and, in particular, to step 3.1 of the national climate risk assessment, with the relevant sectoral questions in Annex 2 for the climate-smart planning process.

Emergency Appeal

The Emergency Appeal is launched by the IFRC on behalf of a National Society to promote the operation and generate funding from partners and donors. It is released within 48 hours to position the operation quickly and can be revised if/when the humanitarian needs, proposed sectors of the response, high-level plan and funding requirements are in need of revision. The Planned Operations section showcases the key areas to be implemented. Under the sub-heading 'Protection and Prevention', the Emergency Appeal should also highlight support for those affected by limiting the disaster/crisis, along with the climate risks they face, by integrating risk information and implementing actions to reduce both current and future risks.

4. Other key weather and hydrological risks to be aware of in the planning phase?

This information can then guide the sector planning for the emergency phase and lay the foundation for any subsequent recovery phase to 'build back better' and help the adaptation to future climate change.

Emergency tools and templates on the go.IFRC platform

In guidance in the Operational Toolbox, climate risks are already included in some of the most critical templates. Within an upcoming review round, some of the climate sections will be reviewed.

From the moment a disaster strikes, a number of standard processes start. In Figure 10 the timeline on the go.IFRC platform is outlined (only Assessment and Planning parts depicted) for standard tools to be applied for an emergency operation; for smaller operations, only some of the tools may be selected by the National Societies.

Since extreme weather conditions can pose enormous additional threats to the affected populations after a disaster, the monitoring of weather conditions during an operation is standard practice. It is used to adjust the operational activities so inclement weather leads to minimal additional impacts upon affected populations, and potential derailment of the operation is avoided.

The weather forecast information and, if relevant, seasonal forecast information from the national weather service (and possibly secondary sources) is most useful to incorporate into the tools in Table 6.

Operational Strategy and Implementation Plan

The Operational Strategy template includes a section on 'Anticipated climate related risks and adjustments in operation':

[*Describes the key hazards that could affect the operation in the short- and medium/long-term, based on forecasts and climate projections. This section should also describe in a few sentences how the operation/response will be adjusted to prevent or reduce the risk and not place communities at increased risk in the future.*]

The Planned Operation section of the Operational Strategy provides more detail under each sector along with relevant activities; for example, placing camps in areas not at high risk of flooding; provision of drought-tolerant seeds if heatwaves are likely to occur; tailoring of shelter options to be more storm-resistant if there is a high/increasing risk of storms etc. Each sector has its technical/programmatic guidance note, including the risk reduction, climate adaptation and recovery sector.

The Operational Strategy template already asks the question explicitly about how the weather, seasonal and climate projections information can potentially impact the proposed activities and how you can avoid that from happening. In the development of the Operational Strategy and Implementation Plan, a National Society could use the Annex 2 questions in this Guide to reflect on this more, if it is difficult to think through all of the impacts it may have on the operation. And longer term projections might not need to be included in the initial stage of the operation as the priorities lie elsewhere than longer term risk reduction linkages.

Risk Register

Climate extremes that could exacerbate risks in the operational area should be considered among the contextual and operational risks assessed in the Risk Register.

4.4 Climate considerations in recovery

DRM phases are interconnected (see Figure 11). Operations may turn into recovery or long-term programmes. To prepare for future hazards, we must build back better and include climate change adaptation strategies in our recovery plans.

To make recovery plans climate-smart from the start, we refer to Chapter 3, which explains how to get to climate-smart programmes with the use of short- and medium-term forecasts and long-term climate projections.

We can build on the National Climate Risk Assessment, if this assessment is in place (if not, a basic climate-risk assessment should be conducted/compiled – see Annex 1 for quick resources you can use). These long-term climate projections need to inform the recovery assessment and plans (see Box 18).

With regards to the use of short- and medium-term forecasts during the implementation of recovery plans, well established collaborations especially with the national weather service are needed, as explained in Chapter 2.

Each of the interventions in a recovery phase can be screened (with support of Annex 2), to ensure they are robust to withstand climate risks, including more intense or frequent weather extremes and slow-onset changes due to climate change. This is further explained in Chapter 3 and the accompanying XL Notebook.

As highlighted in the upcoming revised IFRC Guide to Supporting Resilient Recovery:

- "The traditional disaster response continuum of immediate relief to recovery moving to development and improved response preparedness is increasingly less applicable.

The American Red Cross is helping California residents recover after more than a week of back-to-back storms. The US Weather Prediction Center yesterday called the latest extreme weather to affect the country as 'a precipitation onslaught'. (Photo: American Red Cross)

In practice, such distinct phases do not exist, and humanitarian response includes both the initial life-saving interventions alongside early recovery or recovery support. The longer the timeframe of the response operation, the more it will focus on recovery. A recovery approach shows how recovery principles can be applied across the whole Disaster Risk Management (DRM) continuum, and not only to a specific phase".

- "In addition to building back better, recovery approaches can start to address the underlying causes of risks and vulnerabilities communities face, integrating risk reduction, environmental sustainability, climate action, issues of protection, gender and inclusion, and other core elements that will strengthen community resilience in a post-disaster and crisis context."

Principle 4 in the IFRC Recovery guide, explains this in more detail:

> *Principle 4: Address risks and vulnerabilities to build back better for resilient recovery.* Resilient recovery is about building back better so that people are less vulnerable, and the risk of future shocks is reduced. [...] . Recovery interventions should adopt a risk-informed approach that incorporates the reduction of risk into all interventions. Recovery assistance should promote sustainability and reinforce the longer term development objectives of those being assisted. It should be climate-smart and consider both current and future impacts of climate change and help communities to adapt to it, promoting nature-based solutions where feasible. National Societies can directly apply their considerable knowledge of disaster risk reduction in recovery contexts, guided by the Community Resilience Framework and tools such as the EVCA. Resilient recovery also includes rebuilding social cohesion; enabling communities to come together with a common vision for a more sustainable future."

BOX 18. 'Build back safer' during the recovery phase – our techniques are working!

Following the principles of 'build back safer' and 'build back local', some communities in Madagascar are boosting their resilience to tropical storms. Some have already passed their first, very severe test – the next strong cyclone.

The 2022 cyclone season had a devastating impact on communities in south-east Madagascar. Homes were destroyed, crops ruined and livelihoods lost.

The storms left more than 400,000 people in urgent need of assistance.

> Most of our homes were destroyed when Cyclone Batsirai made landfall in our district,"

said the mayor of Tsaravary, a commune located in one of the districts most impacted by the February 2022 storm.

Photo: Malagasy Red Cross Society

Collaboration with climate scientists in combination with, for instance, land-use planners and communities will help to identify how areas can adapt and improve (building back better) on risk reduction compared to the situation prior to the disaster. Rebuilding without considering scenarios for future risks should not be an option. As a minimum, we should ensure that the recovery phase is climate-smart and that we do not place people at increased risk. This brings us back to working with climate information during the design and implementation of the recovery operations, including the programmatic steps outlined in Chapter 3.

When engaging in planning for long-term adaptation, it is recommended to seek specialist advice – and to triangulate this with different local and technical expertise – to ensure the interventions lead to actual benefits and better resilience under a wide range of future conditions. That means, make efforts to avoid 'maladaptation' and look for 'no-regret options' as explained in Box 9 (see also Glossary).

Under the leadership of local governmental bodies and traditional leaders, ten carpenters in the commune agreed to take part in a collaborative reconstruction effort that focused on ensuring such damage would not occur again.

> "It is a way for me to support my community and to grow my skills,"

says Tsotso, a 40-year-old father, when asked about his motivation to join the rebuilding efforts. With the other carpenters, Tsotso committed to attend eight hours of theoretical training conducted by the Malagasy Red Cross Society that focused on 'build back safer' techniques. These newly trained carpenters then worked with the community over the course of ten days to build shelters following 'build back safer' techniques and standards requirements. These structures now serve as models of this and other communities are reproducing these techniques in their own rebuilding efforts. The first reinforced shelter model was inaugurated on 19 February 2023 by local authorities and received benedictions from the local tribal kings who came to the inauguration ceremony.

TRIAL BY CYCLONE

Only three days later, the reinforced shelter model went through its first major trial, when Cyclone Freddy made landfall in the very same district. It was with great relief and enthusiasm that communities reported that the shelter models still stood, despite winds of 165 kilometres per hour.

> "The shelter we built together confidently withstood the strong winds we heard last night!,"

said Tsoto.

> "Now, the community can see that our techniques are working. I am really willing to encourage and support them with the actual rebuilding of their homes."

Aimé – who lives in the same village – added:

> "Beyond the fact that the house is still standing, the carpenters also used local materials. This will make the rebuilding process of our homes easier."

To foster resilience and community ownership of the rebuilding process, the Malagasy Red Cross Society provided additional support to the most vulnerable families to participate in the rebuilding process. This assistance takes the form of a cash contribution that covers 10 per cent of the expenses required to build a house that

Learning from operations

An emergency operation provides an important opportunity to reduce the risks of future disasters. It is important to review the choices made during the emergency operation,[10] including the trade-off decisions we made, for instance, between short-term emergency interventions versus longer term sustainable solutions. In reflection meetings after the disaster operation, the following questions will be relevant:

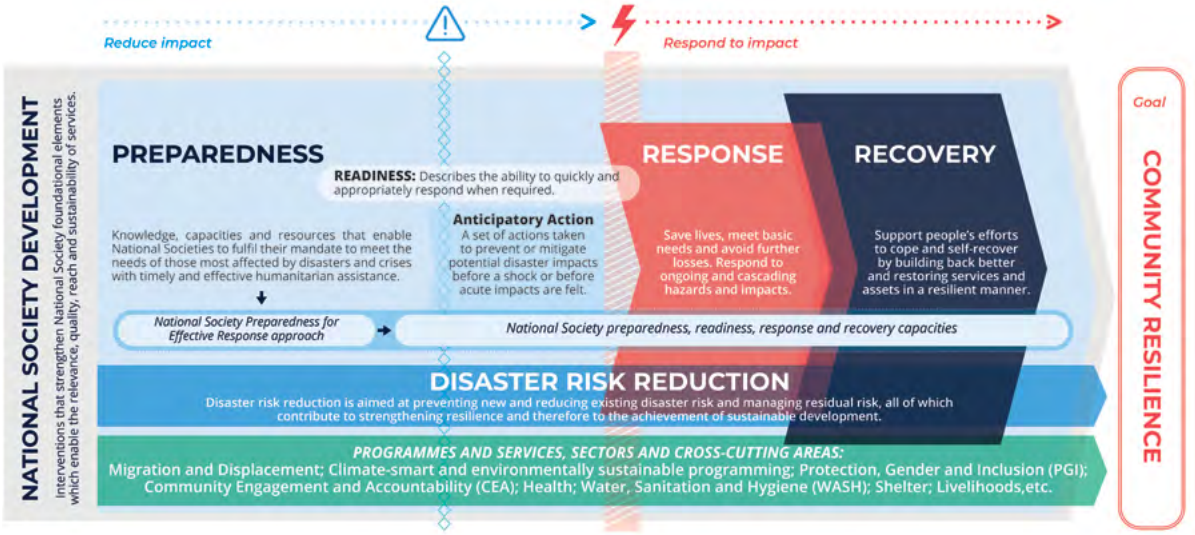
- Was the operation in any way impacted by additional hazards that we could have seen coming?
- If we had known in advance that during the operation the area would be impacted by additional hazards (heat/rains/etc.), could we have done anything different? What would we have done if we had foreseen additional disasters during the emergency operation?
- In the case of similar or more abnormal weather forecasts next time, would we choose the same operational activities or are there different/additional things we should include in our operational plan?
- Could early warnings have been used or designed better for early action? Which early actions could have been more effective? Do the contingency plans need to be revised with new worst-case scenarios in relation to future risk levels and climate extremes? (e.g., new evacuation routes, different shelter locations, etc.)
- Do logistics, relief supplies and warehouses etc. need to be reconsidered with new climate extremes in mind (new/safer sites, materials, alternative access routes, evacuation areas)?

meets the necessary standards. Through these steps, communities can take an active role in rebuilding their homes while retaining control and a sense of agency over their own recovery.

Within the scope of an IFRC Emergency Appeal, a total of three reinforced shelter models were built with 21 locally based carpenters and six assistants. More than 110 volunteers were also trained in 'building back safer' techniques in the districts of Mananjary, Nosy Varika and Vohipeno.

This case study is an adapted version of the article Our techniques are working! by Caren Ramanantoanina, IFRC in the Red Cross Red Crescent magazine, 30 March 2023.

Figure 11. IFRC disaster risk management continuum



10 In addition to the operational learning compiled at the Go IFRC platform

- How can long-term interventions help to build back better? Which climate-resilient livelihoods can support the area in a changing climate?

- Can we establish community-based action teams to lead further climate-smart community resilience planning (as described in Chapter 4).

Reviews and learning evaluations (possibly with support of the questions in Annex 2) can also help to understand if the interventions and actions chosen during the emergency operation were climate-smart and identify what type of preparedness and longer term interventions could reduce the impacts if another disaster were to strike the area.

TABLE 7. Examples of how climate is (already) part of recovery tools

Initial recovery checklist

The current version includes criteria for the "environmental and climate-related consequences of planned intervention" [under code HA04 'build back better']; whereas climate risks may be implicit in "The recovery programme aims to strengthen community resilience..." (code HA01), but the climate-related aspects might deserve to become more explicit. We believe the screening of activities as explained in Chapter 3.2 (and Annex 2) is relevant in making the recovery activities climate smart.

The Guatemalan Red Cross celebrating the 2016 International Day for Disaster Reduction with an event in Villa Canales, just south of the capital Guatemala City, under the 'Vivir para contarlo' ('Live to tell') theme that included advice on health, water and sanitation, and resilience from Red Cross volunteers, all simple ways of avoiding climate-related disaster impacts. (Photo: Rolando Déleon/Climate Centre)

5. How to make generic plans and strategies climate-smart?

As summarized in Chapter 1, it is relevant for all National Society strategies and plans to reflect how your organization can meet international commitments, including how to make our work climate-smart. For an overall 3–5-year plan or strategy of a National Society, or for sub-strategies for departments or specific sectors, the long-term climate projections and the expected impacts across sectors are the most important pieces of information. Please note that this chapter is not guiding you to develop a dedicated Climate Strategy (which would be an important thing to do and is recommended in the Climate Action Journey), but explains how climate considerations can be incorporated in all other strategies of the organization: how to make National Societies climate-smart. This chapter builds on the three-step approach outlined in Chapter 4, but in here we will explain what it means for strategies, not programmes.

5.1 Reviewing climate impacts

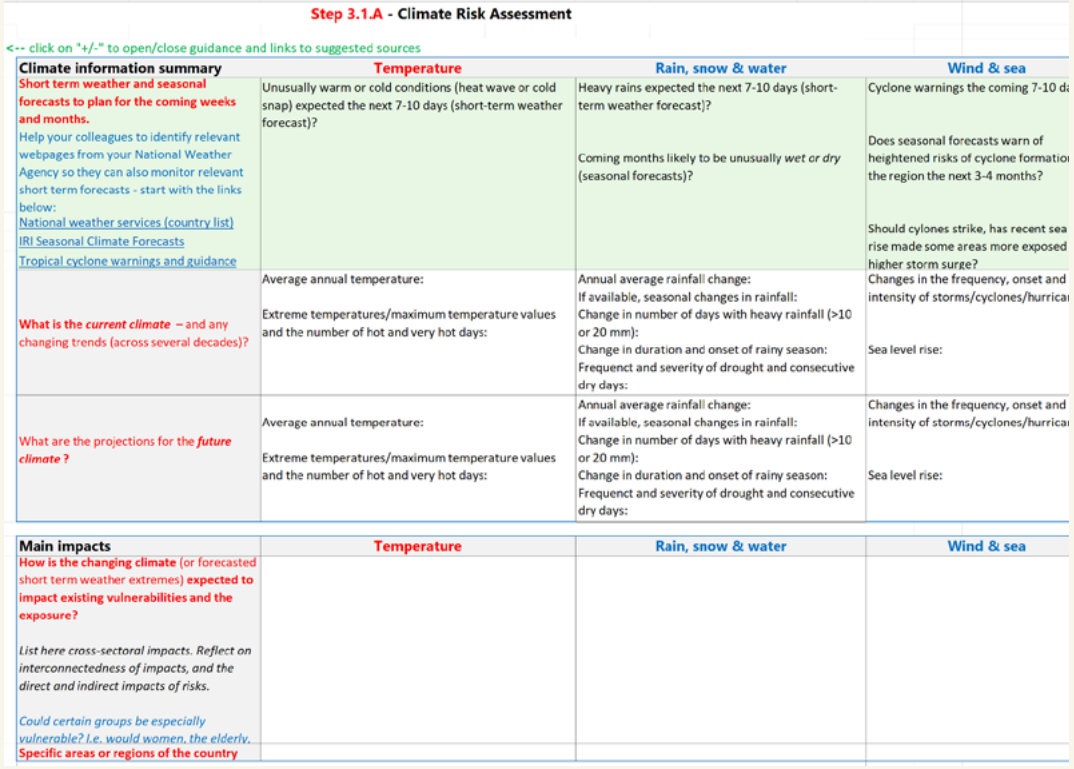
A national climate risk assessment provides the basis for integrating climate risks into the strategy processes. If this assessment is in place, the organization will already know about climate impacts across the sectors or work areas of the National Society. If an assessment is not yet in place, please see the guidance in Annex 1 on how to access the relevant information – either a 'basic' or 'in-depth' approach – and using the supporting XL Notebook (tabsheet 3.1.A Climate Risk Assessment). The questions in Annex 2 offer a way to understand how the different work areas of the National Society could be impacted.

BOX 19. Using the supporting *XL Notebook for national climate risk assessment, screening and planning*

The XL file[11] is a supporting notebook to this guide and it is not necessary to use it. But it offers a structure for keeping track of information when going through the steps towards climate-smart programmes and operations. The file is open for edits so can be tailored by users.

The XL Notebook has three brightly coloured main tabsheets (as well as a sheet with instructions and sheets with examples) named:

3.1.A Climate Risk Assessment:



Step 3.1.A - Climate Risk Assessment

<-- click on "+/-" to open/close guidance and links to suggested sources

Climate information summary	Temperature	Rain, snow & water	Wind & sea
Short term weather and seasonal forecasts to plan for the coming weeks and months. Help your colleagues to identify relevant webpages from your National Weather Agency so they can also monitor relevant short term forecasts - start with the links below: National weather services (country list) IRI Seasonal Climate Forecasts Tropical cyclone warnings and guidance	Unusually warm or cold conditions (heat wave or cold snap) expected the next 7-10 days (short-term weather forecast)?	Heavy rains expected the next 7-10 days (short-term weather forecast)? Coming months likely to be unusually *wet or dry* (seasonal forecasts)?	Cyclone warnings the coming 7-10 d… Does seasonal forecasts warn of heightened risks of cyclone formatio… the region the next 3-4 months? Should cylones strike, has recent sea rise made some areas more exposed higher storm surge?
What is the *current climate* – and any changing trends (across several decades)?	Average annual temperature: Extreme temperatures/maximum temperature values and the number of hot and very hot days:	Annual average rainfall change: If available, seasonal changes in rainfall: Change in number of days with heavy rainfall (>10 or 20 mm): Change in duration and onset of rainy season: Frequenct and severity of drought and consecutive dry days:	Changes in the frequency, onset and intensity of storms/cyclones/hurrica… Sea level rise:
What are the projections for the *future climate* ?	Average annual temperature: Extreme temperatures/maximum temperature values and the number of hot and very hot days:	Annual average rainfall change: If available, seasonal changes in rainfall: Change in number of days with heavy rainfall (>10 or 20 mm): Change in duration and onset of rainy season: Frequenct and severity of drought and consecutive dry days:	Changes in the frequency, onset and intensity of storms/cyclones/hurrica… Sea level rise:

Main impacts	Temperature	Rain, snow & water	Wind & sea
How is the changing climate (or forecasted short term weather extremes) expected to impact existing vulnerabilities and the exposure? *List here cross-sectoral impacts. Reflect on interconnectedness of impacts, and the direct and indirect impacts of risks.* *Could certain groups be especially vulnerable? I.e. would women, the elderly,* Specific areas or regions of the country			

11 Link opens the file in a browser; to download your editable version, click 'File' > 'Save as' > 'Download a copy'. Please note that the file will be revised based on user feedback, so always download the latest version prior to use.

It is also recommended, depending on time and budget, to explore climate finance streams in the country, the Government's climate agenda (often explained in National Adaptation Plans[12]) and identify priority areas where the National Society, as an auxiliary to the Government, can offer to support field implementation. Pending budgets and capacities, this information could be included in a dedicated climate strategy – or incorporated in the general or sectoral strategies.

Knowing the expected climate impacts, and the national priorities to address the rising risks, clarifies how and where the National Society could best engage.

5.2 Screening the strategy inputs

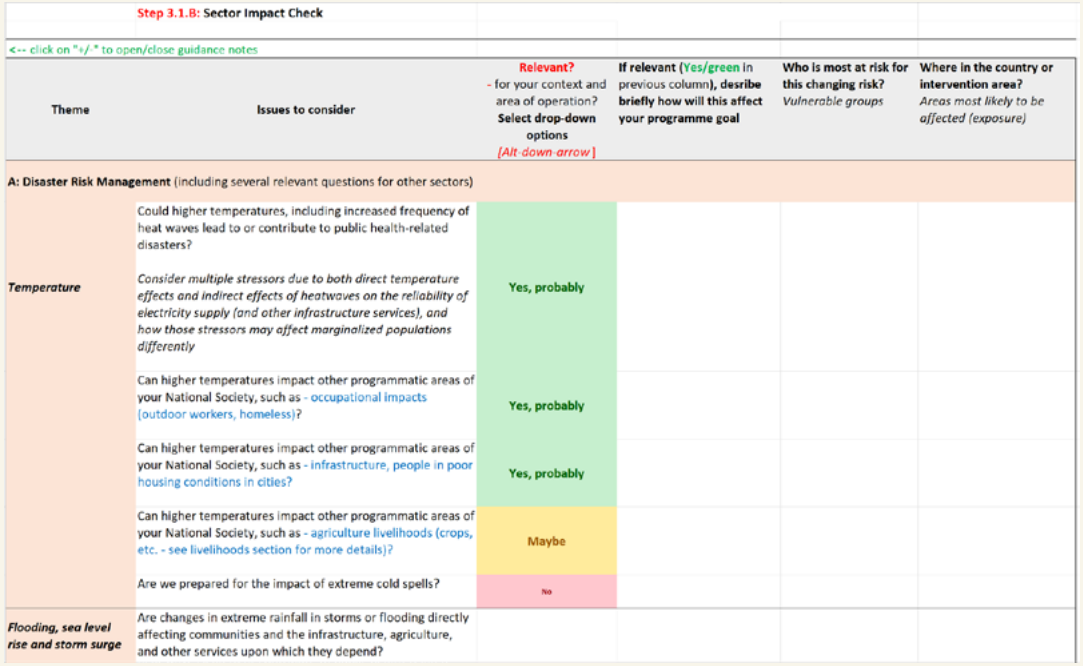
As a general or sector strategy begins to take shape, it's time to check where it could be worthwhile to consider the changing risks posed by climate change and variability. Often, it is useful to revisit previous strategies for lessons learnt as well as missed opportunities. Relevant questions to ask during this process include: 'How are vulnerabilities changing in the country?; 'What are the potential impacts in a particular area of work?; 'Which good practices have we seen of projects that helped reduce risk in the face of climate change?'; 'Any maladaptation practices or missed opportunities?'; 'Which of the (planned) work areas (activities) require special attention to meet expected new risk levels?'. In the process, discussing examples often works best.

The supporting XL Notebook (tabsheet 3.2–3.3 Screening & Planning) offers a structured space to capture the findings when screening (old and new) strategic documents and plans; it also contains some examples.

12 Formal National Adaptation Plans for a range of countries are available here

This sheet is used to compile information on climate-related risks and briefly assess how these may affect vulnerabilities. It includes a row with space for information on shorter term weather and seasonal forecasts – pieces of information that are not relevant for longer term programme planning, but are important for planning the coming few months of an intervention, including humanitarian operations. The sheet also provides links to most relevant websites to browse for climate information (see screenshot on the previous page).

3.1.B Sector Impact Check: This sheet lists questions to help identify relevant areas within different sectors sensitive to climate impacts. It holds the same questions as Annex 2 but the XL Notebook has additional space to add notes on changing risks and likely affected areas (see screenshot below). The Notebook also offers to filter the many questions so users can select and work only with the questions ranked 'relevant'; this helps focus on the main issues to address the next steps.



Step 3.1.B: Sector Impact Check

<-- click on "+/-" to open/close guidance notes

Theme	Issues to consider	Relevant? - for your context and area of operation? Select drop-down options (Alt-down-arrow)	If relevant (Yes/green in previous column), desribe briefly how will this affect your programme goal	Who is most at risk for this changing risk? Vulnerable groups	Where in the country or intervention area? Areas most likely to be affected (exposure)
A: Disaster Risk Management (including several relevant questions for other sectors)					
Temperature	Could higher temperatures, including increased frequency of heat waves lead to or contribute to public health-related disasters?				
	Consider multiple stressors due to both direct temperature effects and indirect effects of heatwaves on the reliability of electricity supply (and other infrastructure services), and how those stressors may affect marginalized populations differently	Yes, probably			
	Can higher temperatures impact other programmatic areas of your National Society, such as - occupational impacts (outdoor workers, homeless)?	Yes, probably			
	Can higher temperatures impact other programmatic areas of your National Society, such as - infrastructure, people in poor housing conditions in cities?	Yes, probably			
	Can higher temperatures impact other programmatic areas of your National Society, such as - agriculture livelihoods (crops, etc. - see livelihoods section for more details)?	Maybe			
	Are we prepared for the impact of extreme cold spells?	No			
Flooding, sea level rise and storm surge	Are changes in extreme rainfall in storms or flooding directly affecting communities and the infrastructure, agriculture, and other services upon which they depend?				

During the process of reviewing old examples – assessing what has worked well and what hasn't – and comparing and scrutinizing the new draft strategy objectives and priority areas, it will often become obvious where there is a need to pay special attention to changing climate risks – insights to carry to the next step.

5.3 Climate-smart planning

When step 5.2 has identified the most apparent entry points for climate-smart activities, the next task is to come up with specific ideas and suggestions for *how* each objective or priority area could be adjusted so it explicitly pays attention to climate risk management. Please see examples of how strategies or plans might include climate:

- A five-year National Society Strategy, or Organisational Development Plan, prioritizing:
  - capacity building of leadership and technical department staff as well as key Branch staff and volunteers, in climate change impacts and basic approaches to take countermeasures in various programmes of the National Society
  - sectors with special new opportunities for integrating climate risk – e.g., heatwave awareness and action in social activities for the elderly.

- A 3-year Health and WASH Department Strategy that:
  - identifies areas in the country (and Branches) where water-borne diseases are likely to become more widespread due to increased flood risks, therefore requiring scaling up of awareness-raising, WASH interventions, and the introduction of a new design for basic WASH infrastructure
  - plans for the better use of seasonal forecasts to adjust the timing and scale of current dengue prevention campaigns prior to wet seasons (i.e., the standard campaigns, but with flexible timing and scale according to forecasts)
  - prioritize the scaling up of an existing vector-borne disease prevention programme to cover new areas where the diseases are likely to reach in the coming decade (i.e., the standard campaigns, but in new areas and with more awareness raising)
  - stronger collaboration with health authorities on water- and vector-borne disease surveillance.

3.2-3.3. Screening & Planning: This sheet first helps go through step 3.2 (screening of planned interventions) and then leads into step 3.3 on prioritizing and designing climate-smart interventions. This sheet has two different sections (see Table 4):

- The upper section is for screening a range of existing National Society documents for good and bad practices and identify entry points for revising the planning documents.
- The lower section is for working on one particular project (or a LogFrame) to scrutinize the objectives and activities to consider how they may need adjusting to support a climate-smart approach. *Note that this section can be applied for **existing 'old' projects**/ LogFrames as well as when designing a **new project**/LogFrame:*
  - for 'old' projects, each objective (and associated activities) can be entered and considered for revision; a rephrased version can then be suggested.
  - ***for a new project, the same process is applied to the initial draft*** objectives and activities that are being developed during the project design process. In this way, climate aspects are integrated into the normal project activities a National Society may be used to working with in different sectors like disaster management, WASH, livelihoods etc.

For new, *dedicated adaptation projects*, the broader Climate Action Journey is relevant (see Figure 2) that offers support with different pieces of guidance along the Journey, including the design and development of new locally led adaptation projects – with separate guidance.

- A five-year Disaster Management Strategy – building on the PER approach and Anticipatory Action – that prepares for expected new extreme events of weather-related hazards, acknowledging that likely impacts depend on the topography and land use management of different regions of the country. The strategy might include, for example:
  - strategic location of non-food items (NFI) warehouses, and logistics planning for reaching likely affected areas even in more extreme flood levels than previously experienced
  - awareness and early warning plans for at-risk populations in currently known and potential new risk zones
  - Forecast-based Action programming with communities in certain (additional) high-risk areas
  - scaling up community-based resilience programming with special attention to climate-related risks
  - development of heatwave action plans for urban areas – integrated with other urban activities of the National Society and partners.

- Urban resilience and shelter strategies, focusing on:
  - awareness and mapping of 'urban hotspots' based on climate projections for extreme temperatures, flooding, coastal erosion, etc.
  - coalition building with key urban stakeholders with a clear role defined for the RCRC
  - plan to include seasonal and climate forecasts in planning efforts, resettlement options away from new risk areas
  - assess utilities systems (electrical supply) to adapt and minimize the risk of power cuts and incident risks at neighbourhood level.

BOX 20. What can the climate-smart process be – when developing a National Society Plan or Strategy?

- At the start, it will be helpful to identify a small group (3-6 people) that can be involved (lightly) during all the three steps. You can invite experts in this group from the different work areas of the National Society (either internal experts or external) and the national weather service.

- Ask the identified group members to join a workshop or explore through a consultation process how climate projections and potential impacts can affect the different pieces of work of the National Society or of the strategy in question.

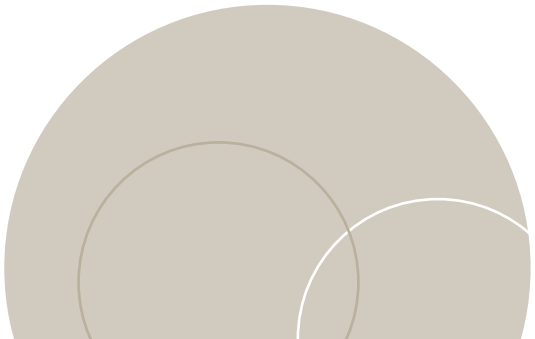
- For the screening section, it can be best to start with an internal meeting with all the relevant sector colleagues from different departments to discuss their existing workplans or programmes. This can be done step-by-step by using the supporting XL Notebook (tabsheet 3.2–3.3 Screening & Planning).

- The final step requires a brainstorm with experts and colleagues in the relevant fields of work to identify (innovative) ideas, and what aspects to prioritize.

- Afterwards, invite colleagues and experts to validate or review the National Society's strategy.

Estimated time to ensure the strategy or plan is climate smart: throughout the duration of the strategy development, reserve up to a maximum of 3–6 days for the climate-smart components (across different people/departments).

Estimated budget: maximum of 6 days of salaries, meeting rooms for workshop and interviews.



6. Concluding remarks

This Guide offers National Societies a methodology and tools to make their programmes and operations climate-smart. This is an important starting point in enhancing climate resilience and can be seen as a solid contribution to national adaptation agendas. However, it is clear that we need to go above and beyond the integration of climate change considerations into our existing work to address the climate crisis. We need to develop and scale locally led adaptation initiatives to ensure all communities can anticipate, absorb and adapt to climate change and its impacts. The steps developed in this Guide align with this ambition and fit into the IFRC's broader Climate Action Journey, a journey within which dedicated locally led adaptation initiatives can be designed (see Figure 2). The initial steps to make our work climate-smart (national climate risk assessment; screening and planning process) and the necessary enablers in the process (working with climate information across timescales and collaborations), lay the foundation to develop dedicated, inclusive programmes that can address the most urgent adaptation priorities. The steps in this Guide and the consecutive steps of the wider Climate Action Journey will make the National Societies strong and credible players to fight the climate crisis.

The Red Cross and Red Crescent National Societies have a long history of working on climate-related DRR, preparedness, response and recovery, and the methods proposed in this Guide closely align with existing tools and only require, primarily, a mindset change to ask the right questions during the design and implementation of our programmes and operations.

While the Guide is extensive and detailed, its approach is not overly complex. This step-by-step approach can be done in a light-touch way in case funds are limited; for instance, beginning in one sector of the National Society. If a National Society wants and is able to conduct more in-depth assessments, with more detailed screening and a more extensive planning process, it can offer a broader and more effective level of integration of climate information into its work.

A significant eruption of the Sangay volcano in central Ecuador in September 2020 caused the Ecuadorian Red Cross to activate its early action protocol with emergency funds from the IFRC, allowing it to assist 1,000 families in rural communities most affected by falling ash. Earlier eruptive activity by Sangay in June that year provided Red Cross volunteers with an opportunity (pictured) to test equipment for measuring ash fall. (Photo: CRE)

ANNEX 1. Structure and resources for the National Climate Risk Assessment by National Societies

The questions in this Annex support National Societies in gathering and writing up relevant information about climate change and its overall impacts in the respective country, while Annex 2 supports the subsequent screening of National Society programmes and operations.

At the end of this Annex, we also list a range of climate information sources to consult during the assessments.

For your convenience, we offer a simple XL Notebook for organizing the information for the climate risk assessment as well as the programme screening: This Excel file has separate 'sheets' or 'tabs' (plus tabs with examples) for the Steps 3.1 (*3.1A Climate Risk Assessment – 3.1B Sector Impact Checks*) and 3.2–3.3 (*Screening & Planning*) – see Box 19 and Table 4. If you only invest in a basic version of the climate risk assessment, you can use the Notebook as the main place to list the information.

A more comprehensive version can be compiled in a published report, with support from the template and questions below. In *italics*, you can find guidance about each of the sections and a recommended word-count.

A: Annotated Table of Contents for a National Climate Risk Assessments

Foreword

Any publication initiates with a foreword (preferably by or signed by your leadership), table of contents and acknowledgements section, in which you thank all contributors and experts that supported the writing.

1. Executive summary (1 page)

At the end of the writing process, a short, concise summary can be compiled and placed at the top of the document. This will help all readers to understand the concerns, impacts, conclusions and recommendations upfront.

2. Introduction (500 words)

This section is where you should simply describe what a climate risk assessment is (see section 3.1 of the Guide for ideas) as well as the methodology and key findings of your national climate risk assessment. It should not be longer than 500 words and can make use of bullet points and summary figures if you like. It should follow the structure outlined here:

a. **The importance of climate risk assessments –** *here you explain why climate risk assessments are important generally and for your National Society. Why did you do it? What do you hope it will help you with? etc.*

b. Methodology – *here, you briefly describe the methods you used for the assessment. Who was involved and how? What sources did you use? What was your timeline? etc.*

c. Key highlights of the different sections in the document – *here, you describe, in prose or bullet points, what the main results or highlights of your climate risk assessment were. You can structure it as 1-3 bullet points per section (current and future climate, main impacts, sectoral impacts, regional impacts etc.). You should add one bullet point describing limitations/further questions and a final one about how this will feed into future planning on the Climate Action Journey.*

3. Climate information summary (4–5 pages)

The aim of this section is to compile information about the current climate in your country as well as the projections of the future climate. You can follow the outline provided and respond to these questions and are encouraged to make use of visuals (maps, graphs, etc.). You can reach out to the Climate Centre and other research resources in your country (e.g., local universities) for support on this. The accompanying XL Notebook template Step 3.1A helps to organize the information gathered.

Most climate impacts relate to different times of the year and the seasonal cycle of temperatures, rainfall, storms, winds, etc., so climate information should focus on these seasonal cycles and how they vary due to natural variability and may be changing and continue to change due to climate change. Descriptions of historical variability are very valuable because they describe the range of possible variability that should be anticipated in the coming decade.

The climate, including seasonality and observed and projected changes, varies from region to region either because of how large-scale weather patterns intersect with different regions (e.g., regions closer to the tropics tend to have more rainfall), or because of regional topography (high mountain areas tend to be cooler). Climate information should identify different climate regions across a country.

A common approach is to use the Köppen–Geiger climate classification system which divides the world up into different climate regions. However, other approaches may be more relevant in some countries. In some cases, it is more helpful to focus on key water catchments, agricultural areas, or livelihood zones.

This section could include the following information:

a. National climate overview – including maps of different climate regions or zones, and the seasonal cycle of rainfall, temperature and any other key variables across these zones. This section should include information on extremes events (e.g., heatwaves, tropical cyclones), when they have occurred in the past (if documented) and during which periods of the year they typically occur.

a. Analysis of observed variability and trends – here, observed historical records of temperature, rainfall and other variables are evaluated to determine historical variability and long-term trends. Care must be taken not to draw strong conclusions from short historical records and the quality and coverage of data used should be critically assessed. Historical variability and observed climate extremes should be identified and, where possible, aligned with data on impacts (e.g., past droughts, floods, tropical cyclones).

a. Climate projections – in this section, climate projections from reliable sources (e.g., national climate assessments, World Bank Climate Portal, IPCC Atlas, country factsheets) should be interrogated to identify potential shifts in relevant climate variables across the different regions identified in section (a). Climate projections provide ranges of plausible changes, and these ranges must be clearly stated rather than simplified to a mean or maximum to robustly support a wide range of decision processes. Projections for some variables or events (e.g., tropical cyclones) are not always readily available and may require further interrogation of academic literature and support from experts.

What is the current climate – and changing trends (across several decades)?

- How do temperatures vary throughout the year, seasons and in different regions of the country?
- How does rainfall vary throughout the year, rainy seasons and in different regions?
- What types of extreme weather is experienced in the country?
- Has there been any increase/decrease in the average annual/seasonal temperature?
- Is there more/less rainfall in certain seasons?
- Are there any changes in seasonality?
- Are there any changes in the frequency and/or severity of extreme weather events (including droughts, floods, heat/cold waves, cyclones/typhoons, storms)?
- Are there any impacts from sea level rise, such as increased erosion, increased coastal flooding events, and/or saltwater intrusion of soil or groundwater?

4. Main impacts: How is the changing climate expected to impact (existing) vulnerabilities and exposure? (4–8 pages)

- *The aim of this section is to compile and understand the different climate impacts on communities and individuals. We know that vulnerability (i.e., characteristics of people and infrastructure that may make them more likely to be impacted by a risk) and exposure (i.e., location of people, infrastructure, etc. in the face of the risk) differ widely between demographics and regions, etc. This makes certain people and places disproportionately affected by climate change, especially women, children, the elderly, marginalized groups and indigenous groups. It is increasingly important to look at compound, cascading (domino effect and combined risk) and systemic risks,[13] to better understand how vulnerable people and communities might be impacted by multiple risks happening around the same time. You can follow the outline opposite to structure your research.*

a. Community exposure – here, you want to describe which communities in your country are exposed to the risk of different types of climate shocks. You can use maps and text to complete this section.

a. Differential vulnerability – here, you should talk about different demographic groups that are differently impacted by climate shocks and long-term climate change. This can be demographic groups, community groups in certain areas, etc.

a. Changing exposure and vulnerability profiles – here, you can have a discussion about how exposure and vulnerability might already be changing and how this might change in the future. This will be essential as we talk about long-term climate change and its potential impacts.

13 See Glossary (Annex 6)

5. How will different National Society sectors be impacted?
Climate change will have different impacts on the sectors in which your National Society is working. This will warrant specific interventions and policies to address these impacts at different timescales. The broad issues listed here are supplemented by more specific questions as part of the programme screening in step 4.2/Annex 2 and the supporting XL Notebook file. We recommend you tailor the following outline to the key sectors of interest to your National Society.

a. Introduction, general assessment – here, simply add 2–3 paragraphs about how climate change is and will impact your National Society activities in various sectors. It does not have to be detailed. This can include a need for more funding, a shift in strategic focus on certain sectors more than others, different programme design etc. You should include a reflection on the cross-sectoral impacts of climate change (Livelihoods, DRM, WASH, Health, Displacement, etc.), including compound impacts and domino effects across sectors. Do not worry about being vague here, you will work on this in much more depth through the climate risk screenings.

b. National Society sector – here, list each of your key sectors in turn and follow the outline below for each.

  a. Current National Society activities and strategy under this sector – here, give a short description of the current activities that your National Society is currently engaged in and how they fit within your current strategy. The aim here is just for readers, internally and externally, to understand how you currently approach the sector.

  b. Threats to the sector posed by climate change – here, describe how climate change will impact these sectors. Ideas on this can be found throughout the Guide and some are summarized below.

- **Disaster Risk Management –** this could cover the increased risks of climate extremes and slow-onset disasters, as well as the capacity of DRM systems to prepare and respond to these.
- **Water and WASH –** this could cover climate risks to the quality and quantity of water resources, including aquifers, groundwater, hygiene, safe drinking water, sustainable water sources and water storage.
- **Health –** this could cover climate risks to changing patterns of vector-borne and/or water-borne diseases, heat, malnutrition, treatment disruptions, impact on healthcare services.
- **Livelihoods, Food Security and Economy –** including changes in agricultural productivity/exports/domestic production and impacts on key economic sectors (at local and national level).
- **Infrastructure, Shelter, Settlements and Urban –** impacts on key infrastructure and transport, including considerations of risk zoning, where people can settle/resettle or be displaced in case of rising sea level in coastal areas, more extreme or protracted flood and/or drought events; at household levels how people notice the impact on their homes (e.g., indoor temperatures, ventilation, electrical supply and cooking facilities).

- Migration and Displacement – be sure to reflect on all the relevant areas of work of your National Society.
- Environment and Ecosystems – reflect on the impacts of climate on critical key ecosystems in the country, including the services and livelihood opportunities they provide (e.g., forests/agroforestry; watersheds/ disaster risk reduction; biodiversity/fisheries). This ties directly to work on nature-based solutions and environmental sustainability/Green Response.

6. How will different regions be impacted? (1–3 pages with figures)

Climate change will impact different regions of your country in different ways. The aim of this section is to list how different differentiated regions of the country are and will be affected by these changes. This section will rely on maps, if you have them at hand or can make them, and descriptions of these areas. The aim is simply to underscore an understanding of these differences as it will later help to identify and prioritize sites and landscapes with special needs related to climate-smart programmes and projects.

a. Introduction, general assessment – similar to the above, you want here to simply acknowledge these regional and landscape differences.

b. Regional impacts – here, you want to list the different types of regions and landscapes in which the communities you serve live and how these will be affected differently by climate change. This is about the different economic activities, communities, assets and infrastructure that are in these locations and how climate change will impact them differently. These can include the following:

- **river valleys –** for instance, increased streamflow will likely cause more impactful flooding for communities living in the floodplains. Adaptation interventions may require things like creating non-usable buffer zones through urban planning laws.
- **mountains –** for instance, increased snow and glacial melt may increase the flood and landslide risk for communities living in mountains. Adaptation interventions may require increased monitoring of mass movement.
- **coasts –** for instance, rising sea levels may create saltwater intrusions into community water sources. Interventions may require finding other, more inland, water sources for communities to access safe drinking water.
- **cities and urban centres –** for instance, urban heat island effects, coupled with growing urban populations, are putting more people at risk of devastating heatwaves. Adaptation interventions may include advocacy for urban green space, architectural adaptation for cooler homes and setting up cooling centres during heatwaves etc.

7. Additional relevant components to consider in a climate risk assessment

The National Climate Risk Assessment will benefit from a section on key stakeholders at national level, working on climate change and the environment, including key Government departments and institutions; non-governmental organizations (NGOs); research institutes etc. This information is readily available in e.g., your country's National Adaptation Plan (NAP) or Nationally Determined Contributions (NDC, which are your country's commitments to the Paris Climate Change Agreement). The aim of this section is for you to identify expertise to help you design your climate-smart programmes, understand how your interventions can help national priorities and open doors for partnerships and fundings (step 3.3), and identify advocacy opportunities to influence climate adaptation planning based on lessons learned by your National Society.

a. Key stakeholder map – this could simply be a table that lists key national, regional and local stakeholders working on climate change and environment resources. This could include key government departments and institutions; NGOs; research institutes etc. This information should be readily available in, for example, your country's NAP or NDC.

b. National priorities and policies – it will be relevant to reflect on the national priorities identified for climate change adaptation as defined, for example, in your country's NAP or NDC. These are often defined by sector and prioritized for Government planning and investment.

c. Legal frameworks, laws, and policies mapping – listing relevant national legal frameworks, laws and policies will be an asset, as your work could align and help strengthen these policies and frameworks. This could include existing key national-level initiatives on climate change to help identify climate finance and partnership opportunities. In the Nature Navigator there is a useful tool (see section B) that can be applied to policy mapping, which can also be used for climate-related plans and policies.

d. National climate finance – you could explore how you can further scale climate-smart programmes and operations. It can just be top-level information on national or international investment on climate in the country, looking at the national budget, prioritized sectors, key international donors, current projects and pipeline proposals. Further information can be found here on climate finance for National Societies.

8. Conclusions and recommendations (1-3 pages)

The assessment will need to reflect on concerns and provide recommendations for priority actions. Proposed (new) investments can be provided to address the key risks and changing vulnerabilities and exposure. This section should be short and concise and help your National Society with the interpretation and extraction of the most important elements from the assessment. It should have the following sections:

a. General reflection – here, reflect on what your National Society risk assessment shows as general trends and impacts. What is already happening in your country and what is likely to happen?

b. Key conclusions per section – here, reflect on the key messages from each of the sections.

c. Questions remaining – here, outline questions and topics which you did not manage to address thoroughly through your risk assessment and that you think warrant deeper attention. Be bold here, this list could, for example, be given to university students looking for areas of study, consultants hired to do in-depth research etc.

d. Next steps – this is where you should talk about what you will do with the results of your assessment. How will this bring you to the next step on your Climate Action Journey?

Climate and livelihoods security risk assessment in the Ségou Region (Mali), November 2022. (Photo LRC)

BOX 21. Assessment process and design of climate-smart livelihoods in Mali

Within the framework of the ECHO PPP in Mali, the Mali Red Cross Society (MRCS) with the support of its partners (Danish Red Cross, Spanish Red Cross and Luxembourg Red Cross) and the technical support and guidance of the IFRC Livelihoods Centre, carried out an assessment, screening and planning of climate-smart and environmentally sustainable livelihood activities in November 2022.

The process included assessing climate risks and their impacts on livelihoods in the Ségou region (one of the four intervention zones of the ECHO PPP-funded programme). It is important to note that, due to the country's context, this assessment, in addition to climate risks on livelihoods, added the component of security risks and their impacts on the livelihood activities of the population.

The scope of the assessment included the identification of climate risks, including historical information, trends and medium- to long-term climate forecast information; information on the impacts of these risks on the main livelihood activities (heavily focused on agriculture, livestock and fisheries in areas close to the Niger River); as well as the existing strategies (used by communities and promoted by other stakeholders) to protect and adapt their livelihood activities to the impacts of such risks (mainly to drought or irregular rainfall as well as extreme weather events – such as torrential rain and floods).

The assessment also included questions on the communities' knowledge of climate change, their perception of the causes, and the existence and knowledge of the early warning mechanisms in place.

Besides the target communities and local authorities, the assessment collected information from key stakeholders, mainly the Regional Directorate of Meteorology (Mali Meteo) along with the regional and departmental directorates of agriculture, hydrology, water and forestry etc.

Before collecting information in the field, a secondary information analysis was carried out, mainly focused on historical information and weather forecasts and identifying livelihood zones in the region. A two-day training/workshop was also conducted to train the national and regional team in the collection of information and the use of tools (key informant interview guide, focus group discussion guide).

The results of this study, together with the realization of an internal workshop to share experiences and capacities of the MRCS in the field of climate-smart and environmentally sustainable livelihoods, have allowed the identification of actions to be implemented in Year 2 of the ECHO PPP.

B. Relevant sources to consult during the assessments

During the assessments, information from historical trends, forecasts and projections should be collected by the National Society. If you only want to do a basic risk assessment, we propose using the links marked in **red**.

In the supporting XL Notebook, **five basic resources** are listed. For several countries or regions, summaries are already available as Country Climate Factsheets so you can partly skip the search for climate and disaster information in Step 3.1 and – after thoroughly digesting the information in the factsheets – jump to the process of assessing the implications for the National Society's strategies and programming.

However, it is strongly recommended that, for the in-depth climate risk assessments, the climate working group itself both explores key existing sources to reflect the relevance to their work directly, and to ensure all latest sources are duly reflected. Further, it will be critical to speak with key partners (see Chapter 2) to adapt the latest climate information and jointly identify ways forward.

Below is a more comprehensive list of sources that can be consulted. In addition, to understand and interpret correctly the climate and weather information, a National Society should contact and collaborate with the NMHS.

Information about past climate-related hazards

- Records of **past** disaster events (country level): the National Society can download these records from the EM-DAT public website (free registration needed); in the EM-DAT Query Tool select the country and relevant (weather-related) types of hazards to download in an Excel file with all records. The records vary in quality but provide a list of, for example, flood types, timing/seasonality, affected areas/magnitude and impacts. Another relevant data set is Desinventar, which several National Societies around the world contribute to.
- Some National Societies have uploaded Vulnerability and Capacity Assessment (VCA) reports from selected vulnerable communities to IFRC's VCA Repository; check if VCA reports are available for the planned/ongoing operations area; check the VCA reports for records of weather-related disaster and possible changes in observed frequency and severity.

Weather and seasonal forecasts

- Nationally tailored weather and seasonal forecasts can be provided by the national weather service (find relevant ones in WMO's list). The National Society is advised to always collaborate with the national agencies responsible for meteorological and hydrological forecasting and to discuss with them the access, interpretation and dissemination of likely weather-related risks in the area of operation.
- The European Centre for Medium-Range Weather Forecasts (ECMWF) provides seasonal forecasts relevant to several sectors, such as agriculture, energy, health and water management that can help to prepare for potential periods of extreme weather conditions. If there is a limit to the climate information in your country, and you want to tap into secondary climate information, this can be a relevant source, or ask a climate expert in the Red Cross Red Crescent network to support you on the use of secondary climate information.

- The EU-programme Copernicus provides seasonal forecasts and global flood forecasts through its (slightly complex) Global Floods Forecasting site (registration required). Once logged in, under the red FLOOD RISK header turn on the 'Rapid Flood Mapping' and 'Rapid Impact Assessment' to see expected flood areas in the coming weeks. The site is under continued development so may offer even better information for operations planning soon. If there is a limit to the climate information in your country, and you want to tap into secondary climate information, this can be a relevant source, or ask a climate expert in the Red Cross Red Crescent network to support you on the use of secondary climate information.
- There are tropical cyclone regional specialized meteorological centres (RSMC) that regularly provide track forecasts, intensity forecasts and guidance on structure evolution of the storms for each ocean basin; links to them are listed on this website. A global overview is offered by ECMWF tropical cyclones where 'tropical cyclone track' and 'strike probability' maps can be selected. If there is a limit to the climate information in your country, and you want to tap into secondary climate information, this can be a relevant source, or ask a climate expert in the Red Cross Red Crescent network to support you on the use of secondary climate information.

Climate projections

- The World Bank Climate Change Knowledge Portal's Climate Risk Country Profiles covers many countries; most of the descriptions are newly updated and offer comprehensive overviews (approx. 20 pages) of weather-related hazards, climate projections (based on IPCC) and likely future development of the risk patterns.
- The country's own National Communications to the United Nations Framework Convention on Climate Change (UNFCCC) contain relevant summaries of climate trends and projections, as do the National Adaptation Plans available for some countries.
- Two types if IPCC regional factsheets (a two-pager per region) offers the most succinct summary of 'trends and projections' and regional (and sector) impacts and risks, respectively. For instance, for East Asia, the summary on extreme rainfall conditions reads "Daily precipitation extremes have increased over parts of the region. Heavy precipitation will increase in frequency and intensity, leading to more frequent landslides in some mountain areas".

Climate projections are, by necessity, rather general, but even these general statements set the scene for considering how an operation may need to plan for new climate extremes in all phases, but not the least the long-term recovery options for building back safer. More advanced technical details are available in the IPCC Interactive Atlas.

- USAID country profiles/factsheets are available for quite a few countries: https://www.usaid.gov/climate/country-profiles
- African Development Bank (AfDB) country climate profiles: https://www.afdb.org/en/documents-publications/climate-change-country-profiles-0
- WMO country profiles on hydrometeorological data and status in country https://community.wmo.int/members
- National Adaptation Plan Global Support Programme (NAP –GSP) country factsheets for information on climate plans and policies in-country https://www.globalsupportprogramme.org/nap-gsp/resources?field_resource_type_tid=550&field_region_tid=All
- NAP Global Network analyses https://napglobalnetwork.org/resources/

C. Writing tips and tricks for your national climate risk assessment

Use simple language:

- You don't have to write a full book – the assessment should be a short and simple overview.
- Use short and simple sentences and paragraphs to maximize clarity.
- Always make references to the sources you used and include a reference list (with hyperlinks).
- Include a glossary and a list of abbreviations and acronyms.
- Please use definitions from the Red Cross Red Crescent Climate Centre where possible (see Glossary in Annex 6).
- Visuals, images and maps are welcome – if they clarify what you have written.

Keep the ownership of the process:

- It is crucial that staff across departments remain involved in the writing process, even if you hire external consultants to support the assessment development.
- The document should reflect how climate change may influence (changing) vulnerabilities and the work and priorities of the National Society.
- The process should engage stakeholders.
- A validation workshop at the end with staff, in-country experts and stakeholders can help reflect on the findings and consolidate the recommendations.

Only use reliable sources (see section below):

- Be aware that not all sources have the highest quality of climate information.
- In Annex 1 you can find links to relevant sources, information about climate projections and insights on climate change impacts.
- Ask for technical support and reviews of your National Climate Risk Assessment, either from in-country climate scientists or a climate scientist in the Red Cross Red Crescent network.

Manage uncertainty:

- Climate change projections do not tell us exactly how and when specific communities will be affected by climate change.
- Climate projections involve multiple types and sources of uncertainty that are impossible to reduce.
- Managing uncertainty about the future climate is a core component of climate-smart programmes and operations.

Keep updated:

- Weather and climate patterns are complex (check Chapter 2.2), and scientists can only provide long-term forecasts (months to decades) on a high scale. Climate projections cannot 'zoom' to specific provinces or communities.
- Nevertheless, available climate change projections can be analysed further in the context of your country's vulnerabilities to identify local areas of concern. For example, if the projection for the country is for more intense rainfall events, it would make sense to prioritize work with communities that are already vulnerable to floods and enhance monitoring of seasonal and short-term forecasts to anticipate when and where severe rainfall might occur that could lead to (unprecedented?) floods – and take relevant early action.
- Some documents/websites you'll encounter focus on emissions of GHGs etc. (i.e., aspects relevant for climate change mitigation). This information will be less relevant for designing climate-smart programmes and operations, so look for the sections that describe climate change impacts and how to minimize their severity.
- As science evolves rapidly with new insights and improved climate services, it will be important to update your National Climate Risk Assessment approximately every three years.

ANNEX 2. Guidance for sector impact checks

This Annex offers sets of guiding questions to check the different work areas in the Red Cross Red Crescent. Even though this information is in an Annex, the questions and the considerations are key for the entire climate-smart mainstreaming process.

Each table n this section lists a range of questions (issues) to consider in relation to each sector – we advise to read through all the questions as there will be some overlaps. For each question in the tables, you can indicate if the issue is relevant (Yes/Maybe/No) for your national or local context. The questions are also available in the supporting XL Notebook (in the tab 3.2.B Sector Impact Check) where there is also additional space for adding your comments regarding vulnerable groups (who is most at risk) and areas most likely to be affected (where in the country).

Once your team or working group and other key stakeholders agree in the rough ranking of relevance, your National Society can decide to prioritize actions. First focus on the relevant issues (= green in the supporting XL Notebook), while those ranked 'maybe' (yellow in the XL Notebook) can be revisited during the next review of your plans in a few years' time.

At the end of each sector, further information and links are provided to stimulate the next steps towards making the interventions climate-smart.

A: Guiding section for checking Disaster Risk Management

Note that this section includes standard relevant questions for all other sectors.

Climate risks are already inherently part of DRR. Yet climate change is expected to increase weather and climate hazards, likely augmenting the number and scale of disasters as well as increasing the vulnerability of communities to natural hazards; particularly through ecosystem degradation, reductions in water and food availability, and changes to livelihoods. Considering future projections on possible climate extremes in DRR and recovery is therefore necessary. The following selection of questions are an example of how to identify climate-related risks in disaster risk management (adapted from Climatelinks.org Disaster Readiness Annex, 2020[14]).

14 https://www.climatelinks.org/sites/default/files/asset/document/2022-03/Disaster%20Readiness%202-28-20.pdf

A: Disaster risk reduction and preparedness – *including some generic questions relevant for all sectors*

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
TEMPERATURE	• Could higher temperatures, including increased frequency of heatwaves lead to or contribute to public health-related disasters?	Yes / Maybe / No
	• Could higher temperatures impact other programmatic areas of your National Society, such as - occupational impacts (outdoor workers, homeless people) - infrastructure, people in poor housing conditions in cities - agriculture livelihoods (crops, etc. - see Livelihoods section for more detail)?	 Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No
	• Do we need to prepare for the impact of extreme cold spells? *Consider multiple stressors due to both direct temperature effects and indirect effects of heatwaves on the reliability of electricity supply (and other infrastructure services), and how those stressors may affect marginalized populations differently*	Yes / Maybe / No
FLOODING, SEA LEVEL RISE AND STORM SURGE	• Are changes in extreme rainfall in storms or flooding directly affecting communities and the infrastructure, agriculture and other services upon which people depend?	Yes / Maybe / No
	• Do changes in flooding affect the displacement of people and the need for corresponding planning and response?	Yes / Maybe / No
	• Does coastal flooding due to sea level rise affect populations living along the coast?	Yes / Maybe / No
	• Do storm surge damages to coastal infrastructure, assets and people affect the magnitude of emergency response needed?	Yes / Maybe / No
	• Could emergency operations be hampered by new extreme flood and storm surge levels? *E.g., blocked access routes, flooded warehouse locations etc.*	Yes / Maybe / No
EARLY WARNING SYSTEMS	• Do nationally available early warning systems need to be improved to deliver forecasts and warn different segments of the population, especially those that are hard to reach and most at risk? *Consider if marginalized populations will be reached by (and can use and take action based on) these early warning systems.*	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
DROUGHT [15]	• Could the increasing frequency and duration of drought affect water and food production and availability, the potential for corresponding disasters, and the level of preparedness required?	Yes / Maybe / No
DISASTER PREPAREDNESS	• Are current disaster preparedness plans, systems and operations *insufficiently* informed by weather/climate information, forecasts and warnings?	Yes / Maybe / No
	• Could increasing long-term trends in the frequency and/or intensity of climate and weather-related hazards (storms, floods, droughts, heat- and cold waves) require improvements in disaster preparedness at national and/or local levels?	Yes / Maybe / No
	• Should climate (especially seasonal) information and weather forecasts be considered when selecting emergency items (NFI etc.) to be provided after emergencies?	Yes / Maybe / No
	• Could communication and emergency aid be affected if roads/pathways and communication lines are blocked due to extreme climate events?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies related to DRM ***insufficiently*** addressing climate resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies related to DRM ***insufficiently*** addressing climate resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

15 Droughts and changes in rainfall patterns, such as a reduction in rainfall periods; dry periods during the rainy season, etc.

B: Guiding section for livelihoods, agriculture and food security

The livelihoods framework provides a good entry point to better understand which aspects and components of livelihoods are potentially affected by or exposed to climate change and variability. Livelihoods underpin a holistic understanding of the context and lives of individuals and groups: they are how people access resources and assets in their environment to meet their needs. An analysis of the livelihoods of households and individuals begins by examining the five livelihood assets – physical, financial, natural, social and human capital – in the surveyed area, followed by the range of livelihood strategies into which people translate them.

Overall, livelihoods of poor and vulnerable people, that heavily rely on natural resources as a livelihood source, are affected significantly by weather variability and climate change. To generate a stable income for farmers and secure their livelihoods, thinking about the changing climate patterns and using climate information on short-, mid- and long-term projections is necessary. It is therefore important to know how higher temperatures will affect crop yields, fisheries or agricultural productivity in general. Also, other climate stressors like flooding or drought might impact agriculture and food security. For the latter it is also important to consider how a changing climate might impact food price and volatility or may impact nutrients.

The following selection of questions will guide the initial light-touch analysis of potential climate risks related to the vulnerability context in the agriculture and livelihoods sector (sources: IFRC; USAID Agriculture and Food Security; CRiSTAL Adaptation and Livelihoods). Generally, these questions are only indicative and will provide an orientation from where to deepen the analysis when consulting specific climate information (see Chapter 3). For this section, we also provide a table with specific examples, please see Table 8.

Morigaon, Assam, India. Soil erossion caused by the floods at Gerua in Morigaon district, Assam in September 2020. (Photo: Indian Red Cross Society)

B: Livelihoods, agriculture and food security

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
LIVELIHOODS ASSETS, STRATEGIES AND OUTCOMES	• Could changing temperatures and rainfall patterns, and/or shifts in seasonal onsets, affect livelihood assets? *Consider all the livelihood assets:* • Natural assets (e.g., land, soil, water, forests, fisheries and ecosystems) • Physical assets (e.g., tools, equipment/machinery, draft animals, roads, rail networks, ports, communication facilities, water wells, energy installations) • Financial assets (e.g., cash, savings, livestock, income, remittances) • Human assets (e.g., education, skills, knowledge, labour, good health) • Social assets (e.g., network, memberships) • Political assets (e.g., decision-making, power relations)	Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No
	• Are extreme events (heatwaves, drought or flooding) likely to affect livelihoods assets? *Consider all the livelihood assets:* • Natural assets (e.g., land, soil, water, forests, fisheries and ecosystems) • Physical assets (e.g., tools, equipment/machinery, draft animals, roads, rail networks, ports, communication facilities, water wells, energy installations) • Financial assets (e.g., cash, savings, livestock, income, remittances) • Human assets (e.g., education, skills, knowledge, labour, good health) • Social assets (e.g., network, memberships) • Political assets (e.g., decision-making, power relations)	Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No
	• Is climate change likely to impact on the livelihood strategies that households may engage in at household/community level? *For example, consider how households will:* • generate income • produce food • manage risks to their livelihood assets and strategies • cope with losses in production, income, etc.	Yes / Maybe / No
	• Will climate change likely affect household livelihood outcomes achieved through livelihood strategies, such as: • the income of the household? • the food and nutrition security at household level? • the environmental security of communities and households?	Yes / Maybe / No
	• Could there be potential positive livelihood outcomes (i.e., benefits) as a result of climate change	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
AGRICULTURAL LIVELIHOODS / FOOD PRODUCTIVITY	• Are changing temperatures and rainfall patterns, weather extremes, and/or shifts in seasonal onsets likely to affect drivers of agricultural productivity? *(Further details below)* *Supporting considerations:*	Yes / Maybe / No
	• Are changes in temperature, precipitation patterns and/or weather extremes expected to change crop suitability or reduce the number of harvests?	Yes / Maybe / No
	• Are changes in temperature, precipitation patterns and/or weather extremes expected to decrease crops (agricultural production) in terms of quantity and/or quality?	Yes / Maybe / No
	• Are changes in temperature, precipitation patterns and/or weather extremes expected to decrease forage production and land productivity on rangelands and change livestock migration/transhumance patterns?	Yes / Maybe / No
	• Are changes in temperature and precipitation patterns, and/or weather extremes expected to lead to the emergence and/or increase of insects or other organisms affecting crops and animals?	Yes / Maybe / No
	• Are changes in temperature, rainfall patterns and/or weather extremes expected to cause change (deterioration, increased mortality rate) in the health and productive capacity of livestock?	Yes / Maybe / No
	• Are changes in seawater temperatures and/or weather extremes expected to change fish distributions and migration patterns along the coast?	Yes / Maybe / No
	• Is climate change likely to interact with non-climate threats to agricultural production, such as loss of soil nutrients, overexploitation of water resources or deforestation for cropland?	Yes / Maybe / No
WATER SUPPLY AND ACCESS	• Are changing rainfall patterns likely to affect recharge rates, the quality of groundwater and overall groundwater supplies?	Yes / Maybe / No
	• Is there a foreseen risk of increased (or decreased) temperatures that will affect the evaporation rates of surface waters?	Yes / Maybe / No
	• Is there a foreseen increased risk of prolonged droughts that may increase the competition / conflict for freshwater? *(check on D: Water, Sanitation and Hygiene – WASH, water supply and access theme to complete)*	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
FOOD SECURITY	• Is climate change likely to affect the **availability** of food? *E.g., will rising temperature and changing rainfall patterns affect the production of staple crops and livestock products?*	Yes / Maybe / No
	• Is climate change likely to affect the **access** to food? • could extreme events impact local supply chains of food? • could climate change affect food prices and price volatility? • is access to financial markets hampered due to climate change? *E.g., would women, the elderly, at-risk youth, LGBTI+ individuals, and/or other marginalized populations, be disproportionately affected regarding access to financial markets?*	Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No Yes / Maybe / No
	• Is climate change likely to affect the **utilization** of food? *Could food storage in the household be affected? Could the household care practises and health environment (including sanitation and hygiene) be affected resulting in illness/disease?*	Yes / Maybe / No
	• Is climate change likely to affect the **stability** of food availability, access and utilization over time?	Yes / Maybe / No
NUTRIENT QUALITY, DIETARY DIVERSITY AND FOOD SAFETY	• Is climate change likely to affect food nutritional quality?	Yes / Maybe / No
	• Is there a risk that the impacts of climate change alter the diversity of foods available to people?	Yes / Maybe / No
	• Might extreme climatic events (heatwaves, floods, etc.) or climatic considerations during storage and transport impact food safety and quality?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

There are several guidelines and tools on climate risk screening in view of livelihoods and the agriculture sector and additional guidance notes available:

- IFRC: Climate-Smart Food Security and Livelihoods Programming – Factsheet
- FAO: https://www.fao.org/3/i3325e/i3325e.pdf
- CARE Climate Justice Center: https://careclimatechange.org/wp-content/uploads/2019/06/Resilient-Livelihoods.pdf
- Future Climate for Africa: https://futureclimateafrica.org/wp-content/uploads/2018/09/fonerwa-climate-risk-screening-tool.pdf
- Climate-Smart Agriculture country profiles: https://ccafs.cgiar.org/resources/publications/csa-country-profiles
- CRiSTALTool: https://www.iisd.org/cristaltool/ (IISD)
- USAID: Agriculture and Food Security
- CLIMTAG, the Cimate InforMation Tool for Agriculture

TABLE 8. Example options and activities related to climate-smart livelihoods and food security

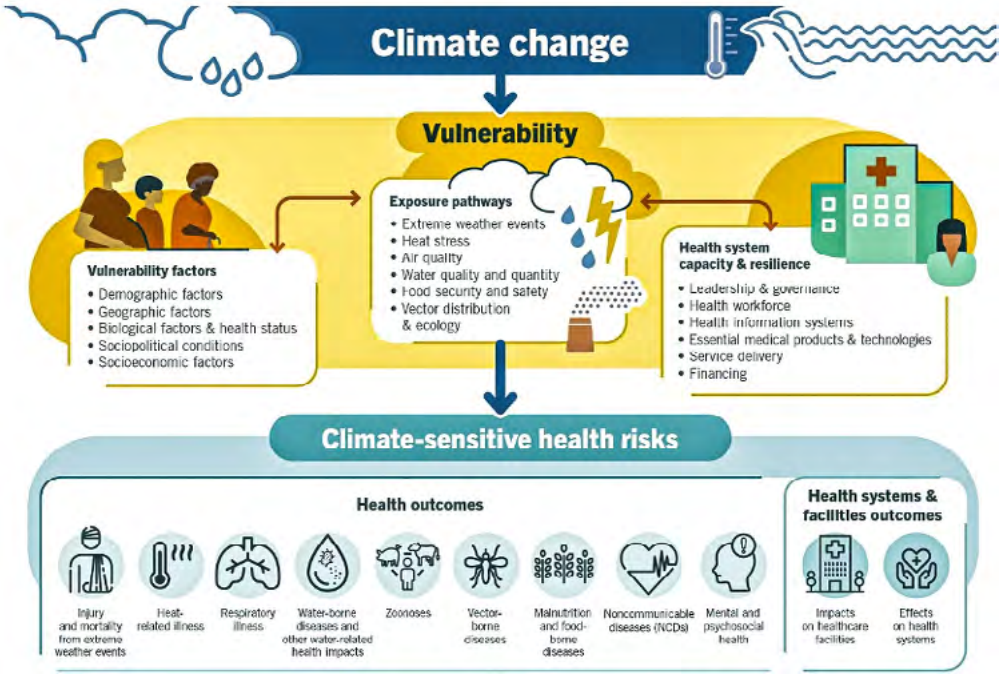
CLIMATE-SMART PROGRAMMING OPTIONS RELATED TO LIVELIHOODS	**1.**	Support investments in new technologies and management practices that will increase returns to land, labour and capital in a changing climate.
	2.	Expand access to markets and credit to encourage farmers to adopt new, climate-resilient crops and agricultural practices.
	3.	Support assessments of climate risks on livelihoods activities and food systems, including vulnerability to physical impacts (e.g., floods), to slow-onset shocks (drought, desertification, etc.) and loss/disruption of workforce (e.g., during heatwave).
	4.	Support assessments of climate risks in the value chain for small businesses, including vulnerability to physical impacts (e.g., floods) and loss/disruption of workforce (e.g., during heatwave).
	5.	Promote /advocate for risk-sharing options (insurance etc.)
	6.	Promote/advocate for investments in (and capital for) income diversification and livelihood development, including collaborations, education and skills development of alternative livelihoods options.
PROVIDE TRAINING TO FARMERS TO ENHANCE AGRICULTURAL PRODUCTION IN THE FACE OF CLIMATE CHANGE	**7.**	Train farmers in the use of drip and micro-irrigation techniques for more efficient irrigation.
	8.	Support and promote rainwater harvesting/collection techniques for agricultural use.
	9.	Support optimization and adaptation of farm management practices conditioned by climate (for early and late onset of rainfall, good, average and bad seasons).
	10.	Provide farmers with information on breeds better adapted to the prevailing and future climate (e.g., new cultivars that are drought- and heat-tolerant) or crops for which climate change has favourable effects.

ENCOURAGE FARMERS TO ADOPT CLIMATE-SMART AGRICULTURAL PRACTICES (AS APPLICABLE TO LOCAL CONTEXT)	**11.** Pest- and disease-resistant varieties **12.** Heat- and drought-resistant varieties/breeds **13.** Shade-grown crops **14.** Efficient use of fertilizers **15.** Soil conservation techniques **16.** Crop association and crop rotation **17.** Zero grazing **18.** Mulching **19.** Conservation agriculture For more information see also Climate-Smart Agriculture Sourcebook (FAO, 2013), Climate-Smart Agriculture (World Bank)
INCREASE THE UNDERSTANDING OF FARMERS ON CLIMATE RISKS	**20.** Promote analysis of the risk of climate impacts taking into account crop–weather interactions. **21.** Develop and provide advice to farmers and access to modern information and communication technologies. **22.** Raise awareness of communities on climate change and its impacts, adaptation of agricultural practices and reduction of malpractices.
IMPLEMENT ACTIVITIES TO ENHANCE THE NATURAL RESOURCE BASE IN THE FACE OF ALL RISKS	**23.** Address pollution of agricultural landscapes, freshwater basins and marine systems. **24.** Encourage and enable farmers, pastoralists and fishers to manage natural regeneration of trees, grasslands and fish stocks.
STRENGTHEN FOOD SECURITY IN THE FACE OF CLIMATE CHANGE	**25.** Help farmers adapt cropping practices to help ensure food production, food security and sustainable livelihoods (e.g., altering cultivation and sowing times as well as crop cultivars). **26.** Support improvements in processing, marketing and the distribution of agricultural/dairy products. **27.** Promote conservation and transformation actions that reduce food loss.
IMPROVE NUTRIENT QUALITY, DIETARY DIVERSITY AND FOOD SAFETY	**28.** Encourage planting of crops with high nutrient value that are suitable for changing climatic conditions. **29.** Help smallholders to diversify crops to increase resilience to variable climate conditions and to promote dietary diversity. **30.** Develop storage practices to protect food supplies under conditions of heat stress or excess moisture.
IMPROVE RISK MANAGEMENT	**31.** Develop new insurance instruments to address climate risks. **32.** Encourage new development away from high-risk locations (e.g., the coastal zone, river floodplains). **33.** Promote practices to protect livelihood assets (crops, animals, equipment, etc.) from extreme events such as heavy rains, floods, landslides, etc., by including them in the contingency plans and DRR programmes.

C: Guiding section for checking health programmes

The unfolding climate crisis has major implications on human health and wellbeing. Climate change is strongly mediated by several environmental and social determinants of health e.g., clean air, safe drinking water, secure shelter and sufficient food. It is expected that, between 2030 and 2050 alone, climate change will "cause approximately 250,000 additional deaths per year, from malnutrition, malaria, diarrhoea and heat stress" (WHO, 2021). In 2021, IFRC launched a brief on climate change impacts on health and WASH, which elaborates on impacts and solutions to address the health crises posed by climate change. Climate change will incur significant direct and indirect costs to health, particularly in areas with weak health systems infrastructure. WHO's Figure 12, below, provides a conceptual overview of the key climate-sensitive health risks that can each be explored further through academic literature or through the WHO's excellent health and climate change country profiles which summarize the evidence of specific climate hazards and health risks.

Figure 12. WHO – **Overview of climate-related health risks with their vulnerability and exposure pathways.**



The following selection of questions provide an overview of areas within the health sector which might be impacted by climate change in different ways (among other sources: WHO Protecting Health from Climate Change, WHO Climate change and health: vulnerability and adaptation assessment). Note the significant overlap with the WASH sector in the next table.

C. Health

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
VECTOR- AND WATERBORNE DISEASES	• Could changing temperature and precipitation patterns affect the epidemiology, life cycles and range of critical vector-borne diseases? *Consider: Are there emerging vector-borne diseases that may need more attention due to climate change? Is there an increased risk that key hotspots of disease shift over time?*	Yes / Maybe / No
	• Are practices of waste management affected by climate change and could this increase the spreading of vectors?	Yes / Maybe / No
	• Is there an increased risk of stagnant water that could increase the spread of vectors?	Yes / Maybe / No
	• Could there be areas that experience increased or more frequent flooding, so hotspot areas for waterborne diseases could be shifting over time?	Yes / Maybe / No
	• Could any waterborne disease become more or less important over time? e.g., Are there emerging waterborne diseases that may need more attention?	Yes / Maybe / No
	• Is the infrastructure of sanitation facilities, either at household level or communal ones, potentially impacted by a changing climate and can this create a risk of contamination to drinking water sources, crop production, etc?	Yes / Maybe / No
EXTREME WEATHER AND CLIMATE EVENTS	• Could climate extremes impact health infrastructure (e.g., physical infrastructure, road networks, supply chains)?	Yes / Maybe / No
	• Do we need to plan for changing water- or vector-borne disease outbreaks after extreme weather events?	Yes / Maybe / No
HEATWAVES *(Consider the same questions for* **COLD SPELLS,** *if relevant)*	• Are there particular areas and people vulnerable to heatwave impacts?	Yes / Maybe / No
	• Will climate change likely affect the frequency of wildfires?	Yes / Maybe / No
	• Is there an associated increased risk of degraded air quality in relation to heatwaves?	Yes / Maybe / No
	• Would National Society teams/volunteers need training to recognize and act in case of heat stress, heat stroke and dehydration?	Yes / Maybe / No
	• Could heatwaves potentially lead to the disruption of water, energy and transportation services – with consequences for health and health services?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
HEALTH, FOOD SECURITY	• Is there a risk that climate variables will negatively affect the nutritional value of key nutritional crops?	Yes / Maybe / No
	• Is it likely that there may be an impact of climate-linked declines in dietary diversity?	Yes / Maybe / No
	• Could there be particular health impacts for child development given climate impacts on food supply chains or crop survival?	Yes / Maybe / No
	• Could the economic impacts of climate change increase the risk of communicable and non-communicable diseases	Yes / Maybe / No
HEALTH SYSTEMS AND INFRASTRUCTURE	• Are health facilities and their related energy and water supplies planning for the increased risks of flooding, drought, landslides and/or storm surges?	Yes / Maybe / No
	• Would access roads to health facilities and/or markets likely be washed out and/or damaged in an emergency? *Consider what risks that would pose to relief/response efforts, ongoing treatments and other healthcare services in the area – and if there are contingency plans?*	Yes / Maybe / No
	• Could national or regional medical supply chains be impacted by climate extremes?	Yes / Maybe / No
	• Could rising temperatures (and heatwaves) impact day-to-day operations and patient outcomes?	Yes / Maybe / No
	• Could health services for marginalized populations be affected by higher temperatures, changing rainfall patterns, sea level rise and other climate stressors?	Yes / Maybe / No
MIGRATION AND HEALTH	• Could migrating/displaced people be at risk from specific health impacts exacerbated by climate change (e.g., inadequate access to services, psychosocial ill-health, infectious disease risk, inadequate WASH servicing, inadequate shelter conditions)?	Yes / Maybe / No
SEXUAL AND REPRODUCTIVE HEALTH	• Could existing issues around access to sexual and reproductive healthcare be exacerbated by climate change?	Yes / Maybe / No
	• Could the impacts of climate change such as food security issues, air quality or disease risk impact maternal and infant health?	Yes / Maybe / No
AIR QUALITY	• Are there existing “smog” risks that could be exacerbated by higher temperatures/heatwaves – increasing the impact on existing heath conditions?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
MENTAL HEALTH	• Could climate extremes lead to mental health issues for affected populations?	Yes / Maybe / No
	• Does conflict intersect with climate change in the context of mental health?	Yes / Maybe / No
NON-COMMUNICABLE DISEASES (NCDs)	• Could changing temperatures and climate extremes affect the NCD burden in a specific region?	Yes / Maybe / No
	• Are climate extremes, climate-related displacement and infrastructure damage causing any treatment interruptions for NCDs?	Yes / Maybe / No
ONE HEALTH	• Could diseases of zoonotic origin affecting human health and livelihoods potentially become more widespread with changing climate conditions?	Yes / Maybe / No
	• Could there be a need to establish or scale-up monitoring and surveillance systems for communities to recognize and keep track of diseases affecting livestock and wildlife that could be transmitted to humans in a changing climate?	Yes / Maybe / No
	• Could there be a need to ensure improvement in ecosystem health to provide any positive outcomes on human and animal health in your region?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

D: Guiding section for checking Water, Sanitation and Hygiene – WASH

Climate change in all its facets has strong and very diverse impacts on the WASH sector (see Figure 13). Due to droughts and other water scarcity-related hazards, water availability and access becomes a widespread challenge. Further, heavy rainfall and flooding can damage water sources and sanitation facilities, carry runoff and waste into streams and lakes, and contaminate the water supply (UNICEF). Overall, climate change may affect the water supply, water and sanitation infrastructure as well as water quality. This may lead to poor sanitation and hygiene practices, contamination of water sources, a reduction in water quality and an increase in vector-borne diseases. Rising sea-levels may also cause the salinization of drinking water.

The following selection of questions can help us to identify how climate risks can be included in WASH interventions (Some sources: USAID; UNICEF).

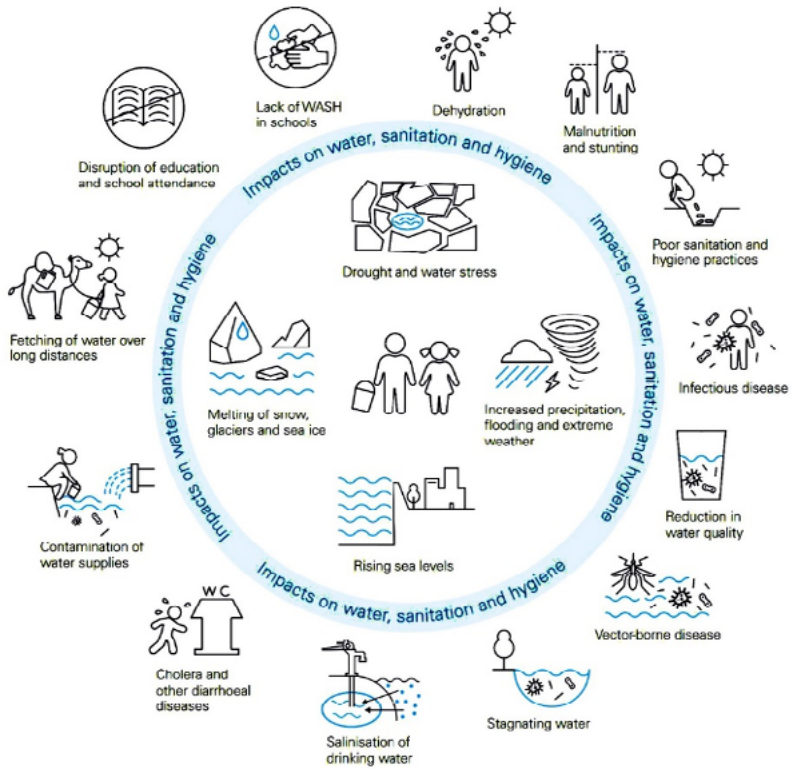


Figure 13. The impact of climate change on WASH components (source: UNICEF 2020)

D: Water, Sanitation and Hygiene – WASH

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
VECTOR- AND WATERBORNE DISEASES	Please see the list of questions compiled in the previous health table.	
WATER SUPPLY AND ACCESS	• Are changing rainfall patterns likely to affect recharge rates, the quality of groundwater and overall groundwater supplies?	Yes / Maybe / No
	• Is there a foreseen risk of increased (or decreased) temperatures that will affect the evaporation rates of surface waters?	Yes / Maybe / No
	• Is there a foreseen increased risk of prolonged droughts that may increase the competition / conflict for freshwater?	Yes / Maybe / No
	• Are water sources at risk to being impacted by climate change? *Consider: are water points poorly sited and, hence, at risk? Are water points already too low during hot seasons and is this trend likely to continue? Is access to clean water during floods at risk with higher flood levels in the future? Are water storage tanks well-constructed and located to withstand higher flood levels?*	Yes / Maybe / No
WATER AND SANITATION INFRASTRUCTURE	• Could the current WASH infrastructure and/or operations and maintenance be compromised by projected increasing flood levels? *i.e., Is there a risk of flooding leading to the contamination of drinking water infrastructure and spread of waterborne diseases?*	Yes / Maybe / No
	• Are WASH facilities in healthcare centres and schools compromised by projected increasing flood levels?	Yes / Maybe / No
	• Is drought and reduced groundwater recharge likely to lead to borehole failures?	Yes / Maybe / No
	• Is household water treatment and storage at risk of being damaged by climate extremes?	Yes / Maybe / No
	• Are investments in the WASH sector likely to be ***insufficient*** to deal with climate change impacts?	Yes / Maybe / No
	• Is crop survival at risk with water scarcity?	Yes / Maybe / No
	• Is there a risk of groundwater contamination due to bad sanitation infrastructure and hygiene behaviours?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
WATER QUALITY	• Is there a risk that flooding leads to overflows of latrines and septic systems or sewage systems – leading to increased public health risks?	Yes / Maybe / No
	• Are higher temperatures likely to increase the risk of hazardous algal blooms?	Yes / Maybe / No
	• Is sea level rise leading to risks of contaminating drinking water supplies?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

Several guides focusing on the intersection of climate change and the WASH sector, include:

- Reducing The health and water, sanitation and hygiene (WASH) impacts of climate change – IFRC 2021.
- Water Sector Climate Change Adaptation Guidance Note – Islamic Development Bank
- How UNICEF Regional and Country Offices can shift to climate resilient WASH programming – UNICEF 2020.

E: Guiding section for checking shelter, housing and settlements

Climate change is a severe threat for the housing sector as well as urban (formal and informal) settlements. Increasing urbanization, poor urban planning and weak implementation of urban plans increase the risk of adverse climate change impacts, especially in informal settlements. The IFRC offers multiple guidance on Shelter and Settlements and on Urban Resilience. Cluster agencies are also using the Shelter Cluster Tip Sheet for HRP Environment and Climate Change Mainstreaming.

The following selection of questions can help think through how climate risks can affect choices in relation to shelter, housing and settlements (a source among others: UNHabitat)

E: Shelter, housing and settlements

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
SHELTER	• Will climate and weather trends need to be considered in the choice of emergency and temporary shelter locations and associated infrastructure?	Yes / Maybe / No
	• Is there a need to consider data on previous, current and future patterns (rainfall/flood predictions, heatwaves, cold spells etc.) on shelter design and construction materials (improved indoor ventilation, openings and evacuation in case of fire outbreak, higher foundations for flood occurrence etc.)?	Yes / Maybe / No
	• Could lifeline utilities (such as water supply, energy or transport) be affected by flooding or storm surges – new extreme levels?	Yes / Maybe / No
	• Is there a need to continuously monitor repairs and/or retrofitting and relocation needs?	Yes / Maybe / No
	• Do we need contingency planning for IDP/refugee shelter sites for new extreme climate events?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
HOUSING	• Should past, current and future climate and weather information inform our dialogues and contributions to spatial planning, energy use, heat island risk reduction, shading, waste management, hygiene etc. (and, in places where relevant, also in relation to climate change mitigation: such as insulation, recycling, upcycling)?	Yes / Maybe / No
	• Is there a need to consider household items (choice, selection, prepositioning, distribution) in relation to weather warnings, climate projections and predicted needs (i.e., number of blankets, energy-efficient heating or cooking stoves, energy-saving lighting devices if electrical disruption from storms is frequent/predicted)?	Yes / Maybe / No
	• Could we anticipate improved household-level risk reduction measures in relation to heating, cooking, cooling, etc. in, for example, DREF applications/allocations and operations?	Yes / Maybe / No
SETTLEMENTS	• In site planning (especially in camp or camp-like settings), is there a need to take climate and weather information, land topography and anticipated risks into account?	Yes / Maybe / No
	• As above for Housing: Should past, current and future climate and weather information inform our dialogues and contributions to spatial planning, energy use, heat island risk reduction, shading, waste management, hygiene etc. (and, in places where relevant, also in relation to climate change mitigation: such as insulation, recycling, upcycling)?	Yes / Maybe / No
	• Is urban sprawl (the spreading of urban developments on undeveloped land near a city) affecting forest areas that are highly susceptible to, for example, wildfires or important to buffer the impact of flood risks?	Yes / Maybe / No
	• Are some urban areas suffering from poor urban planning so people face increased vulnerability in the face of climate and weather risks?	Yes / Maybe / No
	• As previously for Shelter: Could lifeline utilities (such as water supply, energy or transport) be affected by flooding or storm surges – new extreme levels?	Yes / Maybe / No
	• Are critical facilities (such as educational or health facilities) located in areas particularly exposed to climate change impacts?	Yes / Maybe / No
	• Could we optimize the choices of sites and site risk reduction measures in settlements (improve drainage, slope stabilization, based on weather patterns and climate predictions)?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
INFRASTRUCTURE	• Are housing areas or informal settlements located in areas of increased climate risk (e.g., flood-prone area)?	Yes / Maybe / No
	• Is there a risk that roads/railways/harbours are damaged due to increasingly intense rainfall, floods and storm surges, and sea level rise?	Yes / Maybe / No
	• Is insufficient waste management fostering blocked drainage and, hence, flooding?	Yes / Maybe / No
	• Could energy/electrical infrastructure and communications networks be unable to withstand gale winds/extreme wind situations, wildfires or freezing rain?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

F: Guiding section for programme screening on migration and displacement

According to the IPCC (2022), climate and weather extremes are increasingly driving large-scale displacement in all regions; climate-related displacement has generated and perpetuated vulnerability; and in the mid- to long-term, climate-related displacement will increase, particularly from regions with high exposure and low adaptive capacity.

Climate-related displacement and mobility is complex and different across regions, countries and communities, and leads to diverse humanitarian needs. There is not one type of climate displaced person or one type of climate migrant. For examples of this diversity, vulnerability and loss and damage associated with climate displacement along with the work of National Societies to address the needs of affected communities, please see the IFRC (2021) report: Displacement in a Changing Climate.

We need to recognize that risks are not evenly spread – the people most at risk from climate-related displacement are those who are already vulnerable, already marginalized and living in areas of high exposure and low adaptive capacity. In the table below we have collated a selection of relevant questions to assess climate-related risks in relation to migration and displacement.

F: Migration and displacement

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
UNDERSTAND WHERE MIGRATION AND DISPLACEMENT CAN HAPPEN DUE TO CLIMATE VULNERABILITY (BEFORE MIGRATION)	• Do we need to anticipate migration and displacement for communities impacted heavily by changing climate and weather extremes?	Yes / Maybe / No
	• Will we need to start dialogues about the last resort measure: moving people out of harm's way through planned relocation? (See Planned Relocation in the Context of Disasters and Climate Change: A guide for Asia Pacific National Societies (IFRC 2021).)	Yes / Maybe / No
REDUCE CLIMATE VULNERABILITY OF DISPLACED PEOPLE (BEFORE/ DURING / AFTER MIGRATION)	• Do we need to invest with more urgency through our resilience programmes in high-risk communities, including through DRR and strengthening adaptation?	Yes / Maybe / No

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *– for your context and region/operation?*
ANTICIPATE AND PREPARE FOR CLIMATE-RELATED DISPLACEMENT	• Can Forecast-based Financing and other anticipatory actions be designed to reduce the risks and humanitarian impacts associated with displacement. *This is particularly important as most of the climate-related displacement is associated with climate extremes, which are often seasonal and forecastable.*	Yes / Maybe / No
	• Can we invest in dialogues to support the integration of climate- and disaster-related displacement and other forms of human mobility into relevant national and regional laws and policies, including disaster, climate adaptation, risk reduction, and development? (This is connected to our work in the IFRC Disaster Law Programme.)	Yes / Maybe / No
	• Is the health and hygiene of displaced people impacted by the increased risk of climate extremes and can health and hygiene behaviours, especially during disasters and crises, emergency shelters, displacements, etc. be managed through increased preparedness?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

Additional relevant resources related to migration and displacement:

- Forecast-based Financing and disaster displacement: Acting early to reduce the humanitarian impacts of displacement, IFRC 2021.
- Displacement in a changing climate, IFRC, 2021.
- Disasters and displacement in a Changing Climate: The role of Asia Pacific National Societies, IFRC, 2018.
- Climate and disaster displacement: The importance of disaster law and policy, IFRC, n.d.
- Planned relocation in the context of disasters and climate change: A guide for Asia Pacific National Societies, IFRC, 2022.
- Responding to disasters and displacement in a changing climate: Case studies Asia Pacific National Societies in action, IFRC, 2020.

G. Environment and ecosystems

Please see guidance provided in the Nature Navigator, and in particular the Application Toolbox Annex F1.b on national-level entry points for Nature-based-Solutions for guidance on questions and resource materials.

H: Other work areas/sectors (add relevant areas of your own)

THEME	ISSUES TO CONSIDER *Consider how marginalized populations may be impacted differently*	RELEVANT? *- for your context and region/operation?*
	• Are vulnerable people and your related project activities likely to be impacted by current and changing climate patterns (heat/cold, rain/snowfall, storms and strong winds, droughts, sea level rise etc.)?	Yes / Maybe / No
	• Is there a need to adjust and change the project and associated strategies to prepare for the changing risks, help vulnerable people in at-risk communities and adapt to the increased risk levels?	Yes / Maybe / No
ENABLING ENVIRONMENT AND POLICY	• Are **National Society** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
	• Are **national and local government** policies and strategies related to livelihoods and food security ***insufficiently*** addressing climate adaptation and resilience – i.e., are they at risk of not covering future climate impacts?	Yes / Maybe / No
CROSS-CUTTING	• Could certain socioeconomic groups be especially vulnerable? i.e., Would women, the elderly, people with disabilities, at-risk youth, LGBTI+ individuals, ethnic groups and/or other marginalized populations, be disproportionately affected – and, therefore, require special attention when planning interventions?	Yes / Maybe / No

ANNEX 3. Examples of cross-sectoral climate-smart programmes

TABLE 9. Example considerations for climate-smart programmes and operations (adapted from Watkiss *et al.* 2020)

PHASE	CSPO CONSIDERATIONS	EXAMPLES OF CSPO
DESIGN DECISIONS MADE DURING THE CSPO PROCESS	• Do we need to change the location of our intervention to account for climate-related hazards? • Do we need to change the design of our activity to reduce the risks of climate hazards, in the short-, medium- and long-term? • Do we need to change the choice of material, technology, etc.? • Do we need to change the shelter/housing typology and resettlement options? • Are important disruptions expected in relation to water supply, groundwater, energy supply, pollution, etc?	• Moving a pond construction uphill away from a river, because the river reaches record high-water levels due climate change • Changing sowing times due to seasonal forecasts/climate projections indicating shifts in seasons • Changing to crop seeds that are heat-resistant due to increasing temperatures • Moving away from coastal areas or to higher ground due to projections of sea level rise • Building on stilts, or with construction methods that take weather patterns into account and allow people to better cope with increased floods and higher floodwaters • Moving a shelter uphill and changing the evacuation route because of the risk of new record-breaking flood levels
DESIGN FOR ADJUSTMENT DURING IMPLEMENTATION	• Flexibility built into the design • Modular or iterative design to enable later change – wait, observe, collect information and data, and revise if and when needed	• Establishing rigorous M&E system and connect to project management decisions
MAINTENANCE AND OPERATIONS	• Change in how technology, infrastructure etc. is maintained	• Making sure that newly paved roads do not prevent floodwater runoff and induce floods • Are the water storage and catchment techniques sufficient and safe from the impacts of climate extremes? • Making sure latrine constructions are appropriate to face flood risks
NON-TECHNICAL OPTIONS	• Institutional and capacity-building measures • Enhancing access to information, research and behavioural change • Financial and market-based measures (including insurance) • Advocacy for policy and legislative measures	• Medical training to improve awareness and treatment of climate-related health issues, especially heat impacts • Distributing weather forecasts via radio and SMS • Forecast-based Financing • Integrate information on climate extremes in DRR plans and strategies
OPTION TO DO NOTHING	• Live with the risks	

EXAMPLE from the INDIA RED CROSS SOCIETY: making better use of climate and weather services

Background: India is highly vulnerable to climate change. Extreme droughts, floods, heatwaves and water stress as well as decreased food production are worsening existing vulnerabilities brought on by poverty. For millions of people, particularly farmers, fishermen and those reliant on natural resources, the impact of climate-related disasters has already increased. The Indian Red Cross Society (IRCS) has been increasingly dealing with extreme disasters. Merely responding to disasters is insufficient. DRR and enhanced anticipation of disasters is essential.

Climate-smart elements: The IRCS has expanded its use of climate and weather services. In the process, it organized training for branches, using the modules from the Climate Training Kit (including the climate games) to increase early action options in response to alerts. For many IRCS branches, using forecasts from the Indian Meteorological Department is standard practice. A WhatsApp group called 'Weather Basics' was created by an unaffiliated group to improve proactive weather analysis, professional interaction and knowledge sharing on weather, climate change and related environmental issues.

Through this group, timely alerts combined with real-time information are provided to Red Cross disaster managers at headquarter and state branches levels. It's a platform for collaboration by Government, weather experts, disaster managers, the private-sector and others. Volunteers and CSO partners have also helped farmers register on the national portal to receive advisories as well as marine forecasts for fisherfolk as part of the Government's climate services.

In early 2019, the IRCS and the India Meteorological Department signed a five-year MoU, which includes joint work on: a) capacity building for volunteers on using weather forecasts and climate services; b) early warning of multiple hazards to increase community awareness and resilience; c) making weather and forecast data more accessible and usable; d) improving early warning systems, particularly for agricultural livelihoods and public health; e) post-cyclone analysis to improve impact-based forecasting and warning; and f) impact-based forecasting pilot studies in rural and urban areas. State Red Cross branches work with their local weather offices on early warning, capacity building and impact-based forecasts on a regular basis.

Outcomes: Villagers in 40 districts are regularly receiving national weather service alerts and early warnings via Red Cross volunteers on WhatsApp groups. Villagers alerted for floods in the 2019 monsoons did not lose their animals, compared to other areas where alerts had not reached as widely. In other regions, villagers have also been able to save their grain, cattle and personal property thanks to Early Warning Early Action, which branches have put into their core work on disaster management. This has led to better planned field visits, timely mobilization of volunteers and pre-positioning of stocks.

EXAMPLE of climate-smart disaster preparedness in MALI, with Partners for Resilience

Background: Torrential rains are commonplace in Mali and often cause floods. Over the past three decades, over 3 million people have been impacted by floods in Mali. Initially, the focus of the Partners for Resilience (PfR) programme within the Mali Red Cross Society (MRCS) was to strengthen contingency plans for disaster response; but, from 2017, the team also started to anticipate and prepare for floods. In 2020, parallel to the PfR project, the MRCS also developed an EAP for floods. Even in areas of Mali such as Mopti where man-made hazards are the main cause of stressors in the region, climate change exacerbates existing risks.

Climate-smart elements: PfR and local authorities started to interact with the communities in the region of Mopti to understand their needs and risk perceptions. In addition, PfR used hydrometeorological information through WhatsApp groups to help disseminate clear alerts on risks during the rainy season. Local engineers were mobilized to carry out topographical surveys and map the building of a dike. From that, they were able to develop a plan that was structured around three disaster preparedness and prevention scenarios: 'best', 'intermediate' and 'worst'. Those scenarios then triggered optional responses as the well as the mobilization of resources. In addition, the EAP in place uses seasonal flood forecasting to anticipate specific interventions including training communities, pre-positioning supplies and service contracting. Further action will be implemented once the the thresholds for 'green', 'yellow', 'orange' or 'red' alert systems have been surpassed such as warning message communication, shelter provision and reinforcement, and the distribution of NFI for disease prevention.

Outcome: Red Cross and partners started to take into consideration climate and weather information. Optimizing the use of weather information made it possible for communities to better anticipate and respond more quickly to disasters with pre-identified actions, which could more effectively and efficiently be implemented. The communities were also able to improve their coordination and have a better understanding of their roles and responsibilities in disaster prevention and response. As a longer term measure, the dike that was put in place made it possible to harvest water for additional activities, such as climate-smart agriculture based on climate information and stockpiling for times of scarcity. The EAP seeks to reduce the impacts of flooding on local communities by preventing loss of life, destruction of public infrastructure and the emergence of water-borne disease. Local actors in Mopti are now better prepared to deal with the torrential rains and longer term climate trends.

More information can be found at: Climate Action, examples from the Red Cross Red Crescent and partners.

EXAMPLE from the MALI RED CROSS SOCIETY: climate-smart livelihood activities

Background: desertification and losses in agricultural production are contributing strongly to the food insecurity of Mali – with changing climate conditions among the main drivers. Within the framework of the ECHO PPP, the MRCS conducted an internal assessment of the National Society's experiences and capacities in the field of climate-smart and environmentally sustainable livelihoods, with the support of its partners (Danish Red Cross, Spanish Red Cross and Luxembourg Red Cross) as well as the technical support and guidance of the IFRC Livelihoods Centre.

Climate-smart elements: For more than 20 years, the MRCS, together with partner National Societies in the country, has been reviewing climate trends along with medium- and long-term forecasts to assess climate change effects. These are one of the main drivers of desertification and losses in terms of agricultural production, contributing strongly to the food insecurity of the country. As a result of its first studies and experiences,[16] the MRCS started implementing climate-smart activities that promote livelihoods adaptation to climatic conditions and forecasts, mainly adaptation to drought and rainfall irregularities (delayed onset of the rainy season, shortening of the rainy season, dry periods during the rainy season, etc.) that affect agricultural and livestock production.

Half-moon cultivation in Kayes, Mali.

Production of hydroponic fodder crops, Mopti. (Photos: Mali Red Cross)

16 "Un Espoir dans le Désert", Mopti: Croix Rouge Malienne

Outcome: Among the experiences of the MRCS, the following adaptation practices stand out:

- Promotion and expansion of traditional techniques, such as the half-moon and *zai*, that capture and maintain soil moisture in the absence or scarcity of rainfall. These techniques increase production, especially if combined with organic compost and contribute to land restoration.

- Use of adapted or more resistant seeds to drought (horticultural crops, rice, etc.), or use of traditional animal breeds which are more adapted to the rise in temperatures and drought (both goats and poultry).

- Creation of farmer schools to train smallholders in climate-smart practices such as: composting, micro-dosing, pre-sowing seed soaking (a technique that improves seed germination in changing rainfall conditions), or crop association (a practice that boosts production by taking advantage of the properties of certain varieties such as leguminous plants to become natural fertilizer for other species).

- Hydroponic green fodder production which, in addition to ensuring low-water-use livestock feed, reduces the risks for small-scale livestock keepers in contexts of conflict and insecurity. This practice uses up to 80 per cent less water (1 kilogramme of fodder requires 2–3 litres of water, compared to 80–90 litres with other techniques) and is produced in 8-10 days.

- In addition, the MRCS has experience in the collection and dissemination of meteorological information, so that farmers can make decisions on their livelihood activities. MRCS also complements these dissemination activities with awareness-raising and information actions on climate change, its effects and adaptation and mitigation measures.

- To design and implement its climate-smart agriculture/livelihood programmes, the MRCS works closely with other national partners, mainly Meteo Mali (national weather service), regional technical services (agriculture, forestry, hydrology, livestock, etc.) and research institutes (such as the Institute of Rural Economy).
- (

Rain gauges and collection of meteorological information.

Zai (pit) farming method in Kayes. (Photos: Mali Red Cross)

Mali

EXAMPLE from the INDONESIA RED CROSS SOCIETY: a climate-smart DRR approach in the absence of downscaled climate and weather information

Background: With climate change leading to more heavy rainfall events, early warning signals from local streams and rivers are increasingly important. In most parts of Indonesia, high-tech flood warning systems are not yet available or affordable, particularly in remote villages. Vulnerable people in flood-prone areas frequently have clear high-water-level thresholds that they consider to be a risk that requires taking early action to mitigate. Commercially available early warning alarms are frequently prohibitively expensive for village governments and households.

Climate-smart elements: The Climate Centre assisted in the development of low-cost, easy-to-assemble community-based flood alarms for use by volunteers from the Indonesian Red Cross Society (IRCS) branches in North Jakarta and Bogor district. Together with the American Red Cross, a training session on how to make the alarms was organized. For the volunteers, a manual in Bahasa was also created. The alarm consists of a mechanical device with magnets and a doorbell that uses the surface energy of the rising water to activate the alarm sensor. The sound can travel far into the villages. The design has evolved over time and the alarm is now regarded as a useful warning mechanism, particularly at night in the rain, as well as a sensor for monitoring river water levels.

Outcome: IRCS branches in North Jakarta and Bogor district can manufacture and customize the alarm based on the materials available in the project areas. They have also trained volunteers and introduced the approach to local government and private-sector representatives. In addition, an insurance company provided financial assistance to the Bogor branch so that they could replicate the affordable flood alarms in several flood-prone locations in October 2019. The PfR Indonesia Catalogue of Best Practice was published in Bahasa last month, and makes public the guidelines for the development of an affordable flood alarm.

EXAMPLE from the KENYA RED CROSS SOCIETY: addressing diarrhoeal disease

Background: Back in 2010, diarrhoeal disease caused the death of 8.8 per cent of children under five years old in Kenya. It is known that often diarrhoeal disease is related to heavy rainfall, flooding and drought, all of which increases the likelihood of water contamination. According to the latest climate projections (IPCC AR6) it is likely that, in a 2°C warmer world, thousands to tens of thousands of additional cases of diarrhoeal disease can be expected, mainly in West, Central and East Africa.

Climate-smart elements: Aiming to tackle this problem, the Kenya Red Cross Society (KRCS) developed a project in 11 villages to improve water and sanitation facilities. The KRCS integrated project work from the start with existing diarrhoeal prevention materials used by health officials working on local programmes with communities in Nyando. Public health officers assisted with training as well as monitoring and evaluating hygiene and sanitation efforts. Also, the KRCS developed a contingency plan based on climate and weather information monitored by the community. The prevalence of diarrhoea and malaria was monitored before, during and after floods, and early warning committees assisted people in recording traditional triggers for early preparation.

Outcome: Beneficiaries learned improved techniques for building latrines. Early warning information to promote health and hygiene was disseminated prior to heavy rainfall events; one endline survey found that the proportion of respondents receiving early warning information had increased from 69 per cent to 87 per cent. 260 community members and 50 Red Cross Nyando branch volunteers received community-led total sanitation training during the project period. These experiences can guide the scaling up of similar efforts to larger areas expected to be increasingly affected by water contamination in a changing climate.

Source: Coughlan de Perez *et al.* (2014). Further information can be found in Health risk management in a changing climate.

Kenya

EXAMPLE from the ZAMBIA RED CROSS SOCIETY: investing in climate-smart agriculture

Background: Zambia is in the tropical south-central region of Africa. The rainy season begins in the middle of November and lasts until April. Rainfall is generally highest in the northern provinces of Zambia, decreasing from north to south. The Zambezi River is the longest river in Zambia and its upper sector passes through flood plains and swamps. The river is important for millions of people in Zambia for health, agricultural and economic benefits, but climate change coupled with environmental degradation has intensified the annual flooding seen along some stretches of the river, displacing and affecting hundreds of thousands of people each year, and people live in a perpetual and devastating cycle of displacement and suffering.

Climate-smart elements: The IFRC and the Zambia Red Cross Society acted to strengthen community capacity towards disaster preparedness and increase food security. Through partnerships with government departments of agriculture, meteorology and veterinary services, they trained lead farmers in communities to work with seasonal and weather information, so they could act as persuaders in adopting new methods within their own communities, where they were known and trusted.

Outcome: The training helped the communities to increase awareness and prediction of dry and flood seasons, so they could adopt drought-coping strategies when needed. These skills have enabled communities to grow a range of different crops that are drought- or flood-resilient. Additionally, cultivation in swamps, depending on seasonal factors, was promoted. With the training on climate and weather information, the communities in Zambia were able to develop and adopt new strategies that increased their resilience to climate change.

Sources: Source: Muringai, *et al.* (2022) and Zambia Red Cross Society, Building resilience among households in the Zambezi River Basin (2016).

EXAMPLE from the INDONESIA RED CROSS SOCIETY: climate and weather information in support of fishermen

Background: Indonesia's weather can be very erratic, with abrupt monsoons and typhoons having an impact on many of the nation's islands, particularly coastal communities. In Indonesia, the amount of rain can vary greatly between the dry and wet seasons. Erratic seasons are increasing as a result of climate change along with as the frequency and severity of extreme weather and climate events. For many Indonesian fishermen it has become increasingly difficult, with more uncertain weather, to decide when to set sail with their nets.

Climate-smart elements: Fishermen from Cilincing, north of the capital Jakarta, received specialized training from the Indonesian Red Cross Society and its allies, including the American Red Cross and the Climate Centre. The training focused on helping fishermen and their families access and interpret available forecast information so they can better plan for safer trips to sea. The fishermen were introduced to online tools by the Meteorological, Climatological and Geophysical Agency of Indonesia as well as the Ministry of Marine Affairs and Fisheries. Here, they could receive forecasts of the weather to indicate suitable fishing grounds. In this initiative, the children and wives of the fisherman were invited to the training too. Youth in particular were welcomed to assist with accessing the online prediction data, since they are often more accustomed to using online tools.

Outcome: The fishermen are now accessing the online information. Before deciding to go fishing, more fishermen are actively monitoring marine weather forecasts. To continue the learning process and discuss the upcoming forecast and information on other weather-related topics, several WhatsApp groups of training graduates have been established in different regions (e.g., on floods and tropical cyclones).

KENYA RED CROSS investing in long-term adaptation

Background: After many years of food insecurity, crop failure and dependence on relief in the country, the KRCS started to work with local farmers and the Kenya Agricultural and Livestock Research Organization to develop more drought-resistant crop varieties, including cassava. This will enable the farmers to adapt to a future with more frequently recurring droughts and floods. While the climate projections for the country predict shorter dry spells, they also predict more severe dry spells (USAID Atlas 2018, Climate Risk Profile, Kenya).

In 2012–2014, in the aftermath of drought that affected millions of people, the KRCS helped to reinforced the climate-resilience of food supplies, which paid multiple dividends in Machakos, south-east of Nairobi.

> "We can see a bright future for our farmers,"

says David Muoka, a member of the Yatta Farm Growers and Processors Community Based Organization, in the film Mbaitu tuvandei manga ("Let's plant cassava").

> "It's the only crop that can do well, come drought, come floods,"

Muoka explains.

> "With the modern way of life, most people had abandoned cassava, but now we are going back to it because of climate change."

With their profits from adding value to newly harvested cassava, the Yatta farmers have bought processing machinery and are on the verge of what may be – proportionately, at least – a local agricultural revolution.

> "We chip it, dry it and mill it,"

says Muoka; with cassava products like bread, chapattis and doughnuts, an income emerges that can a lift a community out of subsistence farming altogether.

When the Climate Centre first visited Machakos to document a case study on the climate-smart cassava, it found the KRCS helping communities decide their own development priorities.

> "We have big plans to build a cassava factory, to try and industrialize the village,"

David Muoka said then.

> "This is our wish, God willing."

Mbaitu tuvandei manga was made with the assistance of the KRCS and the support of the UK-based Climate and Development Knowledge Network.

Kenya

EXAMPLE of BANGLADESH building community resilience through climate change adaptation

Background: Bangladesh is inherently exposed to coastal risks because it has a huge low-lying coastal area. In recent years, Bangladesh has become world famous for its Cyclone Preparedness Programme (CPP). The programme has saved countless lives over the years and is regarded as a model of community-based early warning. But the country faces a wide range of climate impacts in addition to cyclones: riverbank erosion, waterlogging, temperature extremes, excessive rainfall, landslides. All of these increase people's vulnerability. Traditional practices and local knowledge have reduced some of these impacts, but the 'random intensity of hazards due to climate change', as a Bangladesh Red Crescent Society (BDRCS) newsletter put it, poses major challenges.

Climate-smart elements: Efforts such as the 'Cyclone Preparedness Programme' and 'Building Community Resilience through Climate Change Adaptation', developed by government authorities and the BDRCS, improved knowledge management and minimized gaps in traditional practices. The latter was implemented in 2011–2014 by BDRCS, with technical support from the IFRC, and was funded by the Canadian Red Cross. Vulnerability and capacity assessments were undertaken to identify local needs and priorities. The programme also made full use of the National Society's risk reduction expertise. As part of the programme, the BDRCS developed an adaptation strategy and set up a new climate knowledge centre to raise awareness and showcase its work. Community-based Early warning systems were strengthened in collaboration with the Bangladesh authorities and national weather service.

Outcomes: The project's five thematic areas – communications, advocacy, integration of climate change into existing work, assessing community risk, and partnership – were agreed at a regional workshop. Examples of highlights from project activities included a boat design capable of protecting fishermen in rough seas, a project that facilitated community-owned seed banks, and climate-resilient shelters. The programme was integrated in the BDRCS's disaster risk management strategy for 2010–2014.

EXAMPLE: Kenya green belts

Background: Dadaab, founded in 1991 during the civil war in neighbouring Somalia, now houses over 200,000 refugees and asylum seekers across three camps and is one of the largest refugee complexes in the world. Many of the crises that refugees in Dadaab had fled have been ongoing for a long time, which means that many people have grown up here. The camp is in Garissa County, a semi-arid region of north-eastern Kenya that is prone to soil erosion and drought. The KRCS has been present in the camp since its inception. As the camp's population grew, the land was being cleared for firewood; and the situation was exacerbated by a drought in the Horn of Africa in 2011/12, which also affected the land around Dadaab and resulted in a new influx of refugees.

Climate-smart elements: This example builds on KRCS's knowledge of the projected changes in climatic conditions in the region as well as the evidence of deteriorating conditions caused by a combination of factors. These include vulnerable people forced into crowded conditions with limited alternatives to unsustainable land use and water resource practices in a semi-arid zone with low carrying capacity. The programme combined drought-risk management and nature-based solutions to reduce soil erosion through enhanced water management. Priority was given to the need for land rehabilitation. In the camp, specific land was set aside for this purpose, both to provide for livelihoods and to protect the camp itself from the effects of drought. Green belts were built around the camp as part of the project. The project started with a feasibility study to determine which tree varieties should be planted on the degraded land. Because of their adaptability to the local arid conditions, indigenous trees were chosen. After the trees were planted and actively managed for two years, the green belts naturally regenerated without the need for management or irrigation. The project also used engineered irrigation methods to support crop production for livelihood and food security needs, with these co-benefits helping to engage the community in the project. The enhanced land and water management practices will always provide benefits no matter how the climate may develop, so are excellent examples of no- or low-regret options.

Outcomes: Local communities in the camp were heavily involved in the project's implementation. This has increased forest cover of 104 hectares from green belts and 70 hectares from indigenous trees, reducing drought-induced material losses to land, crops and livestock. The project has restored the land to the point where wild animals can return to their natural habitat. The green belts also serve as a barrier against sand and wind.

EXAMPLE: Vanuatu urban resilience

Background: The Global Disaster Preparedness Center (GDPC) has created and tested tools and services to help National Societies improve citywide collaboration on climate-smart resilience and coastal risk reduction. The programme complements and expands on existing civic processes led by local government by bringing together stakeholders such as the business community, universities and community organizations to form a network that focuses expertise, capabilities and resources on priority risks confronting vulnerable communities located in cities. For example, in 2017–2019, the Vanuatu Red Cross Society (VRCS) piloted the Building Coalitions in Cities Programme in Luganville with assistance from the American Red Cross.

Climate-smart elements: The number of people exposed to hazards, shocks and stresses in urban areas is increasing rapidly, resulting in their increased fragility and vulnerability. Therefore, there is an increasing need to help more urban communities in carrying out climate-smart resilience activities that are tailored to their specific circumstances, including likely changes in the frequency and severity of weather-related disasters. After assembling a small programme team, the VRCS contacted partner groups to talk about how to tackle citywide resilience in Luganville, the largest city of Vanuatu. Over the course of three one-day meetings, the group conducted a citywide risk assessment. This revealed vulnerable communities, possible dangers and shocks, and how fundamental systems might be exposed to new and more extreme weather and climate events. This method gave participants a greater understanding of their roles, capabilities, and the necessity of teamwork as well as the links between urban systems and these threats. Enhanced awareness of changing risks and preparedness efforts are key in managing changing risk patterns; as are low-regret options to deal with climate change.

Outcomes: To spread important information about resilience-building and catastrophe preparedness, a communications plan was devised. Activities included broadcasting a series of SMS messages to residents; radio announcements and a guest speaker on a weekly talkback show; posters and brochures distributed across communities; an open Facebook group that was established to share information and concerns; community video and theatre nights that were held in communities showcasing climate change resilience videos; community fundraising stalls; and a performance from a popular theatre group.

ANNEX 4. How to collaborate with national weather services on climate information across timescales

In addition to the guidance provided in Chapter 3, this Annex offers a few more insights and tips on the use of climate information across timescales. Initiating or continuing dialogues with your NMHS can seem difficult or even intimidating at first, if you have not yet had this experience. It is important to keep in mind that you have a serious mandate to save lives and any information that can help you do this should be explored together. It is best to first explain your own work and why it's important in this context to anticipate any extreme weather events or erratic seasons, so that you can be better prepared when disasters strike. And, in the long-term, you could explain why it's equally important that your DRR and/or resilience investments can withstand any impacts of climate change. You are there to improve the collaboration around forecast products that can help to save lives – and it's more effective if we are all able to understand the forecast and coordinate and collaborate around warnings. In your initial explorations, you may even consider inviting a couple of like-minded partners.

Discussing with the national weather service what you already know

When you have initial explorative meetings with the national weather service/NMHS, it will be important to start the discussions with what you already know and explain clearly what you are looking to improve in your work. You can describe to experts the concept of climate-smart programmes and operations (Chapter 1), and how you would like to take a step further towards (or build on your) Early Warning Early Action (EWEA) approaches. EWEA is the overarching principle which brings National Societies and NMHSs together. IFRC characterizes this as: '*Routinely taking humanitarian action before a disaster or health emergency happens, making full use of scientific information*'. Action planning requires using forecast information for insights into what may happen in the future.

The jargon used by climate service providers can be hard to understand, so it is a good idea to indicate which terminology is new to you. Starting the discussion by explaining: a) your own work; b) what you, your colleagues and the communities you work with already know; and c) what you would like to achieve with the climate and weather information across timescales, can steer the conversation in the right direction. In many cases, we already have a good sense of how the climate impacts people, livelihoods and regions. We have experienced or seen the impacts of droughts, floods and high temperatures. Looking back at how climate- and weather-related events have impacted in the past provides a useful starting point, including for identifying jointly the further information you need. Additional tips on what to ask for and what not to ask for in the discussion you have with climate service providers are offered in the Red Cross Red Crescent guide Collaboration with national climate and weather agencies.

It is important to keep in mind that the national weather service is legally the sole and official disseminator of warnings. This mandate is likely to cover daily to seasonal forecasts (i.e., shifts in total rainfall from what is expected on average) to extreme climate events (e.g., the chance of tropical cyclone impact in a few days' time). In some cases, the mandate for issuing warnings

falls to the national disaster management authority. If Government agencies are responsible for early warnings, they cannot delegate this task to third parties such as a National Society. However, the National Society can still have a role in awareness-raising in the communities it serves, so people know the proper early action to take when warnings are issued and have a good understanding of the longer term impacts of climate change. It is worth noting that in some countries the National Society does have a formal collaboration with the Government and national weather service – such as through the Bangladesh Cyclone Preparedness Programme – so is mandated to deliver early warnings to at-risk populations.

The importance of the co-production process: climate services with and for National Societies and communities – reaching the last mile

This section explains how we can ensure the National Society and communities can make better decisions based on climate and weather information. The National Society should seek a type of collaboration with climate and weather service providers that allows co-production of climate and weather tools. Co-production is based on building a common understanding of information needs, building trust between climate scientists and those who will use the information. This means, climate service providers and National Societies should engage in a co-production process around the development and use of climate and forecast information to ensure that this information is relevant and applicable to the National Societies and end-users in communities.

It takes time and effort to build a common understanding of the climate information needs in a particular context. Climate scientists have their own definitions of climate hazards, which do not always align with how vulnerable people may experience them. For example, communities might describe the negative impacts of droughts and so National Societies may want more information about droughts along with forecasts of droughts. However what communities understand as 'drought' might be very different to how climate scientists define 'drought'. This could lead to irrelevant information being provided.

The building blocks of co-production (building on models developed by AMMA-2050, *Visman et al., 2017b and KCL engagement in two BRACED consortia projects in Visman et al., 2018 and WISER 2017)*

A very important aspect in reaching the last mile – or bringing climate information into actual decisions at community level – is the reliability of the information. Much climate information is provided without clear indications of how reliable or skilful it is. Often this is because it is difficult to evaluate reliability without knowing how the information is going to be used. While information about future changes in rainfall may be appropriate for national-level strategic planning, the same information may not be appropriate for planning agricultural interventions within a small district. Many climate service providers rely strongly on a few climate data sources that are not appropriate or reliable in a particular context. Building trust and collective understanding of the decision context, along with a basic understanding of the climate information provided in this Guide, should help National Societies to ask relevant questions about the appropriateness and reliability of climate information products.

We have described some of the sources of uncertainty in climate information in this Guide. How uncertainty is evaluated and presented in climate information products is very important. If the uncertainties are hidden or underestimated, planning processes may fail to consider plausible and impactful futures (and maladaptation, Box 9). The reduction and representation of uncertainty should take place in a dialogue between the climate service provider and the National Societies and other partners. This process cannot be rushed as it requires an ongoing dialogue and a lot of trust-building between scientists and other stakeholders.

Decision-making regarding climate-smart interventions also calls for co-production, often with a broader set of stakeholders with cross-sector knowledge as suggested in Figure 4 (Chapter 2.1).

Further process information can be found in the full brief: Building blocks for co-producing climate services, Future Climate for Africa, 2020.

BOX 22. Example of a climate information co-production approach: Impact-based Forecasting

Impact-based Forecasting is a way to address rising climate- and weather-related risks. Decisions based on weather information are used to mobilize funding and take action before a potential disaster strikes, to minimize the socioeconomic costs of weather and climate hazards. Organizations and individuals can make critical decisions to ensure that resources and supplies are in place to take early action and respond as soon as it is safe to do so. Producers of forecasts and warnings provide critical information to help reduce life-threatening impacts from climate- and weather-related disasters.

An impact-based warning will not describe what the weather will be, but rather **what the weather will do**, including **when (a)**, **where (b)**, **what (c)**, and **how likely (d)** the impacts are. You can see an example of a regular forecast of a tropical cyclone compared to an impact-based forecast compiled for the public.

Photo: GRC-BDRCS forecast-based financing, cash distribution in Noakhali district of Bangladesh for Cyclone Mora, 29 May 2017. (Canton Pious Rozario/DRK)

What if weather information from the national weather service is not provided to the National Society or IFRC; or it is not accessible from the service's website, or not easily understandable or interpretable?

Sometimes it can be difficult to access information from the national weather service. As indicated in Chapter 3, the NMHS is the main source of information about the weather so it is important to work closely with the national weather service, which is legally the only mandated body for the dissemination of forecasts in your country. There are other (international) information sources, such as the US National Oceanic and Atmospheric Administration and the UK Met Office, that can be tapped into if there is a gap in the information from the national weather service; however, the detail is often quite difficult to interpret, so it is a good idea to ask for their or the Climate Centre's support in making it clear. Regional climate centres, especially the regional outlook forums can also be great resources such as GloFAS, the Global Flood Awareness System; but these might similarly be challenging to interpret. Lastly, IFRC is developing a risk watch for the go.IFRC.org platform, which will offer information in the future to complement this information flow. While the detail will not be enough for the development of Early Action Protocols for Anticipatory Action, it will be helpful in the absence of, or lack of access to, any other sources of weather information.

Uncertainties in climate information

Forward-looking climate information is inherently uncertain. The primary tools for projecting future changes in climate are global climate models. No climate model is perfect, as the coupled ocean–atmosphere (and ice, land surface, vegetation, etc.) system is so complex that climate models need to make simplifications and assumptions. We also simply do not know yet how GHG emissions will develop over time and, therefore, how that will impact climate change.

Hazard	Regular forecast	Impact-based forecast for individuals/ members of public
Tropical cyclone	A tropical cyclone Category 3, windspeed of 125 km/h is expected in the next 48 hours.	A tropical cyclone Category 3 (c), windspeed of 125 km/h is expected to make landfall in 12 hours (a), in X and Y regions (b), likely to damage critical infrastructure such as bridges, blocking transport from region X to region Y (d)

It is crucial to know the needs of the users of the forecast and adapt the message to them. In addition, it is important to analyse the risks and provide information on how to reduce these, who to collaborate with and how to disseminate the impact-based forecast. For more information on how to transform weather- and forecast-based information into actions for DRR in communities, please refer to: https://www.ifrc.org/happening-now/emergencies/anticipatory-pillar-dref.

To understand more about Impact-based Forecasting and how to implement it, please see The future of forecasts: impact-based forecasting for early action and a short video Introduction to impact-based forecasting.

Annex 4

Depending on the hazard, the location and the time horizon (how far into the future you're exploring) climate projections from multiple models (and across multiple emissions scenarios) will encompass a wide range of possible changes (in, for example, temperature or rainfall). In some cases, projections of changes in rainfall could range from significant increases through to significant decreases, though this is quite uncommon. Temperature-related measures often involve much less uncertainty.

Uncertainty should not be a barrier to action, rather it should guide our strategies and planning to ensure that we continue to evaluate the changing climate, continue to update information, and develop robust plans that can cope with multiple climate futures. While it is often desirable to make assumptions about which futures are more likely, it is generally more robust to engage with the uncertainty and plan for multiple plausible futures – instead of relying on the most likely future and risk making decisions that can lead to maladaptation (see Box 9).

Downscaled information and challenges in data-poor regions

Rely on general information, or try to 'zoom in'?

The global climate models used for long-term climate projections provide information on a coarse scale. This may be enough for most purposes: much climate-smart planning can be done based on the general trend information, such as higher climate variability, hotter weather, changing rainfall patterns, sea level rise, glacier melt, etc.

However, the general climate pattern may have different effects depending on the local landscape, such as much higher rainfall in

AN EXAMPLE of an MoU or agreement with the NMHS

If the initial collaboration between the NMHS and National Society moves forward towards a more long-term partnership, you may need a formal written agreement in which you jointly specify the areas you will collaborate on to advance shared objectives. Here are some items to consider:

1. The [xxx] Red Cross/Crescent Society is committed to strengthening community resilience, disaster risk reduction and disaster management. [xxx] NMHS provides observation forecasts and warning services on weather-related disasters in different spatial and time scales including xxx (e.g., 3-hour forecast), short/medium range (up to seven days), extended range (up to two weeks), seasonal forecast for temperature and monsoon (four months for rain, three months for temperature). XXX [NMHS] will provide this forecast to XXX Red Cross/Crescent Society on a regular basis through [xxx].

2. For collaboration and the proper exchange of information there will be cooperation at the national, district/provincial/sub-national level.

3. For capacity building to strengthen community preparedness the Red Cross/Crescent Society will organize Training of Trainers at the national, state and district levels and XXX [NMHS] will provide resource personnel and knowledge support for understanding and interpreting weather monitoring and forecast information.

4. XXX [NMHS] at present issues an impact forecasts for cyclones. A joint effort will be made by the Red Cross/Crescent Society and XXX [NMHS] by taking on a pilot study in x districts to develop impact-based forecast with respect to [heatwave, cold wave, heavy rain leading to floods, etc.]

5. XXX Red Cross/Crescent Society and XXX [NMHS] will work jointly to improve the communication of weather forecasts and warnings to at-risk communities, building on the current digital/media tools, supplemented by Red Cross/Crescent Society outreach through its staff and volunteers.

6. XXX [NMHS] will collaborate with XXX Red Cross/Crescent Society to raise awareness on weather monitoring and forecasting, including extreme weather forecasting, as part of the community-based preparedness programme of the Red Cross/Crescent Society starting with xx districts.

high mountain areas, or more intense heatwaves in large urban areas. Therefore, it is always worth seeking advice on whether downscaled (zoomed in) projections are needed and available for taking relevant climate-smart decisions. Contact your national weather service for guidance on what's feasible or seek general advice from the Climate Centre.

Working with climate information in data-poor environments

The long-term climate projection will be available for all parts of the globe (see 'Climate information to consult during the assessments' at the end of Annex 1) and can guide general climate-smart planning. But for shorter timescales – in particular short-term weather forecasts – there are many parts of the world with no or limited climate information available for the project or operation area. A lack of reliable weather and climate information will hamper the local capacity to respond to climate risks, or to engage in impact-based forecasts (see Box 20 and Figure 5) and Anticipatory Action. In such data-poor areas, or where the NMHS has limited capacity, National Societies can seek support from the Climate Centre and/or research institutions to identify the most suitable options (see also Accessing and using climate data and information in fragile, data-poor states, Mason *et al.* 2015).

Furthermore, it is essential to make use of local knowledge on historic and changing climate patterns, particularly in areas without sufficient climate information data. This can be done through participatory approaches (see also EVCA) and by using complementary environmental screening/assessment tools (see also NEAT+).

Kenya Red Cross Society conducted a multistakeholder simulation exercise on 9–19 March 2022 to test the application of its Early Action Protocols. (Photo: Denis Onyodi/KRCS)

ANNEX 5. Climate considerations in selected components of the PER mechanism

Chapter 4.1 provides an example of how the Preparedness for Effective Response (PER) already includes climate considerations in some of its components. This Annex contains a more in-depth summary of the most relevant PER components to reflect on in climate considerations.

The numbered *components* and *standard* benchmarks (only some relevant benchmarks included) in the tables below are direct quotes from the current National Society PER mechanism guidance (collapsible document), while the text under *climate and environmental considerations* is aligned with the latest technical guidance, including this Guide.

All climate-smart activities are marked in **red** while the sustainability-related activities are **green**.

Policy, Strategy and Standards

COMPONENT 2:
DRM Strategy

Description: An outline of the overall goal that the NS seeks to achieve in its disaster and crisis response operations. The goal considers: context analysis, ongoing/regular all-hazards risk assessments: it may define the target proportion of affected population that will be reached, and a definition of the areas/sectors where an NS will usually respond during an emergency.

Climate and environmental considerations:

- The National Society's DRM strategy acknowledges the importance of using climate information across timescales in designing/adjust1ing activities and gives direction to adjust hazard and risk analyses and operational strategies where needed, based on the most recent climate change projections for the country and region.
- National Society's DRM strategy commits to the principles of Green Response

Analysis and Planning

COMPONENT 6:

Hazard Context and Risk Analysis, Monitoring & Early Warning

Description: Describes how the NS monitors and maps past, present and potential hazards, disasters and crises (e.g. hazard, vulnerability assessments, gathering information from communities and government authorities) and systematically evaluates the damage that could be caused by a potential disaster/crisis, the frequency, severity of the impact, and then alerts the relevant areas to scale the preparedness actions to reduce population vulnerability.

Standard Benchmark 6.4: Early warning system is established and includes thresholds (including for slow-onset disasters) and required mechanisms to communicate and activate early action.

Standard Benchmark 6.5: Updated national multi-hazard risk analysis and maps (including changing risks patterns) shared with all branches at least once every two years.

Climate and environmental considerations:

- The National Society monitors weather and seasonal forecasts and receives weather warnings or warnings for the upcoming season, especially in high-risk areas.
- The National Society has conducted an assessment or collected an existing analysis of the major climate and environmental issues within the country such as the most recent climate change projections, climate change impacts within different sectors and geographies, and information on deforestation, freshwater pollution and natural resource exploitation.
- The National Society includes climate and environmental considerations in its multi-hazard risk assessments, including mapping locations of potentially high vulnerability to climate change impacts and of environmental hazards such as landfill sites, tailing dams, chemical and fertilizer factories or stores, hydrocarbon fuel storage depots, and sewage treatment plants as well as the possible presence of environmentally hazardous materials in buildings or manufacturing operations such as asbestos.
- The National Society has conducted or collected a physical mapping of key environmental assets such as natural protected areas, key natural resources (and their health/status) and culturally important sites.

Analysis and Planning

COMPONENT 7: Scenario Planning

A set of practical operation plans that closely mirror the generic disaster or crisis response plan but are tailored to a specific hazard type (e.g. earthquake, dengue epidemic, floods, cyclone) and a specific scenario (i.e. number of people affected, their locations and other important factors).

Standard Benchmark 7.1 Analysis of scenarios is multi-sectoral (e.g. health, livelihood, protection) and includes identification of drivers (root causes of risks) and assumptions to inform potential impact.

Standard Benchmark 7.2 NS has developed humanitarian scenarios for each high-risk area in the country and contingency plans are aligned with those of the public authorities.

Standard Benchmark 7.7 Contingency plans for high risks are developed and reviewed on an annual basis.

Climate and environmental considerations:

- Scenario planning considers that extreme weather can strike in an unprecedented manner (and harm highly exposed people who were already affected), and contingency plans need to be revised with new worst-case scenarios in relation to future risk levels and extreme events.
- Scenarios and response strategies include an understanding of areas of high vulnerability to climate change impacts, differentiated climate impacts on the most vulnerable groups, local risks and environmental hazards such as sanitation and solid waste systems, including the capacity for the collection or clearance of disaster and hazardous waste, materials that can be locally recycled and the capacity and location of any medical waste management systems.
- The National Society's scenarios and response strategies include an understanding of local household energy sources, delivery systems and their capacity to support emergency response.
- The National Society's scenarios and response strategies include an understanding of local community use of natural resources and their role in emergency response (including risks of natural resource depletion as well as opportunities for the sustainable management of natural resources).
- The National Society's response strategy looks at the use of local building materials and technologies, production and supply chains, and how those can be adapted/strengthened to support emergency response (risk of alien shelter solutions, maladaptation is overlooked).

Operational Capacity

COMPONENT 14: National Society Sector-Specific Interventions (with multiple Sub-Components and Benchmarks)

Sector-specific or services provided by the NS in case of emergencies. It is in line with the NS mandate and legislation in-country. It includes chemical, biological, radiological and nuclear (CBRN) preparedness, community-based DP/DRR, epidemic and pandemic, evacuation, first aid, food security and livelihoods, health in emergencies, management of dead bodies, restoring family links, search and rescue, shelter, transition to recovery, and WASH

Climate and environmental considerations:

- The National Society assesses the impacts of climate change, especially likely weather and climate extremes in relevant National Society Specific Areas of Interventions, and translates this information by adjusting or adding to the proposed activities.
- The National Society conducts basic environmental screening on this area of intervention; for example, by using the NEAT+ tool. The National Society is aware of sector-specific environmental standards, such as those for shelter and WASH contained in the SPHERE standards; also, the sectoral recommendations in the IFRC Green Response: Environmental Quick Guide.

Operational Capacity

COMPONENT 18: Emergency Needs Assessment

Description: Assess the extent and impact of the damage caused by the disaster/crisis and the degree of vulnerability of the affected population. The first step in any emergency response, such an assessment will identify the needs that require external intervention and the gaps to be filled. It is a vital component of the programme-planning process.

Standard Benchmark 18.7:

The Emergency Needs Assessment should analyse secondary risk, specific needs/concerns of vulnerable people/coping mechanisms/early and self-recovery.

Climate and environmental considerations:

- Emergency multi-sectoral assessment team members are trained on basic environmental considerations in emergencies and know how to record and report information and findings. The information collected feeds into environmental screening of programmes and operations (e.g., using tools like the NEAT+).
- Climate and weather-related risks are considered at each assessment stage, and collaborations to obtain this information are established with the national weather service and specialists contacted with impact-based forecast questions, especially relating to elevated risks in specific operational areas in the coming days and months.
- In the early stages of the emergency, the assessment focuses on understanding how short-term weather-related risks (and potentially also seasonal forecasts, if available) could affect the overall emergency operation. (Also, a general awareness of how climate variability, including the possibility of new and record-breaking extremes and changes might affect the area, is useful).
- Later assessment stages focus on medium- and long-term timescales, with information on sectoral climate impacts, to guide the recovery phase and any subsequent long-term programmes/operations.

Coordination

COMPONENT 25: Coordination with Authorities

Description: Mechanisms that facilitate coordination and cooperation with local and national authorities. It is connected to the NS's auxiliary role for humanitarian assistance.

Climate and environmental considerations:

- The National Society engages and coordinates with Government agencies such as ministries and/or departments of agriculture, climate change, energy, environment, fisheries, forestry, land use and planning. and water and sanitation,
- The National Society understands the mandates of the disaster/civil protection authorities and the national weather service and has discussed coordination on early warning dissemination. It has identified its auxiliary roles and responsibilities with these actors.
- The National Society acts as an auxiliary at municipal level to ensure that the roles and mandates of its city branches are reliable and proactive partners of local authorities on preparing and responding to the impacts of climate change in urban settings.

Operations Support

COMPONENT 31:
Operations Monitoring, Evaluation, Reporting and Learning

Description: The Participatory Monitoring, Evaluation, Reflection and Learning (PMERL) is designed to implement a results-based planning, monitoring and evaluation system that provides an evidence base of NS performance, including relevance, efficiency, effectiveness, sustainability and impact. A reliable and trusted organization is accountable, providing transparent and timely information and building systems to strengthen data collection and reporting. It is data-driven, analytical and results-based.

Climate and environmental considerations:

- The National Society captures learnings related to the use of climate information across timescales in operations, including choices made and the implementation of activities.
- Where a climate-related disaster has affected a project implementation or emergency operation, evaluate if the activities were able to withstand the impact of the disaster, and/or if you would have done anything different had you been aware in advance that this could happen during the implementation of your activities.

In Kenya the communities in high-risk areas were registered and supported to move to higher ground. (Photo: Swabira Abdulrazak/KRCS)

ANNEX 6. Glossary

Compiled by Climate Centre in April 2023, this generic Glossary may be updated or adjusted and the latest version is available at climatecentre.org.

TERM	DESCRIPTION	SOURCES[17]
Adaptive capacity	The ability of systems, institutions, individuals (both human and non-human organisms) to adjust to potential damage, take advantage of opportunities, or respond to the consequences of climate impacts. It is important to note the difference between coping and adaptive capacity. While coping aims to maintain the system and its functions in the face of adverse conditions, adaptation involves changes and requires reorganization processes.	IPCC, 2014
Anticipatory Action (AA)/ Early Warning Early Action (EWEA)	A set of actions that are taken to prevent or mitigate potential disaster impacts before a shock or acute impacts of a shock are felt. These actions are carried out in anticipation of a hazard impact and are based on a prediction of how the event will unfold (early warning systems). Anticipatory actions should not be a substitute for longer term investment in risk reduction but contribute to managing residual risk.	Anticipation Hub, 2020
Climate	Description of the average, long-term weather conditions in a given area, over an extended period. The WMO understands climate as the average weather over a 30-year period. Most commonly, variables such as temperature and precipitation are included in the understanding of a climate of a given area, and a more nuanced understanding incorporates variables such as wind, air pressure or humidity, for example.	IPCC, 2014; WMO, 2019
Climate action	The urgent steps taken to combat climate change and its associated impacts. This includes measures taken to strengthen the resilience and adaptive capacity of individuals and communities to climate-related hazards. Climate action is the focus of Goal 13 of the UN Sustainable Development Goals.	ECOSOC, 2019

17 This glossary follows the definitions of leading institutions (IPCC, UNDRR etc.), with alterations in wording to improve accessibility to a non-expert humanitarian audience.

TERM	DESCRIPTION	SOURCES[17]
The Climate and Environment Charter for Humanitarian Organizations (the Charter)	This document aims to foster a strong commitment to climate action across the humanitarian community. It outlines seven commitments to guide the humanitarian sector's approach to: a) increasing risks resulting from climate change; and b) address its own carbon and environmental footprint.	Climate Charter, 2021
Climate change	A significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer) that is attributed directly or indirectly to human activity (e.g., deforestation, GHG emissions) that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.	IPCC, 2022; UNFCCC, n.d.
Climate change adaptation (CCA)	The actions taken to reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves adjusting policies and actions because of observed or expected changes in climate. It involves preparing for and responding to the expected changes in temperature, rainfall, sea levels and other climate variables. *Adaptation measures can be taken at different levels. Making programmes and operations 'climate-smart' can contribute to climate change adaptation.*	IPCC, 2014; IPCC, 2022
Climate change mitigation	Actions taken to reduce or prevent the emission of GHGs and other pollutants into the atmosphere, with the goal of reducing the magnitude and/or rate of long-term climate change.	IPCC, 2014
Climate finance	Local, national or transnational financing (drawn from public, private and alternative sources of financing) that seeks to support climate change mitigation and adaptation actions.	UNFCCC, 2023
Climate and weather extremes	Extreme weather or climate event. The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable. For simplicity, both extreme weather events and extreme climate events are referred to collectively as 'climate extremes'.	IPCC, 2022
Climate information	Information about the past, current state or future of the climate system that is relevant for mitigation, adaptation and risk management. It may be tailored or 'co-produced' for specific contexts and values.	IPCC, 2022
Climate-related hazard	A potentially damaging climate-related physical event, phenomenon, or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Examples include droughts, floods, heatwaves, sea-level rise, storms and wildfires.	UNDRR, 2023

TERM	DESCRIPTION	SOURCES[17]
Climate-related risk	Refers to the probability that a particular climate-related hazard will occur and the potential adverse impacts for lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services and infrastructure. Climate-related risks can be assessed based on a variety of factors, including the magnitude and frequency of the hazard, the vulnerability of the exposed system, and the capacity of the affected population or organization to cope with the impacts.	IPCC, 2014
Climate Risk Management	Refers to activities and methods that are used by individuals, organizations and institutions to facilitate climate-resilient decision-making. Its objective is to promote sustainable development by maximizing the beneficial impacts of climate change responses and minimizing negative impacts across the full spectrum of geographies and sectors that are potentially affected by the changing climate.	Climate risk management Journal, science direct
Climate risk screening	The screening process is a methodology to identify climate risks, key opportunities and priorities for climate action.	
Climate shocks	The realization of climate risks, which fundamentally affects peoples' lives, livelihoods, health and well-being; ecosystems and species; economic, social and cultural assets; services; and infrastructure.	Sinha, 1999
Climate-smart programmes and operations (CSPO)	Programmes and operations have made use of available climate and weather information, both short-term weather and seasonal forecasts and long-term climate projections, in designing and/or adjusting activities to ensure that they contribute to reducing long-term climate risks and vulnerabilities, including potential unprecedented climate extremes. In doing so, programmes and operations ensure that, at a minimum, they do not place people at increased risk in the future considering likely new climate extremes and growing vulnerabilities and, if possible/appropriate, empower communities to anticipate, absorb and adapt to climate shocks and long-term changes.	Climate Centre
Climate variability	Natural fluctuations in climatic conditions on all scales beyond individual weather events. Variability may be due to natural internal processes within the climate system (for example due to El Niño), or through natural or human external factors.	WMO, 2019

TERM	DESCRIPTION	SOURCES[17]
Compound risk and cascading risk	A situation where multiple, interrelated and simultaneous hazards and vulnerabilities occur to create an increased likelihood of a negative impact or harm to a population or community. A compound risk may be caused by various factors, such as natural hazards, conflict, displacement, disease outbreaks, economic and social inequality, and environmental degradation. *Note: Compound risk events are independent of each other, and one is not the causal factor for the other. Cascading risk can be understood as the risk posed by sequential occurrences of two or more events, where the first event triggers one or more events (the domino effect).*	IPCC 2022 UNDRR, 2022
Coping capacity	The ability of people, organizations and systems (using available skills and resources) to maintain the system and its functions in the face of adverse conditions, emergencies or disasters.	UNDRR, 2023
Disaster	A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. Slow-onset events evolve gradually from incremental changes occurring over many years or from an increased frequency or intensity of recurring events (e.g., drought), whereas a *rapid-onset* event may be a single, discrete event that occurs in a matter of days or even hours (e.g., flash flood). Note that, aligned with the United Nations Office for Disaster Risk Reduction (UNDRR) policy, we do not use the term "natural disaster" in this Guide on purpose.	UNDRR, 2023; UNFCCC, 2012
Disaster Risk Reduction (DRR)	Disaster risk reduction is aimed at preventing new and reducing existing disaster risks (which occur due to hazards, exposure, vulnerability capacity) and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. *In recent years there has been a growing convergence between DRR and CCA but they do not overlap completely. Broadly speaking, DRR deals with all hazards, including hydrometeorological and geophysical hazards, while CCA deals exclusively with climate-related hazards. DRR is predominantly interested in climate extremes leading to disasters whereas CCA also considers the long-term adjustment to changes in gradual changing climatic conditions, including the opportunities that this can provide.*	UNDRR, 2023
Disaster Risk Management (DRM)	The application of policies, strategies and other measures to prevent new disaster risks, reduce existing disaster risks and manage residual risks (through disaster preparedness, response and recovery), contributing to the strengthening of resilience and the reduction of disaster losses.	IFRC, 2022

TERM	DESCRIPTION	SOURCES[17]
Environmental degradation	A process through which the natural environment is compromised, reducing biological diversity and the general health of the environment. This process can be entirely natural in origin, or it can be accelerated or caused by human activities.	GEMET, 2021
Environmental footprint or impact	The impacts that activities can have on the environment, including through the disturbance of the natural processes and GHG emissions (the latter also known as 'carbon footprint').	GEMET, 2021
Environmental sustainability	Environmental sustainability is a state in which the demands placed on the environment can be met without reducing its capacity to allow all people to live well, now and in the future. It can be most easily defined by three principles: ● the rate of harvest or use should not exceed the rate of regeneration (sustainable yield); ● the rates of waste generation should not exceed the assimilative capacity of the environment; ● the depletion of a resource should require comparable development of renewable substitutes for that resource.	Daly, 1990 IFRC, 2022c GEMET, 2020
Exposure	Refers to the situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas. It is possible to be exposed but not vulnerable.	UNDRR, 2023
Forecast-based Action and Financing/ Anticipatory Action	Used synonymously, Forecast-based Financing and Anticipatory Action support action to be taken to reduce the impacts of a hazard before it occurs or the impacts are felt, based on a forecast of when, where and how the event will occur. Anticipatory Action is the term most used currently while Forecast-based Action and Financing were the original terms established when the concept was operationalized and is still used for some of programmes within the IFRC network.	IFRC, 2020
Greenhouse effect/ enhanced greenhouse effect	The natural greenhouse effect is caused by the natural amounts of greenhouse gases which are vital to sustain life (such as water, carbon dioxide, nitrous oxide, methane and ozone). In the absence of the natural greenhouse effect the surface of the Earth would be approximately 33°C cooler. The enhanced greenhouse effect refers to the additional radiative forcing resulting from increased concentrations of GHGs induced by human activities.	WMO, 2019
Green Response	Green Response – an approach to humanitarian disaster response that rests on environmental sustainability, making efforts to avoid, minimize and manage potential damage to the local environment and the GHG emissions brought on by humanitarian operations.	IFRC, 2021

TERM	DESCRIPTION	SOURCES[17]
Impact-based Forecast	A product that combines a hydrometeorological forecast with an impact assessment containing information about when, where and how likely certain impacts are. Impact-based Forecasts layer vulnerability and exposure data with a hazard forecast to guide decision-making about risk reduction or anticipatory actions.	Climate Centre, 2020
Hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.	IPCC, 2022
Maladaptation	Actions that may lead to increased risk of adverse climate-related outcomes, including via increased GHG emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence.	IPCC, 2022
Resilience	The ability of communities (and their members) exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact, cope with and recover from the effects of shocks and stresses without compromising their long-term prospects. In short, it is the capacity to deal with change and continue to develop. *Climate-smart programming aims to contribute to the long-term resilience of communities to climate-related risks.*	Stockholm Resilience Centre
Sustainable (development)	The reconciliation of environmental, social and economic demands. Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their needs.	WCED,1987; IPCC, 2022
Vulnerability	The predisposition of people or assets to be damaged/destroyed/affected when exposed to a hazard. The term describes a person or group's inability to anticipate, cope with, resist and/or recover from the impact of natural or human shocks or hazards without compromising their long-term prospects.	IPCC, 2022
Weather	The daily observed meteorological conditions (such as wind, rain, snow, sunshine) in a given area over a specific time period.	WMO, 2019

References

African Development Bank (2019) Climate Change Country Profiles.

Anticipation Hub (2021) Multi-Hazard Risk Analysis Methodologies.

Anticipation Hub (n.d.) The Future of Forecasts: Impact-Based Forecasting for Early Action. Accessed October 3, 2022.

Arrighi, J., Singh, R., Khan, R., Koelle, B., Jjemba, E., (2020) City Heatwave Guide for Red Cross Red Crescent Branches. Red Cross Red Crescent Climate Centre

Bangladesh Red Crescent Society, Cruz Roja Mexicana, IFRC, Norwegian Red Cross, the Red Cross Red Crescent Climate Centre and Somalia Red Crescent Society (2021) Turning the Tide. Adapting to climate change in coastal communities.

Carter, S., Steynor, A., Vincent, K., Visman, E., and Waagsaether, K. (2019) A Manual for co-production of African weather and climate services'. Cape Town: Future Climate for Africa and Weather and Climate Information Services for Africa.

Centre for Research on the Epidemiology of Disasters (n.d.) EM-DAT Public. Accessed October 3, 2022.

Climate and Environment Charter. Accessed October 3, 2022.

Climate Centre (2018) Collaborating with national climate and weather agencies: a guide to getting started.

Climate Centre (2018) NL-supported steps toward resilience in Ethiopia's Somali Region.

Climate Centre (2020) Introduction to Impact-Based Forecasting. https://vimeo.com/456462214.

Climate Centre (n.d.) Climate Training Kit: Science and Impacts.

Climate Centre (n.d.) Health Risk Management in a Changing Climate.

Copernicus, Emergency Management Service (n.d.) Global Flood Awareness System – Global Ensemble Streamflow Forecasting and Flood Forecasting. Accessed October 3, 2022. https://www.globalfloods.eu/.

Cordex – Coordinated Regional Climate Downscaling Experiment (n.d.) Cordex (blog). Accessed October 3, 2022. https://cordex.org/.

Coughlan de Perez, E., Nerlander, L., Monasso, F., van Aalst, M., Mantilla, G., Muli, E., Nguyen, T,. Rose, G., Rumbaitis Del Rio, C. (2015) Managing Health Risks in a Changing Climate: Red Cross Operations in East Africa and Southeast Asia. *Climate and Development 7* (3): 197–207.

Daly, H.E. (1990) Toward some operational principles of sustainable development. *Ecological Economics 2* (1990), 1-6.

DesInventar Sendai (n.d.) Disaster loss data for Sustainable Development Goals and Sendai Framework Monitoring System. Accessed 12 May 2023.

Disaster Risk Reduction, Early Warning System. Accessed October 10, 2022.

ECMWF (n.d.) Forecasts. Accessed 12 May 2023.

ECMWF, Tropical Cyclones. Accessed October 3, 2022.

Environmental Determinants of Health –PAHO/WHO | Pan American Health Organization. n.d. Accessed October 10, 2022.

FAO (n.d.) Climate Smart Agriculture Sourcebook. Accessed 14 May 2023.

Global Commission on Adaptation (2019) Adapt Now: A Global Call for Leadership on Climate Resilience. Rotterdam.

References

Global Disaster Preparedness Center, Green Belts for Drought Recovery and Food Security in Dadaab Refugee Camp in Kenya (blog), Accessed October 12, 2022.

GWP & UNICEF (2017) WASH Climate Resilient Development – Guidance Note. New York and Stockholm.

IFRC & Climate Centre (2021) Climate change impacts on health: Malawi Assessment.

IFRC & Climate Centre (2021a) Climate change impacts on health and livelihoods: Afghanistan Assessment.

IFRC & Climate Centre (2021b) Climate change impacts on health and livelihoods: Fiji Assessment.

IFRC & Climate Centre (2021c) Climate change impacts on health and livelihoods: Maldives Assessment.

IFRC & Climate Centre (2021d) Climate change impacts on health and livelihoods: Mongolia Assessment.

IFRC & Climate Centre (2021e) Climate change impacts on health and livelihoods: Myanmar Assessment.

IFRC & Climate Centre (2021f) Climate change impacts on health and livelihoods: Nepal Assessment.

IFRC & Climate Centre (2021g) Climate change impacts on health and livelihoods: Pakistan Assessment.

IFRC & Climate Centre (2021h) Climate change impacts on health and livelihoods: Timor-Leste Assessment.

IFRC & Climate Centre (2021i) Climate change impacts on health: Ethiopia Assessment.

IFRC & Climate Centre (2021j) Climate change impacts on health: Kenya Assessment.

IFRC (2010) IFRC Guidelines for Livelihoods Programming.

IFRC (2011) Participatory Approach for Safe Shelter Awareness (PASSA) Manual.

IFRC (2012) Continency planning guide.

IFRC (2016) Zambia Red Cross Society - Building Resilience among Households in the Zambezi River Basin.

IFRC (2018) Disasters and Displacement in a Changing Climate: The Role of Asia Pacific National Societies.

IFRC (2019) The Cost of Doing Nothing.

IFRC (2020a) Responding to Disasters and Displacement in a Changing Climate: Case Studies Asia Pacific National Societies in Action.

IFRC (2020b) World Disasters Report: Come Heat or High Water.

IFRC (2020c) Forecast-Based Financing And Disaster Displacement: Acting Early To Reduce The Humanitarian Impacts Of Displacement, IFRC / RCCC Forecast-Based Financing And Disaster Displacement Brief, August 2020.

IFRC (2021) Displacement in a Changing Climate: Localized humanitarian action at the forefront of the climate crisis.

IFRC (2022a) Climate change and mental health fact sheet. Climate Centre, IFRC Psycho Social Centre & Netherlands Red Cross Centre and the Climate Centre.

IFRC (2022b) Planned Relocation in the Context of Disasters and Climate Change: A Guide for Asia Pacific National Societies.

IFRC (2022c) The Nature Navigator. A Handbook for Disaster Risk Management Practitioners.

IFRC (n.d.) Climate and Disaster Displacement: The Importance of Disaster Law and Policy.

IFRC (n.d.) Community Health. Accessed October 3, 2022.

IFRC (n.d.) Early Warning, Early Action. Accessed October 3, 2022.

IFRC (n.d.) eCBHFA - Community Based Health and First Aid. Accessed October 3, 2022.

References

IFRC (n.d.) EVCA Toolbox. Accessed October 3, 2022.

IFRC (n.d.) Historical Profile, EVCA. Accessed October 3, 2022.

IFRC (n.d.) IFRC Shelter and Settlements Roadmap for 2021 – 2025, IFRC Americas Regional Office.

IFRC (n.d.) Mapping, EVCA. Accessed October 3, 2022g.

IFRC (n.d.) Seasonal Calendar, EVCA. Accessed October 3, 2022.

IFRC (n.d.) The Preparedness for Effective Response (PER) Mechanism – detailed, Collapsible document.

IFRC (n.d.) VCA Repository, EVCA. Accessed October 3, 2022.

INFORM (Index for Risk Management), United Nations Development Programme. Accessed October 3, 2022.

IPCC (2018) IPCC SR1.5 Glossary.

IPCC AR6-WGI Atlas (n.d.) Accessed October 3, 2022.

IPCC Fact Sheets - Climate Change Impacts and Risks (n.d.) Accessed May 2023.

IPCC Fact Sheets - The Physical Science Basis (n.d.) Accessed May 2023.

ISDR (2012) CRiSTAL User's Manual Community-Based Risk Screening Tool – Adaptation and Livelihoods. The International Institute for Sustainable Development.

Mason, S., Kruczkiewicz, A., Ceccato, P., Crawford, A. (2015) Accessing and Using Climate Data and Information in Fragile, Data-Poor States. IISD Report May 2015.

Muringai, R.T., Mafongoya, P. Lottering, R.T. (2022) Climate Change Perceptions, Impacts and Adaptation Strategies: Insights of Fishers in Zambezi River Basin, Zimbabwe. *Sustainability 14* (6): 3456. https://doi.org/10.3390/su14063456.

NAP-GSP (n.d.) NAP-GSP Resources, National Adaptation Global Support Programme, UNEP, UNDP, and GEF. Accessed October 3, 2022.

National Academies of Sciences, Engineering, and Medicine (2016) *Next Generation Earth System Prediction: Strategies for Subseasonal to Seasonal Forecasts*. Washington, DC: The National Academies Press. https://doi.org/10.17226/21873.

National Hurricane Center and Central Pacific Hurricane Center, Accessed October 3, 2022.

Pacific Climate Change Science (n.d.) Adventures of the Climate Crab, Accessed 12 May 2023.

Red Cross and Red Crescent (2020) Movement Ambitions to address the climate crisis.

Red Cross Red Crescent Climate Centre, Partners for Resilience (2020) Climate Action: Examples from the Red Cross Red Crescent and Partners.

Resource Library (n.d.) NAP Global Network. Accessed 14 May 2023.

Singh, R., Arrighi, J., Jjemba, E., Strachan, K., Spires, M., Kadihasanoglu, A., (2019) Heatwave Guide for Cities. Red Cross Red Crescent Climate Centre.

Simpson, N.P., Mach, K.J, Constable, A., Hess, J., Hogarth, R., Howden, H. Lawrence, J. *et al.* (2021) A Framework for Complex Climate Change Risk Assessment. *One Earth 4* (4): 489–501. https://doi.org/10.1016/j.oneear.2021.03.005.

UNFCCC (n.d.) National Adaptation Plans. Accessed 12 May, 2023.

UNFCCC (n.d.) National Communication Submissions from Non-Annex I Parties, Accessed October 3, 2022.

UNFCCC (n.d.) Slow Onset Events Accessed October 3, 2022.

UN-Habitat (2020) Climate Change Vulnerability and Risk – A Guide for Community Assessments, Action Planning and Implementation. Nairobi.

USAID (n.d.) Climate Risk Screening and Management Tools – Agriculture Annex .

USAID (n.d.) Climate Risk Screening and Management Tools – Water Supply and Sanitation Annex.

USAID Country Profiles Accessed October 27, 2021.

Watkiss, P., Wilby,R., Rodgers, C.A. (2020) *Principles of Climate Risk Management for Climate Proofing Projects.* Asian Development Bank. https://doi.org/10.22617/WPS200203-2.

WHO (2021) Climate Change and Health. Accessed 12 May 2023.

WMO Members/Partners (n.d.) Accessed April 2023.

World Bank (2017) Climate-Smart Healthcare: Low-Carbon and Resilience Strategies for the Health Sector.

World Bank Climate Change Knowledge Portal (n.d.) Accessed 10 April 2023.

Y-Adapt (n.d.) Youth action on developing adaptation plans for tomorrow, WeADAPT.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