Climate Action Accelerator

Health service level Climate Vulnerability and Capacity Assessment

A method to identify climate change vulnerabilities, risks, and solutions for health facilities in low and middle income settings.

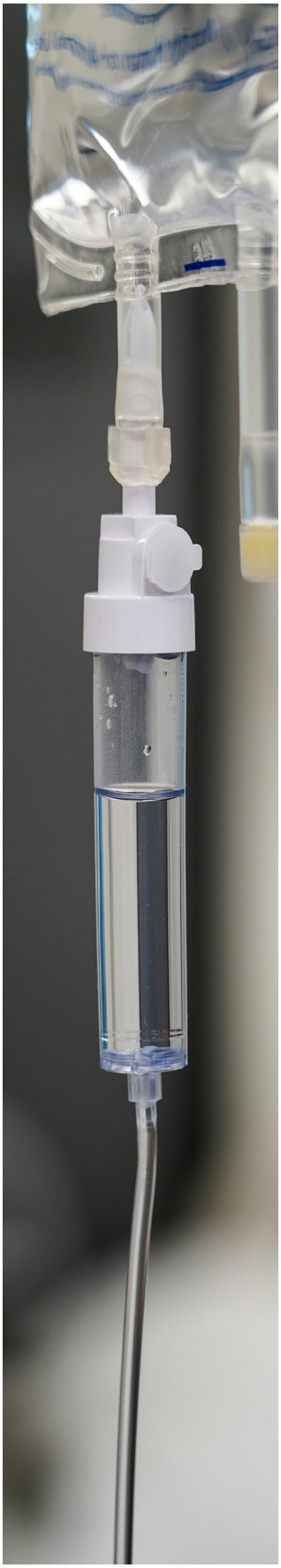
Updated version, October 2024

LIST OF ACRONYMS

CAA:	Climate Action Accelerator
CSO:	Civil Society Organisation
CRESH:	Climate Resilient and Environmentally Sustainable Health Care Facility
FGD:	Focus Group Discussion
HCW:	Health Care Worker
M&E:	Monitoring and Evaluation
MoH:	Ministry of Health
PHC:	Primary Health Care
VCA:	Vulnerability, Capacity and Adaptation
WHO:	World Health Organisation

ACKNOWLEDGMENTS

The Climate Action Accelerator would like to thank Professor Bob Mash and Dr Christian Lueme at the University of Stellenbosch for their key contributions to the Climate VCA toolkit; Health Care Without Harm, for access to their climate impact tool; as well as the staff of Ngouri District Health Bureau, ALIMA, Alerte Sante, and Western Cape Health Authority, whose input has been invaluable in developing and refining the Climate VCA approach.



WHAT IS A HEALTH FACILITY LEVEL CLIMATE VULNERABILITY AND CAPACITY ASSESSMENT?

Vulnerability and Capacity Assessments (VCA) are the cornerstone of Disaster Risk Reduction activities - enabling the identification of risks for which mitigation actions can be undertaken, thus improving system resilience. WHO has produced a VCA checklist for health facilities that focuses on climate risks ('Checklists to assess vulnerabilities in health care facilities in the context of climate change' WHO 2021), as well as guidance on how to make health facilities climate resilient ('WHO guidance for climate resilient and environmentally sustainable health care facilities', WHO 2020). However, these two sources of guidance are not linked, and as such there is a need to operationalise the checklist so that an adaptation plan for the facility can be derived from it.

This document describes a methodological approach developed by the Climate Action Accelerator (CAA) to deliver a Climate VCA at the level of a single hospital or primary care facility in low/medium resource & fragile settings. The approach is currently being adapted for primary care networks. The CAA Climate VCA is a rapid, mixed methods, multi-stakeholder assessment process consisting of 5 stages, designed to be used by health managers and senior health facility staff to generate an 'adaptation plan' to enable that facility to become a Climate Resilient and Environmentally Sustainable Health Care Facility (CRESH). In contrast to current systems or facility-level vulnerability assessments:

1. It enables the identification of the most relevant climate risks (and hence the intervention priorities for that facility) in relation to climate change and health.

2. It considers sustainability to be an intrinsic part of health facility resilience (e.g. reducing dependence on grid electricity in unstable settings), and hence incorporates carbon footprint measurement and carbon weighting of solutions.[1]

3. It provides a comprehensive health service assessment, focusing not only on infrastructure, but also systems issues as (e.g. service delivery and governance) as they manifest at the level of the facility.

The output of the Climate VCA is a comprehensive Climate health risk and solution matrix, showing a prioritised list of Climate RISKS to the facility and population PLUS a corresponding list of SOLUTIONS to mitigate those risks; once costed and mapped over time, the solutions can be incorporated into a comprehensive health service adaptation plan.

[1] In Low income settings, sustainability is of secondary importance relative to resilience, and therefore the methodology is designed to work even if carbon footprint measurement is ommitted.

TERMS & DEFINITIONS

Vulnerability

The tendency / likelihood to be more negatively affected by events than others in the local area. Vulnerability includes having higher chance of suffering harm and a lack of capacity to cope and adapt when harms occurs (IPCC, 2018)[2].

Adaptive capacity

The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

Climate-linked hazard

When a natural or human-induced environmental event (or ongoing state) occurs that causes damage. The damage may be loss of life, injury, disease outbreak or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. Examples: Flood, drought, heat

Exposure

What or who is actually at risk of being adversely affected or harmed. It may be people; livelihoods; ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets.

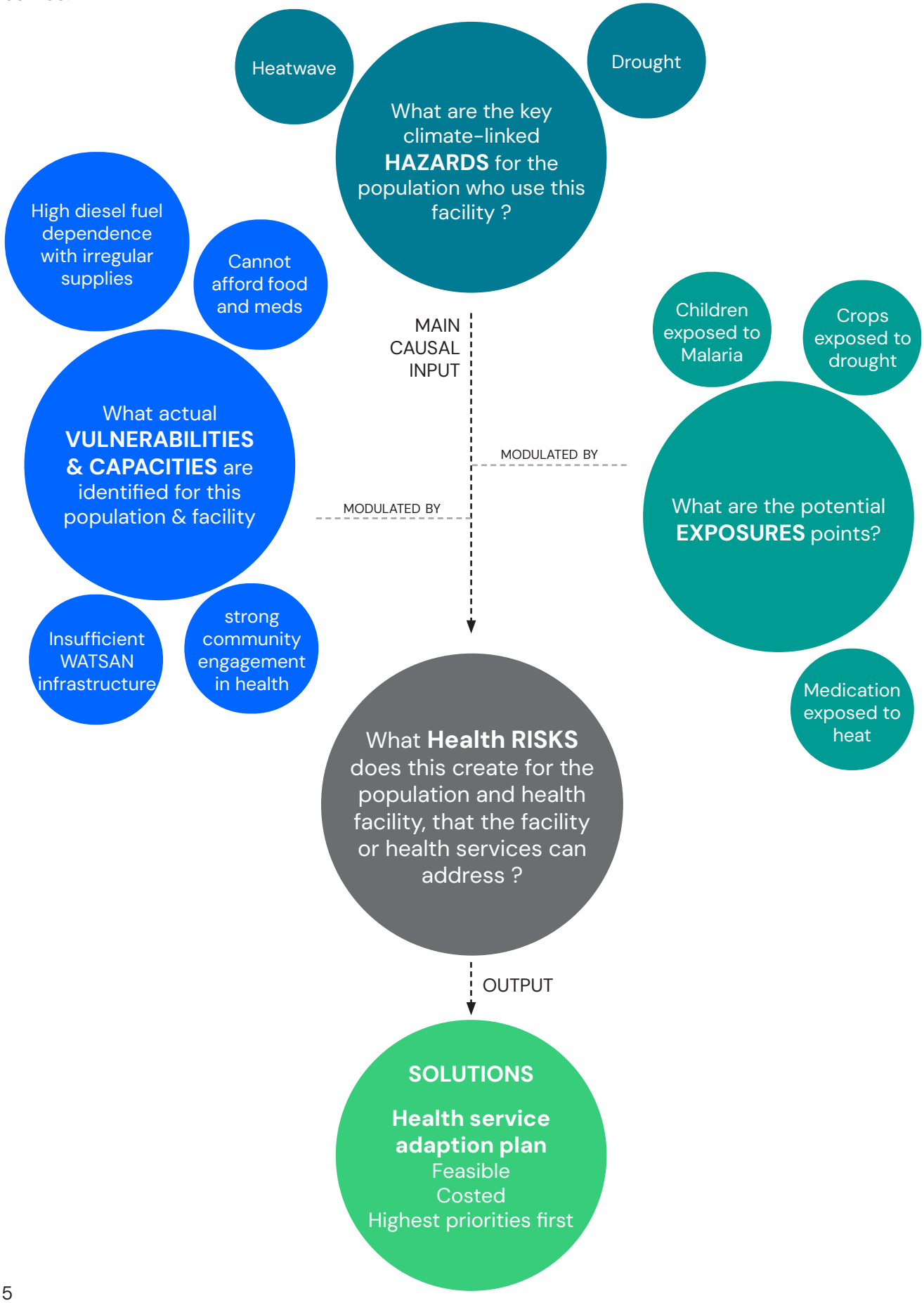
Risk

The probability of harmful consequences, or expected loss (of lives, people injured, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between hazards and vulnerabilities (which can be offset by adaptive capabilities)

[2] Reference: IPCC, 2018: Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Cambridge University Press,, pp. 541-562. https://doi.org/10.1017/9781009157940.008.

CONCEPTUAL MODEL OF THE CLIMATE VCA

The Climate VCA brings together information about population and facility vulnerabilities, capacities, hazards and exposures, to identify climate risks to the facility and the population it serves.



OVERVIEW OF THE CLIMATE VCA METHODOLOGY

Prior to starting the VCA, a multi-disciplinary team is established with clear overight and reporting lines. The Climate VCA itself consists of the following five stages:

STAGE 1: EXISTING DATA REVIEW: use existing data to provide an initial overview of **hazards, vulnerabilities and capacities**, to identify the information gaps that need to be addressed.

STAGE 2: QUANTITATIVE (AUDIT) PHASE: audit of **climate vulnerability and capacities**, addressing the information gaps identified in stage 1 to produce an initial list of climate risks and solutions.

STAGE 3: QUALITATIVE (SCENARIOS) PHASE: Gather additional insights on **climate hazards, exposures, vulnerabilities and capacities** from staff and community members, using a scenario-driven tabletop methodology (future scenarios, based on real past events).

STAGE 4: DATA/INFORMATION ANALYSIS: refine the initial **climate health risk and solution matrix** based on community and staff insights from stage 3.

STAGE 5: PRIORITISATION STAGE: agree on the priority list of interventions and indicators to form the basis of a facility improvement plan.

The stages broadly follow this step-wise sequence, however, there is some back and forth enabling the process to be flexible and iterative. For example, stage 4 (analysis) is best conducted in tandem with the preceding stages. Data is analysed as it emerges, and the findings are used to direct / refocus the subsequent stages. In this way, the emerging health risk and solution matrix becomes more and more reliable at the process progresses.

The detail on each stage is provided in the following pages.

Ngouri case study – Introduction

To illustrate the Climate VCA process, a case study based on conducting a Climate VCA for Ngouri hospital, Chad, is presented over the following pages.

Ngouri hospital is a District General Hospital in Lac Region in Chad, providing comprehensive secondary level care to a predominanlty rural population, with a specialised therapeutic feeding centre for managing cases of severe malnutrition. The hospital receives support from Alerte Sante (National NGO) and ALIMA (International NGO).

PREPARING FOR THE CLIMATE VCA

Prior to the start of the Climate VCA, it is essential to clarify who is commissioning and overseeing the process, and who will be carrying out the work. Organisation and governance will vary by context and by the range of actors involved, but some general principles apply:

- The timeline and deliverable format is agreed between commissioner and the VCA team.
- The commissioning body (e.g. Provincial MoH / NGO) should define the members of the team responsible for the Climate VCA and subsequent development of the facility improvement plan.
- This team will normally include the health facility director and logistics lead, representatives of partner health organisations and invovled Civil Society Organisation (CSOs), community representatives, and at least one person who has experience of conducting such assessments and has received an induction on this methodology.
- The team member with experience of conducting VCAs ensures that the rest of the team understands the objectives and the process sufficiently such that they can all engage meaningfully.
- The commissioner may choose to appoint a separate person or group responsible for oversight (governance).

Ngouri case study – preparatory phase

The Climate VCA for Ngouri hospital was commissioned by the principle supporting NGO (ALIMA[3]), to enable the development of a multi-year improvement plan to strengthen the climate resilience and environmental sustainability of the hospital and its services. The 'improved' hospital would be able to respond to the changing health needs related to current and near anticipated climate change impacts, adapting as future climate hazards evolve; making optimal use of climate smart and low carbon technologies and approaches; to enable a gradual transition towards decarbonised healthcare in a realistic timeframe.

The Climate Action Accelerator was invited to support the implementation of the Climate VCA and the development of the subsequent improvement plan. The Climate Action Accelerator appointed a facilitator, and ALIMA appointed a representative to jointly coordinate the process.

The Climate Action Accelerator facilitator and ALIMA representative made a preliminary visit to Ngouri hospital, and established a multi-disclipinary CRESH team consisting of hospital director, head of logistics, district MoH representative, representative of the other supporting NGO (Alerte Sante) and a senior clinician, to deliver the Climate VCA. During the preliminary visit, the Climate Action Accelerator facilitator provided brief training to the rest of the team on the Climate VCA approach The Climate VCA was conducted over the first six months of 2023, and required one further site visit from the ALIMA representative and the Climate Action Accelerator facilitator.

[3] ALIMA (The Alliance for International Medical Action) is an international medical humanitarian NGO based in Dakar, Senegal, that has been saving lives for over 12 years in emergency situations and health crises in Africa.

STAGE 1: DESK REVIEW

AIM : Make best use of existing information to provide an initial overview of **hazards, vulnerabilities and capacities**, to identify the information gaps that need to be addressed in Stage 2.

TOOLS: *Climate health risk and solution matrix* (Annex 1a); *Climate Information Sources* (Annex 1b)

ACTIONS

I. **Collate and review available data:**

   a. **Local Climate Hazard data:** Location specific or regional information on recent and anticipated climate shocks from secondary data (as well as tested mitigation / adaptation initiatives in the region) (see Annex 1b).

   b. Existing Health data to identify local **existing health vulnerabilities:** Facility level data of patient morbidity and mortalities; Population level health data: local disease burden. The scope of the data used (regional, national, district, local facility) is decided by the facility team depending on the local health system set up.

   c. Pre-existing information on **facility level vulnerabilities** from hospital and PHC logistic data, (e.g. identifying processes that are highly energy dependent / energy intensive, or processes for which there is limited backup in case of shortages of energy or infrastructure failures (e.g. Oxygen concentrators dependent on diesel generators)).

   d. Pre-existing hospital carbon footprint data (where available).

II. The data is used to identify the list of hazards, and preliminary list of vulnerabilities / capacities, in the *Climate health risk and solution matrix* (the Malaria example in the annex can guide the user as to how to complete this).

III. The information gathered is used to review and simplify the facility audit tool so that it is better tailored to the needs of that facility.

OUTPUTS

- Initial *Climate health risk and solution matrix* with first details on hazards and vulnerabilities; Facility audit tools tailored to the needs of that facility.

Ngouri case study – Stage 1 (desk review)

A rapid 'operational' literature review was carried out based on an internet search of public domain documents, and unpublished reports and data from Ngouri hospital (Local meterological data was sought, but none was found that helped further elaborate the hazards and exposures). This yielded a summary of climate hazards in the Sahel region, together with basic info on population vulnerabilities. It also provided basic logistics information on the hospital facilties, which enabled narrowing down of the audit to address the information gaps

STAGE 2: QUANTITATIVE (AUDIT) PHASE

AIM : Complete an audit of **climate vulnerability and capacities**, addressing the information gaps identified in stage 1 (including carbon footprint measurement), to produce an initial list of climate risks.

ACTIONS

I. A live audit is conducted by walking through the health facility, observing infrastructure, work processes and reviewing existing policies and procedure documentation (Annex 2). This audit only asks questions not already answered in Stage 1, it should only take 3-4 hours at most.
   a. Infrastructure audit (focused on building and infrastructure, inc WASH components) & A health service delivery audit (focused on health staff and health care delivery): VCA_Stage2
   b. Carbon footprint audit (may not always be included in low income settings). In Low income settings, sustainability is of secondary importance relative to resilience, and therefore the methodology is designed to work even if carbon footprint measurement is ommitted.

II. The completed audit is used to update the *Climate health risk and solution matrix*

OUTPUTS

- The *Climate health risk and solution matrix* now should include detail on hazards, vulnerabilities and capacities, and an initial list of climate risks and solutions (the malaria example, in the Annexes, guides the user as to how to complete this)

Ngouri case study – Stage 2 (quantitative phase)

The facility audit highlighted both infrastructural vulnerabilities but also gaps in workforce management and aspects of healthcare delivery. The emerging information was integrated into the *Climate health risk and solution matrix*.

STAGE 3: QUALITATIVE (SCENARIOS) PHASE

AIM : Gather additional insights on climate hazards (or more specifically, exposures), vulnerabilities and capacities from staff and community members.

TOOLS: Scenario tabletop approach and tools (Annex 3)

ACTIONS

I. **Training:** Invite selected health care facility staff to a training workshop on the Scenario Tabletop Tools, to co-develop the scenarios and learn how to facilitate Focus Group Discussions (FGD). Two common local climate hazards are identified, ideally relating to events that FGD members have experienced, or to likely future climate risks that they can relate to (See Annex 3 for examples).

II. **Group formation:** The FGD participants are pre-identified, allocated into three or four groups. Participants will normally include hospital and community health care workers (HCWs), health administrators (e.g. hospital director and district health director), community leaders, CSOs and service users. Selected participants should be briefed on the methodology in advance and any persons at risk of re-traumatisation identified. Group constitution will vary by context (See Annex 3 for guidance on focus group).

III. **Conducting FGDs:** Each FGD separately runs through each scenario real-time, facilitated by a senior local staff member with a scribe for note taking (data collection). The facilitator **tells the scenario as a story** of the event and elicits the different perspectives of group members, sharing their reflections on how they personally experienced the following:

   a. **Sources of exposure** to the hazard. (e.g. crops exposed to drought)

   b. **Facility and population vulnerabilities and response capabilities** (local, district, national) are explored. (e.g. high pre-existing malnutrition; poor Watsan infrastructure; facility is poorly ventilated and highly dependent on diesel although supply is erratic.)

   c. The facilitator then encourages participants to identify the **specific Climate RISKS**- theoretical climate risks, or climate risks that did actually occur in their experience. (e.g. increased malnutrition; increased mortality due to high temperature in hospital; supply chain failure and service interruption due to staffing shortages.)

   d. Finally, **solutions** that participants put in place or that would have been helpful are discussed. The FGD's perception of a best-case scenario response is explored in real-time.

IV. Gathering outputs: either (1) transcribe the FGDs based on recordings, (2) generate brief summary notes of unrecorded FGDs, (3) support the facilitator in producing thematic collaborative summaries of FGDs (see Annex 3 for examples)

OUTPUTS:

- Qualitative output data (format determined at start of stage).

Ngouri case study – Stage 3 (Qualitative phase)

Initially four focus groups were planned: (1) health care workers, (2) health administrators, (3) community leaders and (4) patients and relatives. In the end, groups 3 and 4 were combined but then separated by gender, which was felt by the Climate VCA team to be the best way to elicit contributions of all participants. The qualitative work generated a worked example of the most important hazard for the population of Ngouri – Malaria outbreak. This enabled enriching of the *Climate health risk and solution matrix*, and helped generate a prelimary list of climate risks and interventions that would address these (and other hazards).

STAGE 4: DATA/INFORMATION ANALYSIS

AIM : Refine the initial *Climate health risk and solution matrix* based on community and staff insights from stage 3

TOOLS : Qualitative output data from stage 3; CAA climate resilience solution inventory (Annex 4); WHO CRESH guidance document 2020

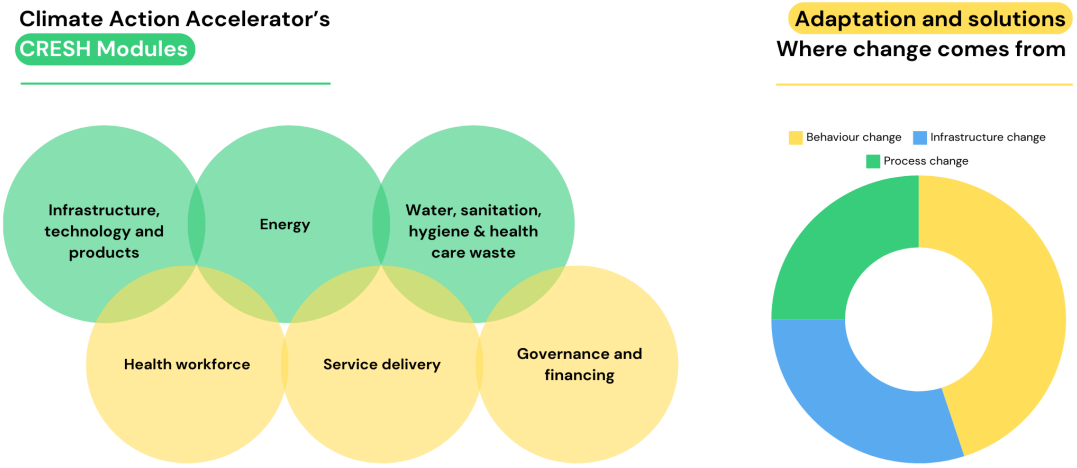
ACTIONS

I. Analyse, combine and condense the outputs from Stage 2 and 3, to identify any unanticipated climate risks as well as any anticipated climate risks that these insights suggest are of less importance; and also to identify solutions that respondents felt were particularly appropriate / desirable, as well as solutions that they deemed not feasible or contextually inappropriate.[4]

II. Potential solutions identified through stage 3 and now enriched / compared to the CAA generic solution inventory, and the updated list is organised according to the six CAA CRESH modules (see below)

III. This phase involves input from experts / polyvalent climate & health advisors who are not directly involved in the Climate VCA process, as a sort of 'cerveau collectif' approach.

IV. Refine and finalise the list of climate risks and solutions based on these insights.



OUTPUTS

- The updated *Climate health risk and solution matrix* should now include an exhaustive list of potential solutions matched to the identified climate risks and ranked according to multiple dimensions including (1) anticipated impact on resilience / carbon footprint and (2) resources required.

Ngouri case study – Stage 4 (Analysis)

The *Climate health risk and solution matrix* and list of interventions could now be fully elaborated. Subsequently, data was added on estimated costs, feasibility and estimates on other parameters relevant for decision making.

[4] In practice, stage 4 is best conducted simultaneously and iteratively with the earlier stages – data is analysed as it emerges, and the findings are used to direct / refocus the subsequent stages. As such, hypotheses that are generated in earlier stages are then tested and confirmed / refuted through subsequent stages of the process. In this way, the emerging *Climate health risk and solution matrix* becomes more and more reliable at the process progresses.

STAGE 5: PRIORITISATION STAGE

AIM : Agree the priority list of interventions and indicators to form the basis of a facility improvement plan. Tools: M&E framework (Annex 5a)

ACTIONS

I. The list of climate risks and solutions forms the basis for a workshop of the facility leadership / CRESH project team. A list of values and prioritisation principles are agreed upon by the CRESH team.

II. Potential solutions are discussed to identify realistic impact and resource requirements (cost, time investment, procurement options, human resources needed etc) and thus cross-check the ranking of the solutions, amending the ranking if needed.

III. The solutions are then prioritised by the CRESH team, and indicators for these solutions are selected from the M&E framework (Annex 5a)

OUTPUTS

- Final climate health risk and solution matrix containing a prioritised list of solutions with estimated resource requirements and estimated carbon and resilience impact, and proposed indicators. This matrix can form the basis (once approved by the VCA commissioner) can form the basis for a multi year facility improvement plan and funding proposals.

Ngouri case study – Stage 5 (Prioritisation)

The *Climate health risk and solution matrix* was reviewed on a preliminary basis by the CRESH team, together with colleagues in the Ministry of Health, who excluded any solutions that were clearly not feasible, already implemented, or inconsistent with the values of the hospital and supporting partner (ALIMA). Further information was added (on Security / Access) to enable decision making. A formal prioritisation workshop was then held for the full CRESH team to review and prioritise the identified interventions, to produce a preliminary shortlist to propose to senior managers in ALIMA. A second workshop was organised involving both the CRESH team and the senior managers of ALIMA, at which the proposed shortlist was further examined, modified and finally approved. This finalised matrix was then used to develop a multi-year facility improvement plan (Annex 5b) (with detailed activities, indicators and indicative budget), from which funding proposals for individual interventions will be derived.

NEXT STEPS

Following the completion of the Climate VCA, the prioritised risk solution matrix can be used to create the health facility 'Adaptation Plan' or 'Improvement Plan'.

The monitoring frame is finalised once the adaptation plan is written. Most indicators in the monitoring frame will likely be process indicators, reflecting the implementation of the interventions outlined in the plan; however, some of the indicators should ideally be resilience indicators.

The Climate VCA is designed to be repeated on an annual or two yearly basis to monitor improvement in health facility resilience and sustainability. The data collected during the follow-up VCAs should include any data required to measure the resilience indicators in the monitoring frame, that was not possible to collect through standard monthly monitoring. Serial climate VCAs, performed through the course of the project, can form a solid basis for project evaluation and for modelling impacts on resilience and carbon production. The Climate VCA approach is currently being adapted and piloted for primary care networks. For more information, see Annex 6.

ANNEX 1A: CLIMATE HEALTH RISK & SOLUTION MATRIX

Note that the headings on this page are generic to illustrate the structure of the *Climate health risk and solution matrix* more detailed examples are provided in the following document:

- ***Climate health risk and solution matrix* generic (malaria example)**

RISKS

Hazard & Exposure	Vulnerabilties / capabilities	Climate risks (Population / Facility)	Indicators of climate risk mitigation	Potential interventions (see tab 2): interventions listed as they emerged
Hazard & Exposure (1)	Vulnerabilties / capabilities (1)	Risks (1)	Indicators of risk mitigation (1)	Potential interventions (1)
	Vulnerabilties / capabilities (1)			
Hazard & Exposure (1)	Vulnerabilties / capabilities (1)	Risks (2)	Indicators of risk mitigation (2)	Potential interventions (2)
	Vulnerabilties / capabilities (2)	Risks (3)	Indicators of risk mitigation (3)	Potential interventions (3)

SOLUTIONS

Potential interventions (organised by module)	Indicator of intervention implementation	Interventions consistent with values + op model	Additional $ requirements	Anticipated resilience impact	Anticipated additional carbon impact	Anticipated impact on other environmental parameters
Potential interventions (1)	Indicator (1)	Yes	$	+	Moderate	Anticipated impact (1)
Potential interventions (2)	Indicator (2)	Yes	$$	+++	Low	Anticipated impact (2)
Potential interventions (3)	Indicator (3)	Yes	$$$	++	High	Anticipated impact (3)

ANNEX 1B: CLIMATE INFORMATION SOURCES

Climate forecasts

Model	Source	Ensemble members	Products
North American Multi-Model Ensemble Project (NMME) -- multi-system ensemble	International Research Institute (IRI) for Climate and Society; Columbia Climate School	• NOAA NCEP CFSv1 (retired Oct 2012) • NOAA NCEP CFSv2 • IRI ECHAMA and ECHAMF (retired Aug 2012) • NASA Goddard Space Flight Center (GSFC) GEOS5 • NCAR/University of Miami CCSM3.0 • GFDL CM2.1 • GFDL CM2.5 [FLORa06;FLORb01] (joined Mar 2014) • Environment Canada CanCM3 and CanCM4 (joined Sep 2012)	Available maps include: • Tertile summary maps • Flexible seasonal maps • Verification plots Available here.
Copernicus Climate Change Service (C3S) – Multi-system ensemble	Copernicus	• European Centre Medium-Range Weather Forecasts (ECMWF) • The Met Office UK • Météo-France • German Weather Service (Deutscher Wetterdienst, DWD) • Euro-Mediterranean Center on Climate Change (Centro Euro-Mediterraneo sui Cambiamenti Climatici, CMCC) • US National Weather Service's, National Centers for Environmental Prediction (NCEP) • Japan Meteorological Agency (JMA) • Environment and Climate Change Canada (ECCC)	Available maps include: • Ensemble mean anomaly maps • Tertile summary maps • Extreme 20th percentile maps • Verification plots Maps available here. Individual systems raw data available here. Verification plots available from here.
Probabilistic Multi-Model Ensemble (MME) –Multi-system ensemble	World Meteorological Organization (WMO) Centre for Long-Range Forecast Multi-Model Ensemble	• Beijing • CMCC • CPTEC • ECMWF • Exeter • Melbourne • Montreal • Moscow • Offenbach • Pune • Seoul • Tokyo • Toulouse • Washington	Available maps include: • Tertile summary maps Available here.

ANNEX 1B: CLIMATE INFORMATION SOURCES

Weather forecasts

Global Ensemble Prediction System (GEPS)

- 2 to 4 week projections
- Open source (https://app.climateengine.org/climateEngine)
- Relatively low resolution (55km square grid)
- Variables: cumulative rainfall, average temperatures.
- Uses: modelling and analysis, mapping
- Modality: online visualising tool (using point data), or can be downloaded and mapped in GIS software

European Centre for Medium Range Weather Forecasts (ECMWF)

- Up to 6 week projections, and longer range over several months
- Open source (https://charts.ecmwf.int/)
- Variables: all rainfall, temperature, wind and pressure
- Uses: online only
- Modality: online visualising tool (using point data)

Other tools

- The Regional Climate Outlook Forums (RCOFs) convene key stakeholders, including National Meteorological Services and various sectors, to generate consensus seasonal forecasts for significant regional seasons worldwide. For Africa, the relevant regional forums are PRESASS and PRESAGG (West Africa), GHACOF (East Africa), PRESAC (Central Africa) among others. These generally convene a meeting prior to key seasonal timelines in order to release a consensus forecast product in anticipation of, for example, the onset of the main rainy season. These products are made available publicly and to stakeholders. More information on RCOFs here: https://library.wmo.int/viewer/53939/download?file=RCOF-Factsheets-consolidated.pdf&type=pdf&navigator=1
- EM-DAT (International Disaster Database from Centre for Research on the Epidemiology of Disasters) - https://public.emdat.be/ Open source historic records of disasters, including climate related events, accessible through a database format
- Severe weather warnings – WMO (https://severeweather.wmo.int/v2/)
- Flood hazard risk – UNEP/GRID (https://wesr.unepgrid.ch/?project=MX-XVK-HPH-OGN-HVE-GGN&language=en&theme=color_light)
- Dust forecast – WMO (https://sds-was.aemet.es/)
- Various monitoring and prediction tools relevant for Africa region – NOAA (these also inform FEWS) (https://www.cpc.ncep.noaa.gov/products/international/africa/africa.shtml)
- Food security bulletins and mapping – FEWSNET and AGRHYMET
- Open source climate data analysis using GIS (GeoCLIM)

ANNEX 2: FACILITY AUDIT TOOL

- Facility resilience audit :
  VCA Stage 2 Audit Tool

- (Optional) Carbon audit tool (developed by Healthcare without Harm)
  HCHW Climate Impact Checkup Tool V3.3

ANNEX 3: EXAMPLES OF SIMULATION SCENARIOS

Guidance on focus group constitution:

Discussions with senior hospital staff and community members can provide a basic understanding of locally relevant factors to help define focus group consitution. For example, in some contexts, mixing categories of participant (e.g. health workers and community representatives) will enrich discussions; in others, community participants may feel inhibited in a group that includes doctors, and in this case group constitution should be homogenous. The following are examples of other dynamics that should be considered when constituting the groups:

- language,
- hierarchical relationships,
- diveristy of age and experience to ensure the collected information is as representative as possible

Example Scenario 1: Drought + extreme heat + malnutrition peak:

- Part 1: Over the past few years Chad has experienced a continuous increase in temperature, increased rainfall variability, and increase frequency of mini droughts. For the catchment population of N'gouri hospital they have lived through a particularly dry season. Rainfall variability mixed with waves of extreme heat have damaged the crop and the harvest yield is poor, 60% less than previous years.
- Part 2: As expected, after a lag period, N'gouri is seeing a peak of children presenting with MAM and SAM. This is much worse than usual. Malnutrition has also left the kids vulnerable to meningitis/malaria and this is adding to and complicating the crisis situation in the hospital now.

Example Scenario 2: Flood + diarrhoeal disease outbreak:

- Climate change models project an increase in the incidence and severity of floods in some parts of Chad in the coming decade. A severe period of heavy rainfall has left the N'gouri hospital inundated with water. The generators have been flooded and energy supply is unreliable and very limited. The Pharmacy is also flooded, ruining a large amount of medication stock. The floods have contaminated water supply in the villages surrounding the hospital you are starting to see increased cases of diarrhoeal disease.

Example of Scenario-based tabletop approach

- VCA Stage 3 tool - Qualitative Tabletop Methodology

ANNEX 4: LIST OF GENERIC SOLUTIONS

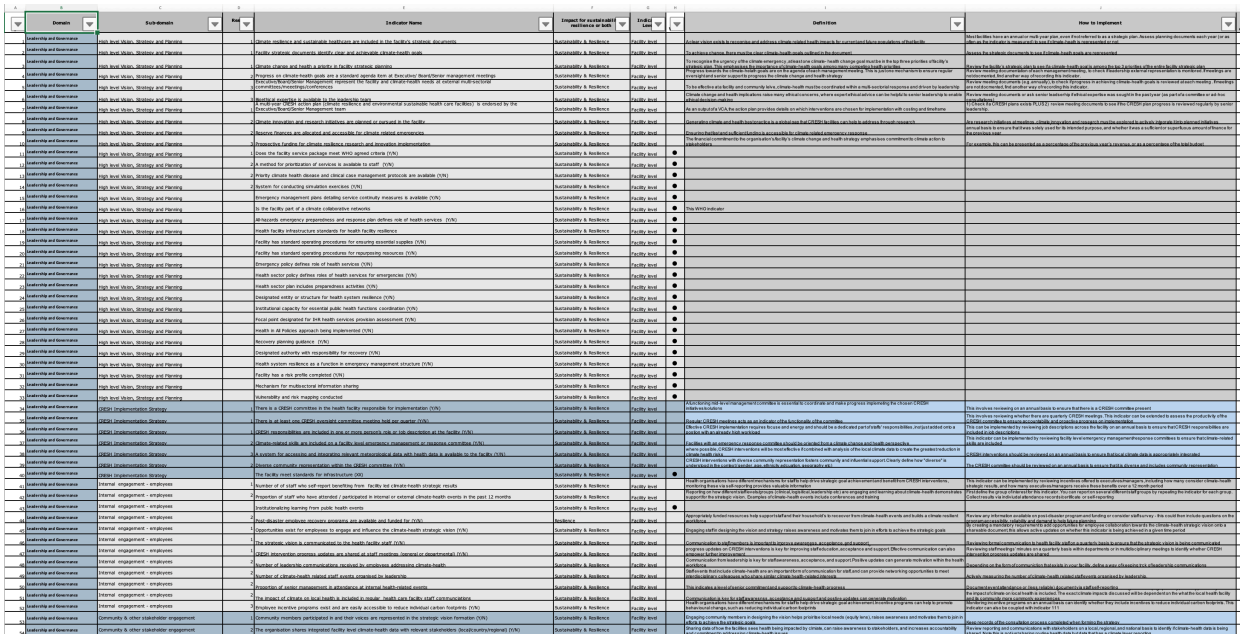
SOLUTION	RATIONALE
Energy	
Renewable energy source	Solar energy with adapted circuits and durable batteries with automated switch to backup energy source
Lighting efficiency	LED lighting and movement detector
Energy management	Energy 'diagnosis' and efficient energy management protocols
Health staff / Workforce	
HR planning for periods of climate (and other) stress	Adaptive and resilient workforce management processes: HR requirements (positions / skills / ratios) Health workloads and workflows to ensure staff wellbeing and adequate rest
Interventions to improve working conditions for staff	Rest areas with shade and water
Education for sustainable healthcare	Behaviour change training/ ways of working, implementing energy / water consumption / resilience strategies to cope with evolving changes
Infrastructure, technologies and products	
Supply and procurement	Reliable supply chains with focus on sustainable materials and sustainable supplier practices Review medication & product requirements to change from (1) single use → reusable products, (2) minimise packaging, (3) change to low GHG meds where possible Good inventory management to minimise stock outs Review existing food service for environmental sustainability
Structural integrity and efficiency of buildings (including temp management)	Renovation or retrofitting of structures to improve climate integrity, including flexible use structures to adapt to changing needs Energy efficient/resilient materials, sustainable and locally supplied Temperature efficient roof design / materials (tin) / reflective painting Flood barriers and rain shelters Natural ventilation using ventilation chimneys and modified windows
Biomed and technologies	Efficient O2 concentrators with reliable bridging / efficient O2 infrastucture to meet range of needs Change to non-toxic cleaning processes and materials to reduce indoor air pollution Oxygen management protocols to prevent wastage

ANNEX 4: LIST OF GENERIC SOLUTIONS

SOLUTION	RATIONALE
Health Service Provision	
Health service provision is oriented to current and evolving needs and epidemiology	Telemedicine and digital tools to ensure continuity of access Services are reviewed and adapted to local (evolving) needs - e.g. lab, bloodbank ambulance service for obstetrics
Community activities to promote population resilience and reduce demand for healthcare, oriented to local (and evolving) epidemiology and needs	Supplementary Feeding Programmes / Community management of malnutrition Preventative interventions of Malaria (Bednets, IRS, SMC) Reinforcement of EPI (campaigns or opportunistic) Community sensitisation on climate and health
Water, hygiene and medical waste	
Waste reduction and management	Water management protocols (segregation etc) Conservation of reusable products Recycling of non-incinerable items e.g. plastics Efficient waste zone and clean incinerators
Water security	Access to clean water Efficient water management including rainwater harvesting
Sanitation	Flood resileint toilets (e.g. elevated toilets)
Governance and financing	
Leadership, advocacy, & funding	Work with national government / WHO / implementing partners to identify long term financing solutions. Clinical leadership activities (e.g. quality improvement processes, IPC procedures or committees).
Service continuity planning	Development of contingency / business continuity plans for key services. Eprep plans and processes, including pre-positioned stocks Disaster management committee Annual current / future risk scenario planning is undertaken (e.g. risk information analysis to plan drug orders / prevent stock-outs)
Monitoring and Evaluation	Implement a monitoring frame (using sector-validated indicators) to enable learning and accountability, including sharing with health staff

ANNEX 5A: DRAFT M&E FRAMEWORK

The CAA M&E framework contains over 200 process and outcome indicators drawn from validated indicator repositories (e.g. WHO health systems resilience indicators, WHO climate resilience indicators, Geneva Sustainability Centre Health Facility Indicators), that are particularly relevant to health facilities in Low and Middle Income Settings. These indicators are aligned with the generic solutions in Annex 4. Users can select indicators from this list according to the specific solutions included in their action plan; we recommend not to exceed (on average) one process indicator and one outcome indicator per solution. Choice of indicators will be determined by feasibility of measurement in that context, as well as the means of measurement identified (e.g. data extraction from monthly routine reports, or ad hoc assessments based on the VCA data tools). A sample from the M&E framework is given below. Please contact contact@climateactionaccelerator.org for more information.



Domain	Subdomain	Key	Indicator Name	Impact for sustainability resilience or both	Indicator Level	Definition	How to implement
Leadership and Governance	High level Vision, Strategy and Planning	1	Climate resilience and sustainable healthcare are included in the facility's strategic documents	Sustainability & Resilience	Facility level	A clear vision exists to recognise and address climate-related health impacts for current and future populations of that facility	Most facilities have an annual or multi-year plan, even if not referred to as a strategic plan. Assess planning documents each year (or as often as the indicator is measured) to see if climate health is represented or not.
Leadership and Governance	High level Vision, Strategy and Planning	1	Facility strategic documents identify clear and achievable climate-health goals	Sustainability & Resilience	Facility level	To achieve a theme, there must be clear climate health goals outlined in the document	Assess the strategic documents to see if climate health goals are represented
Leadership and Governance	High level Vision, Strategy and Planning	1	Climate change and health a priority in facility strategic planning	Sustainability & Resilience	Facility level	To recognise the urgency of the climate emergency, at least one climate- health change goal must be in the top three priorities of facility's strategic plan. This emphasises the importance of climate health goals across many competing health priorities	Review the facility's strategic plan to see its climate health goal is among the top 3 priorities of the entire facility strategic plan
Leadership and Governance	High level Vision, Strategy and Planning	2	Progress on climate health goals are a standard agenda item at Executive/ Board/Senior management meetings	Sustainability & Resilience	Facility level	Review meeting documents (e.g. annually) to check if progress in achieving climate health goals is reviewed at each meeting. If meetings are not held, for whatever reason, to check if leaders at the external representations is monitored. If meetings are held/monitored, find another way of recording this indicator	Review meeting documents (e.g. annually) to check if progress in achieving climate health goals is reviewed at each meeting. Meetings are not held/monitored, find another way of recording this indicator
Leadership and Governance	High level Vision, Strategy and Planning	3	Executive/Board/Senior Management represent the facility and climate-health needs at external multi-sectoral committees/meetings/conferences	Sustainability & Resilience	Facility level	To be effective at a facility and community level, climate-health must be coordinated within a multi-sectorial response and driven by leadership	Review meeting documents (e.g. annually) to check if progress in achieving climate health goals is reviewed at each meeting. Meetings are not held/monitored, find another way of recording this indicator
Leadership and Governance	High level Vision, Strategy and Planning	4	Technical expertise is available in the leadership team	Sustainability & Resilience	Facility level	Climate change and health implications raise many ethical concerns, where expert ethical advice can be helpful to senior leadership to enable ethical decision-making	Review meeting documents or ask senior leadership if ethical expertise was sought in the past year (ex: part of a committee or ad-hoc ethical decision-making)
Leadership and Governance	High level Vision, Strategy and Planning	1	A multi-year CRDSH action plan (climate resilience and environmental sustainable health care facilities) is endorsed by the Executive/Board/Senior Management team	Sustainability & Resilience	Facility level	A clear vision exists to recognise and address climate-related health impacts for current and future populations of that facility	If CRDSH, the CRDSH plans exists, PLUS2: review meeting documents to see if the CRDSH plan progress is reviewed regularly by senior leadership.
Leadership and Governance	High level Vision, Strategy and Planning	2	Climate innovation and research initiatives are planned or pursued in the facility	Sustainability & Resilience	Facility level	As an output of a VCA, the action plan provides details on which interventions are chosen for implementation with costing and timeframe	Generating climate and health baseline data is a related task that CRDSH facilities can help to address through research
Leadership and Governance	High level Vision, Strategy and Planning	3	Training finances are allocated and accessible for climate related emergencies	Sustainability & Resilience	Facility level	Ensuring that the land and sufficient facility is accessible for climate-related emergency response	As research initiatives at maximum, climate programs and research must be explored to actively integrate into planned initiatives
Leadership and Governance	High level Vision, Strategy and Planning	4	Prospective funding for climate resilience research and innovation implementation	Sustainability & Resilience	Facility level	The financial commitment by the organisation/facility's climate change and health strategy emphasises commitment to climate action to stakeholders	Ensure that the land and sufficient facility is accessible for climate-related emergency response
Leadership and Governance	High level Vision, Strategy and Planning	1	Does the facility service package meet WHO agreed criteria (Y/N)	Sustainability & Resilience	Facility level	●	For example, this can be presented as a percentage of the previous year's revenue, or as a percentage of the total budget
Leadership and Governance	High level Vision, Strategy and Planning	2	A method for prioritization of services is available to staff (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	3	Priority climate health diseases and clinical care management protocols are available (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	4	Numeric for conducting simulation exercises (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	5	Emergency management plans detailing service continuity measures is available (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	6	Is the facility part of a climate collaborative networks	Sustainability & Resilience	Facility level	●	This WHO indicator
Leadership and Governance	High level Vision, Strategy and Planning	7	All-hazards emergency preparedness and response plan defines role of health services (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	8	Health facility infrastructure standards for health facility resilience	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	9	Facility has standard operating procedures for ensuring essential supplies (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	10	Facility has standard operating procedures for repurposing resources (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	11	Emergency policy defines role of health services (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	12	Health sector policy defines roles of health services for emergencies (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	13	Health sector plan includes preparedness activities (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	14	Designated entity or structure for health system resilience (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	15	Institutional capacity for essential public health functions coordination (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	16	Focal point designated for link health services provision assessment (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	17	Health in All Policies approach being implemented (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	18	Recovery planning guidance (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	19	Designated authority with responsibility for recovery (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	20	Health system resilience as a function in emergency management structure (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	21	Facility has a risk profile completed (Y/N)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	22	Mechanism for multisectoral information sharing	Sustainability & Resilience	Facility level	●	
Leadership and Governance	High level Vision, Strategy and Planning	23	Vulnerability and risk mapping conducted	Sustainability & Resilience	Facility level	●	
Leadership and Governance	CRDSH Implementation Strategy	1	There is a CRDSH committee in the health facility responsible for implementation (Y/N)	Sustainability & Resilience	Facility level	A functioning risk-level management committee is essential to coordinate and make progress implementing the chosen CRDSH interventions	This involves reviewing on an annual basis to ensure that there is a CRDSH committee present
Leadership and Governance	CRDSH Implementation Strategy	1	There is at least one CRDSH oversight committee meeting held per quarter (Y/N)	Sustainability & Resilience	Facility level	Regular CRDSH meetings acts as an indicator of the functionality of the committee	This involves reviewing whether there are quarterly CRDSH meetings. This indicator can be extended to assess the productivity of the meetings, for example by reviewing the minutes to see if key decisions are made and implemented
Leadership and Governance	CRDSH Implementation Strategy	1	CRDSH responsibilities are included in one or more person's role or job description at the facility (Y/N)	Sustainability & Resilience	Facility level	Effective CRDSH implementation requires focus and energy and should be a dedicated part of staffs' responsibilities, not just added onto a person with an already high workload	This can be implemented by reviewing job descriptions across the facility, on an annual basis to ensure that CRDSH responsibilities are included if job descriptions
Leadership and Governance	CRDSH Implementation Strategy	2	Climate-related visits are included on a facility level emergency management or response committee (Y/N)	Sustainability & Resilience	Facility level	If a facility sits an emergency response committee should be oriented from a climate change and health perspective	This indicator can be implemented by reviewing facility level emergency management/response committees to ensure that climate-related visits are included
Leadership and Governance	CRDSH Implementation Strategy	3	A system for accessible and interpretive relevant meteorological data with health data is available to the facility (Y/N)	Sustainability & Resilience	Facility level	Climate and health interventions will be most effective if combined with analysis of the local climate data to create the greatest reduction in climate health risks	CRDSH interventions should be reviewed on an annual basis to ensure that local climate data is appropriately integrated
Leadership and Governance	CRDSH Implementation Strategy	2	Diverse community representation within the CRDSH committee (Y/N)	Sustainability & Resilience	Facility level	CRDSH interventions with diverse community representation fosters community and influential support. Clearly define how "diverse" is understood in the context (gender, age, ethnicity, education, social status, etc)	The CRDSH committee should be reviewed on an annual basis to ensure that is diverse and includes community representation
Leadership and Governance	CRDSH Implementation Strategy	3	The facility meet standards for infrastructure (00)	Sustainability & Resilience	Facility level	●	
Leadership and Governance	Internal engagement - employees	1	Number of of staff who self-report benefiting from facility led climate-health strategic results	Sustainability & Resilience	Facility level	Health organizations have different mechanisms for staffs help drive strategic goal achievement and benefit from CRDSH interventions, monitoring these via self-reporting provides valuable information	This indicator can be implemented by reviewing incentives offered to assist disadvantagers, including how many consider climate-health strategic results, and how many executives/managers receive these benefits over a 12 month period
Leadership and Governance	Internal engagement - employees	2	Proportion of staff who have attended / participated in internal or external climate-health events in the past 12 months	Sustainability & Resilience	Facility level	Reporting how many different staff (employees, clinical, logistical leadership etc) are engaging and learning about climate-health demonstrates support for the strategic vision. Examples of climate-health events include conferences and training	Data from the group chosen for this indicator. This can report on some or different staff groups by repeating the indicator for each group. Collect results via individual attendance records or discussion or self-reporting
Leadership and Governance	Internal engagement - employees	3	Institutionalizing learning from public health events	Sustainability & Resilience	Facility level	●	
Leadership and Governance	Internal engagement - employees	2	Post-disaster employee recovery programs are available and funded for (Y/N)	Resilience	Facility level	Appropriately funded resources help support staff and their household's to recover from climate-health events and builds a climate resilient workforce	Review any information available on post-disaster program and funding or consider staff surveys - this could then include questions on the availability of support, if needed, and whether it has been helpful or not
Leadership and Governance	Internal engagement - employees	1	Engaging staff in the vision and strategy	Sustainability & Resilience	Facility level	Engaging staffs' designing the vision and strategy raises awareness and motivates them to join in efforts to achieve the strategic goals	Ensuring there is clear collaboration (ideally for climate health strategic vision or be a standalone document) this allows active updates on whether this indicator is being achieved in a given time period
Leadership and Governance	Internal engagement - employees	1	The strategic vision is communicated to the health facility staff (Y/N)	Sustainability & Resilience	Facility level	Communication is ineffective is important to ensure messages are cohesive and support	Reviewing how communication to health facility staff on a quarterly basis to ensure that the strategic vision is being communicated
Leadership and Governance	Internal engagement - employees	1	CRDSH intervention progress updates are shared at staff meetings (regular or departmental) (Y/N)	Sustainability & Resilience	Facility level	Progress updates on CRDSH interventions is key for improving staff education, acceptance and support. Effective communication can also celebrate further improvements	Reviewing staff meetings - minutes on a quarterly basis within departments or in multidisciplinary meetings to identify whether CRDSH intervention progress updates are shared
Leadership and Governance	Internal engagement - employees	2	Number of leadership communications received by employees addressing climate-health	Sustainability & Resilience	Facility level	Consistent communication from leadership is key for staffawareness, acceptance, and support. Positive updates can generate motivation within the health workforce	Depending on the form of communication that leads in your facility, define ways of how to track/monitor communications
Leadership and Governance	Internal engagement - employees	3	Number of climate-health related staff events organized by leadership	Sustainability & Resilience	Facility level	Staff events that include climate-health are an important form of communication for staff, and can provide networking opportunities to meet climate champion colleagues who share similar climate health-related interests	Actively measure the number of climate-health related staff events organized by leadership
Leadership and Governance	Internal engagement - employees	2	Proportion of senior management in attendance at internal health-related events	Sustainability & Resilience	Facility level	This indicates a level of senior commitment and support to climate-health purposes	Document level of attendance or times related documents is staff self-reported
Leadership and Governance	Internal engagement - employees	2	The impact of climate on local health is included in regular health care facility staff communications	Sustainability & Resilience	Facility level	Communication is key for staff awareness, acceptance and support and positive updates can generate motivation	The impact of climate on local health is included. The exact climate impacts discussed will be dependent on the what the local health facility and its community deem a priority
Leadership and Governance	Internal engagement - employees	3	Employees receive programs exist and are easily accessible to reduce individual carbon footprints (Y/N)	Sustainability & Resilience	Facility level	Behavioural change, such as reducing individual carbon footprints	Ask employees if they are aware of any programs that can identify whether they include incentives to reduce individual carbon footprints. This indicator can also be coupled with indicator 1.11.
Leadership and Governance	Community & other stakeholder engagement	1	Community members participated in and their voices are represented in the strategic vision formation (Y/N)	Sustainability & Resilience	Facility level	Engaging community members in designing the vision helps prioritise local needs (equity lens), raises awareness and motivates them to join efforts to achieve the strategic goals	Keep records of the consultation process completed when forming the strategy
Leadership and Governance	Community & other stakeholder engagement	2	The organization shares integrated facility level climate-health data with relevant stakeholders (local/country/regional) (Y/N)	Sustainability & Resilience	Facility level	Sharing data of how its facilities sees health being impacted by climate, can raise awareness to stakeholders, and increases accountability	Review reporting and communications with stakeholders on a local, regional, and national basis to identify if climate-health data is being

ANNEX 5B: ALIMA FINAL PLAN D'ADAPTATION

Coming soon.

ANNEX 6: GUIDANCE ON USING THE CLIMATE VCA AT PRIMARY CARE NETWORK LEVEL

The guidance in this document can be applied at the level of a primary care network (including 'hub and spoke' networks with a larger central facility and several smaller dependent facilities such as health posts). The following modifications are required:

- Preparatory Stage: the team responsible for conducting the VCA (sometimes referred to as the CRESH team) should include a representative of each facility in the network, as well as the network lead or lead administrator
- Stage 2 (audit) should normally be carried out for each facility in the network, applying only those sections of the audit that are relevant based on the size and range of services provided in each facility. Where facilities are very similar in size and range of services provided, the audit can be carried out on a representative sample of facilities
- Stage 3 (qualitative stage): a single series of focus group discussions should be undertaken for the whole network (as opposed to separately for each facility). In contexts where the decision is taken to separate focus groups by category of participant (e.g. one group for health staff, one for community representatives etc), the health staff focus group should ideally include a representative from each facility
- Stages 4 and 5 (data analysis and prioritisation): attention should be given to ensuring the participation of representatives of all facilities, to the greatest extent possible. The final list of priorities can include priorities common to all health structures, as well as specific priorities for individual structures.

Climate Action
Accelerator

climateactionaccelerator.org

linkedin.com/company/theclimateactionaccelerator/

@climateactionaccelerator

@CAA_Geneva

Contact us
Chemin des Mines 2
1202, Genève

contact@climateactionaccelerator.org