WATER AT THE HEART OF CLIMATE ACTION

Accelerating and scaling up water action to reduce risks and increase climate resilience.

Inception Report - 30 August 2024

Kingdom of the Netherlands

WATER @theHEART of Climate Action

Abbreviations

AA	Anticipatory Action
AWS	Automatic Weather Station
CEA	Community Engagement and Accountability
CREWS	Climate Risk Early Warning System
CWG	Communications Working Group
DAPS	Dignity, Access, Participation and Safety
DRIMS	Disaster Risk Information Management Systems
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EAP	Early Action Protocol
EOC	Emergency Operation Centres
eVCA	enhanced Vulnerability and Capacity Assessment
EW4All	Early Warning for All
EWEA	Early Warning Early Action
EWS	Early Warning Systems
GBON	Global Basic Observing Network
GCF	Green Climate Fund
GHACOF	Greater Horn of Africa Climate Outlook Forums
GLOFAS	Global Flood Awareness System
IBF	Impact Based Forecasting
IDP	Internally Displaced Person
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
ITCG	Inter-pillar Technical Coordination Group
KNMI	Koninklijk Nederlands Meteorologisch Instituut
L&D	Loss and damage
LLA	Locally led adaptation
MEAL	Monitoring, Evaluation, Accountability and Learning
MEAL WG	MEAL Working Group
MH-IB-EWEA	Multi-Hazard Impact Based Early Warning and Early Action Systems
MHEWS	Multi Hazard Early Warning Systems

MoU	Memorandum of Understanding
MoFA	Ministry of Foreign Affairs
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NLRC	Netherlands Red Cross
NMHS	National Meteorological and Hydrological Services
PGI	Protection, gender and inclusion
PSEA	Prevention of Sexual Exploitation and Abuse
PWD	Person with disability
RAATWG	Regional AA Technical Working Group
PMU	Programme Management Unit
RWG	Regional Working Group
SAD	Sex, Age, Disability
SLT	Senior Leadership Team
SOFF	Systematic Observations Financing Facility
SOP	Standard Operation Procedure
SWG	Strategic Working Group
TFA	Technical Focus Area
ToC	Theory of Change
TWG	Technical Working Group
UNDRR	UN Office for Disaster Risk Reduction
WASH	Water, sanitation and hygiene
WHCA	Water at the Heart of Climate Action
WMO	World Meteorological Organization

Ethiopia context abbreviations

EDRMC	Ethiopian Disaster Risk Management Commission
EMI	Ethiopian Meteorology Institute
ERCS	Ethiopian Red Cross Society
MoWE	Ministry of Water and Energy

Rwanda context abbreviations

GGCRS	Green Growth and Climate Resilience Strategy
MINEMA	Ministry in charge of Emergency Management

RRC	Rwanda Red Cross
RMA	Rwanda Meteorological Agency
RWRB	Rwanda Water Resources Board

South Sudan context abbreviations

MHADM	Ministry of Humanitarian Affairs and Disaster Management
MoEF	Ministry of Environment and Forestry
MWRI	Ministry of Water Resources and Irrigation
NEWTWG	National Early Warning Technical Working Group
SSDMD	South Sudan Disaster Management Department
SSMS	South Sudan Meteorological Services
SSRC	South Sudan Red Cross
WHCA TWG	WHCA Technical Working Group

Sudan context abbreviations

HAC	Humanitarian Aid Commission
HCENR	Higher Council for Environment and Natural Resources
MoAF	Ministry of Agriculture and Forestry
MoH	Ministry of Health
MoIWR	Ministry of Irrigation and Water Resources
NCCD	National Council of Civil Defence
RSF	Rapid Support Forces
SAF	Sudanese armed forces
SMA	Sudanese Meteorological Authority
SRCS	Sudanese Red Crescent Society

Uganda context abbreviations

DDMC	District Disaster Management Committee
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MoFPED	Ministry of Finance Planning and Economic Development
MoLG	Ministry of Local Government
MoH	Ministry of Health
MICT	Ministry of Information and Communication Technology
MWE	Ministry of Water and Environment

NBI	Nile Basin Initiative
NPSC	National Project Steering Committee
NTWG	National Technical Working Group
NVRAU	National Vulnerability and Risk Atlas of Uganda
OPM	Office of the Prime Minister
PMU	Project Management Unit
SDMC	Sub-county Disaster Management Committees
UNMA	Uganda National Meteorological Authority
URCS	Uganda Red Cross Society

Cover photo: Animal herder in Somalia affected by drought and famine. (Olav A. Saltbones/Norwegian Red Cross)

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1. EXECUTIVE SUMMARY

A unique collaboration of the International Federation of Red Cross and Red Crescent Societies (IFRC), the Netherlands Red Cross (NLRC), the Red Cross Climate Centre ("the Climate Centre"), the Systematic Observations Financing Facility (SOFF), the UN Office for Disaster Risk Reduction (UNDRR) and the World Meteorological Organization (WMO) is well positioned to integrate their ways of working and collaborate with governments and communities to reduce climate vulnerability in Ethiopia, Rwanda, South Sudan, Sudan and Uganda for end-to-end community-centered Early Warning Systems (EWS). This inception report builds on the Water at the Heart of Climate Action (WHCA) proposal which was approved by the Netherlands Ministry of Foreign Affairs (MoFA) on 21 July 2023 and provides information on how the consortium aims to achieve the objective of accelerating and scaling up water actions to reduce impacts and increase resilience of vulnerable communities in the five selected countries through an integrated, systemic, silo-breaking approach.

Five technical focus areas are central to the consortium-level theory of change outcomes:

- **Outcome 1: Water-related risk knowledge and governance** – Weather- and water-related disaster risk information system(s), established through participatory and inclusive processes, and effectively applying local, national and global level data, inform(s) decision-making to support affected communities with community-centered solutions for risk management.
- **Outcome 2: Observations, monitoring and forecasting of weather- and water-related hazards** – Improved production of and access to climate, weather and water observation, monitoring and impact-based forecasting/prediction products in order to deliver flood and drought warning services to various stakeholders for decision-making.
- **Outcome 3: Water-specific early warning systems dissemination and communication** – Most at-risk communities access relevant, timely, understandable, and actionable water-related alert/early warning messages that could enable them to take actions to protect lives, livelihoods and critical infrastructure.
- **Outcome 4: Anticipatory action and locally led adaptation** – Strengthened preparedness to take anticipatory action in response to warnings and enhanced locally led water-related climate adaptation capacities that could contribute to the reduction of water-related risks.
- **Outcome 5: Cross-cutting** – Cross-cutting enabling activities are implemented to ensure effective community and stakeholder engagement, response to protection-gender-inclusion needs, strong inter-TFA linkages, a cross-fertilization of learning, efficient knowledge management and high-quality actions.

These outcomes have guided the country teams to formulate a context-specific intervention plan, with contextualized definitions of success and a country-level theory of change. The country intervention plan has been informed by assessments that were conducted during the Inception phase (August 2023 – August 2024) with consortium partners, local, national and regional stakeholders to identify existing capacities, gaps and needs. The details of this contextualization show that WHCA will be implemented in some countries with an existing stronger framework of policies and practices in which the programme intervention will be embedded (Ethiopia, Rwanda, Uganda). In other countries WHCA will support the very foundation of establishing structures for Early Warning Systems (South Sudan) or the programme will be implemented in a context of active conflict (Sudan) where previous EWS achievements have suffered and are in need of supporting structures to serve people with EWS messages facing security and climate risks. The country plan section in this report provides detailed information on the gaps, intervention plan and sustainability strategy at country level.

The approach of developing a high-level consortium theory of change with contextualized country-level theories of change alongside, enabled a common standardized approach in which the unique added value of each consortium partner is ensured, while following a locally led approach at community and national

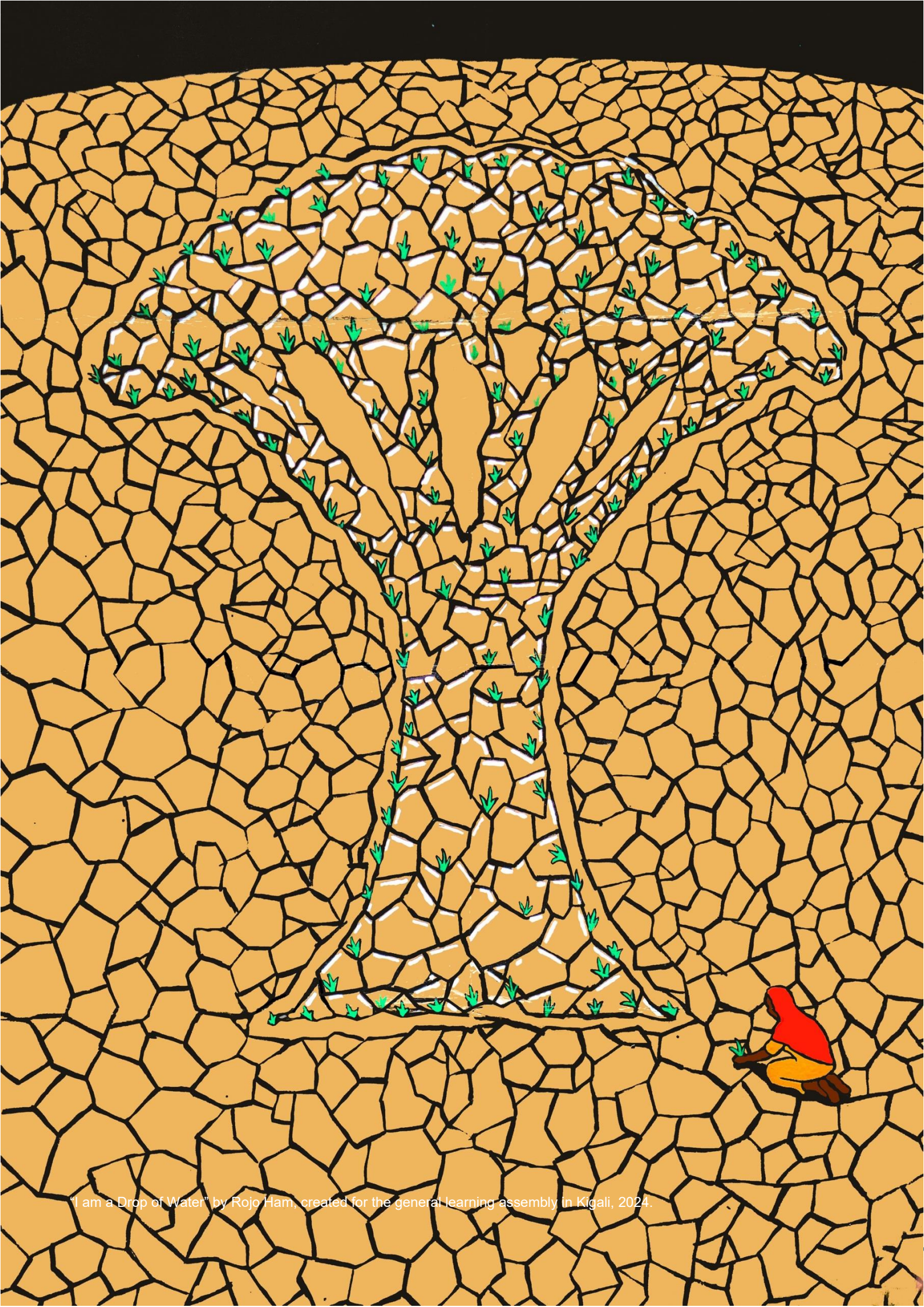
levels to determine the country-specific intervention plan. The consortium partners further agreed on priorities for regional alignment:

- Regional and international climate policy events and stakeholder alignment
- Regional capacity strengthening and facilitation of cross-country learning
- Basin perspective
- Interoperable systems for early warning
- Contribution to EW4All initiative
- Alignment with other regional EWS programmes.

The inception phase provided further clarity on the cost of the planned intervention: 78 per cent of the budget of 55m euros will directly benefit implementation in the five selected countries. The remaining 22 per cent will cover costs of global and regional coordination and make technical support available to country teams.

The governance model of the consortium was developed for effective implementation and reflects the following four criteria: locally led decision making, regional coordination, short lines to higher leadership teams, and representation of partners at all levels in teams and working groups. The MEAL framework, communications strategy and learning agenda were developed by the different working groups.

The consortium partners are grateful for the opportunity to partner with the Ministry of Foreign Affairs of the Netherlands, and during the inception phase (July 2023 – August 2024) of WHCA they have laid a strong foundation for fruitful collaboration with governments in the five selected countries in setting up or strengthening effective EWS.



"I am a Drop of Water" by Rojo Ham, created for the general learning assembly in Kigali, 2024.

2. INVESTING IN WATER AND EARLY WARNING SYSTEMS

Whether it's too much or too little water, nine out of ten disasters triggered by natural hazards during the last decade were water-related.[1] Since the 1970s, 44 per cent of all disaster events worldwide have been flood-related.[2] Due to anthropogenic climate change, the future does not look much better: extreme weather events like floods and droughts have become more likely, more severe and more difficult to predict.[3] The 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) concludes that there is increasing evidence of observed changes in the hydrological cycle on people and ecosystems.

The impact of water-related disasters is varied and affects all sectors of society including agriculture, pastoralism, livelihoods, ecosystems, health, energy the economy and infrastructures. Ethiopia experienced consecutive years with failed rainy seasons resulting in a severe drought.[4] Flooding and landslides in Rwanda not only destroy livelihoods, but they also erode the top soil that sustains crops.[5] Floods in South Sudan have worsened over the past years as the country is increasingly suffering from the consequences of climate change. Every year, floods affect between 750,000 and more than a million people, forcing them to leave their homes for higher ground.[6] At the time of writing this report (August 2024), flooding is affecting people in Sudan, including those who have fled conflict areas and are already displaced.[7] In April 2024, communities in Uganda fled their homes as a result of flooding.[8] The Greater Horn of Africa as of 2023 had experienced six failed rainfall seasons with reports showing that this was most severe drought in the region since the last 40 years. As of December 2022, at least 36.5 million people were estimated to be affected by severe drought and more than 20 million people were estimated to face acute food insecurity due to the drought.

There is a growing need and opportunity to transform humanitarian action from response to prevention and anticipation – response cannot keep pace with impact. Early warning systems (EWS) can support countries to reduce risk, adapt to climate change and enable communities to prepare for hazardous climate related events and attenuate their impact. Systems that warn people of impending storms, floods or droughts are a cost-effective measure that saves lives, reduces economic loss, and provide a nearly tenfold return on investment.[9] The IPCC identifies water action as one of the most effective measures to reduce climate vulnerability.[10] There is a need for coordinated, collaborative and operational strategies to manage hydro-meteorological events with an integrated, community-centred and holistic approach at regional, national and local levels.

The aim of Water at the Heart of Climate Action (WHCA) programme is to accelerate and scale up water actions to reduce the impact of water-related disasters and increase resilience of vulnerable communities. It also seeks to support the realization of the Early Warning for All (EW4All) initiative led by the UN Secretary General. This will be achieved through five technical focus areas (TFAs):

1. Water-related risk knowledge and governance
2. Observations, monitoring and forecasting of weather- and water-related hazards
3. Water-specific early warning systems dissemination and communication
4. Anticipatory action and locally led adaptation
5. Cross-cutting activities.

[1] https://www.undrr.org/implementing-sendai-framework/sendai-framework-action/water-risks-and-resilience.
[2] IPCC Sixth Assessment Report, Chapter 4: Water (2022).
[3] IPCC Sixth Assessment Report, Chapter 4: Water (2022).
[4] The Horn of Africa Drought Situation Appeal, January – December 2023, UNHCR.
[5] https://www.climate-refugees.org/spotlight/2023/22/rwanda-floods.
[6] https://www.unicef.org/southsudan/what-we-do/climate-change-and-flooding.
[7] https://news.un.org/en/story/2024/07/1152676.
[8] https://www.dw.com/en/el-nino-climate-pattern-intensifies-in-east-africa/a-68932184.
[9] https://www.un.org/en/climatechange/early-warnings-for-all.
[10] IPCC Sixth Assessment Report, Chapter 4: Water (2022).

The WHCA programme contributes to EW4All, which aims to ensure universal protection from hazardous hydrometeorological, climatological and related environmental events through life-saving multi-hazard early warning systems, anticipatory action and resilience efforts by the end of 2027, as called for by the UN Secretary General in 2022. The TFAs have been aligned with the EW4All pillars to support countries in building and operating effective and inclusive multi-hazard early warning systems.

Hydrometeorological observations are the basis for monitoring and prediction of weather and climate across different timescales. To improve the reliability of long-range predictions for any location on the planet, observations from the whole globe are required. Investments in countries with a shortfall in observations through WHCA are therefore also an investment that benefits citizens in Europe, including in the Netherlands. Combining improved observations, monitoring, forecasting and warning with risk knowledge, dissemination of warning messages and community-led anticipatory action contributes to effective, timely, comprehensive, targeted EWS across all levels. There is growing evidence that such approaches are cost-effective and provide a dignified way to manage risks before they become humanitarian disasters.[11] Investments in WHCA therefore contribute to a reduction of humanitarian needs after a disaster.

The nature of the challenge requires a partnership that brings together a variety of expertise areas needed to successfully implement the programme. The WHCA consortium consists of the International Federation of Red Cross and Red Crescent Societies (IFRC), the Netherlands Red Cross (NLRC), the Red Cross Red Crescent Climate Centre, the Systematic Observations Financing Facility (SOFF), the UN Office for Disaster Risk Reduction (UNDRR) and the World Meteorological Organization (WMO). NLRC is leading the consortium. The consortium partners implement the WHCA programme with and through their implementing partners in Nile basin countries Ethiopia, Rwanda, South Sudan, Sudan and Uganda. IFRC, NLRC and the Climate Centre's responsibilities at country level are implemented through the Red Cross Red Crescent National Societies ("National Societies"). SOFF implements through major multilateral development partners (such as multilateral development banks or UN organizations) with the technical assistance of peer advisors – these are advanced national meteorological and hydrological services (NMHSs), including Koninklijk Nederlands Meteorologisch Instituut (KNMI) – and working directly with the beneficiary countries' meteorological offices. UNDRR implements through national and regional partners including the national disaster management agency. WMO implements activities through the NMHSs at the national level to strengthen the early warning services.

The consortium partners are grateful for the opportunity to partner with the Ministry of Foreign Affairs (MoFA) of the Netherlands, and during the inception phase of WHCA they have laid a strong foundation for fruitful collaboration with governments and other stakeholders in the five selected countries in setting up or strengthening effective EWS. Where collaboration with the Netherlands embassy in the WHCA country has taken place, it has helped the consortium navigating the landscape of initiatives to leverage and synergize this commitment with other ongoing initiatives. In other countries collaboration with the Netherlands embassy will be initiated at the start of the implementation phase as connecting across programmes and initiatives will drive the largest impact. This inception report builds on the WHCA proposal which was approved by NL MoFA in July 2023 and provides information on how the consortium aims to achieve the objective of accelerating and scaling up water actions to reduce impacts and increase resilience of vulnerable communities in the five selected countries.

[11] WFP (2020). The Evidence Base on Anticipatory Action. https://www.wfp.org/publications/evidence-base-anticipatory-action.

Bor Branch concluded two days of rapid assessment for the fresh floods affected population in Bor town the capital of Jonglei state. The temporary dyke along the Nile river had broken due to increases of water level in the river as a results of continued rainfall across the mountainous areas of South Sudan and from neighbouring Uganda, Kenya and DRC Congo. (2023 photo: IFRC/SSRCS)

3. CONSORTIUM MODEL

3.1 An integrated way of working

To respond to the challenges of reducing the impacts of water-related disasters and increasing the resilience of vulnerable communities, the expertise of different organizations with their unique mandates is needed. Each play a different role in the EWS value chain, ensuring communities are empowered to take early action based on reliable observations data resulting in early warning messages that take into account specific vulnerabilities.

In summary,[12] SOFF bridges the data gap by installing land observation infrastructure to increase the quality of the data which will be used to create the advisory from the NHMS. WMO supports the NHMS to have the necessary capacity and infrastructure to timely monitor, forecasts and analyze the data to produce the warning or advisories for water related hazards. UNDRR works with the government institutions to ensure that risk information is included in decision-making and integrated in the advisory of the NHMS. It also supports the disaster management structure to have the necessary policy in place so that risks can be reduced and anticipated. The partners within the IFRC network ensure that the advisory coming from the NHMS reaches the most vulnerable in the communities and is transformed in effective and timely early actions.

WHCA provides the opportunity for these organizations to partner, achieve an integrated way of working and collaborate for higher effectiveness and bigger impact to ensure community-centred end-to-end EWS. The global consortium partners and their national implementing partners have embraced this challenge during the inception phase and laid a solid foundation for alignment, transparency and good will. The inception phase revealed that this new way of working does not come without challenges, but these challenges can be turned into achievements and unlock the potential of this collaboration and contribute to system change. One of the challenges that have been encountered during the inception phase are the different platforms and flows of information sharing on EWS across the various stakeholders within the selected countries. A sub-working group with representatives of the different consortium partners has been set up, which will facilitate the co-design, integration and interoperability of available platforms and information sharing flows at country level. This will include assessing the current systems and designing an interoperability framework. Another challenge has been to work out what it practically means to be a programme that contributes to the larger EW4All initiative and how to respond to the expectations that come with it. In each country, a government office has been selected to lead on this initiative, and is therefore a critical stakeholder within WHCA too. It has been ensured that the in-country governance models reflect this reality. In some countries the EW4All launch workshops have taken place jointly with WHCA workshops which, after addressing some of the practical challenges, has been beneficial for all stakeholders and provided a strong foundation for in-country collaboration. Achieving system change and integrated ways of working require high levels of coordination, flexibility of all stakeholders and transparency. These will be further strengthened and refined during the implementation phase, building upon the solid foundation which was laid during the inception phase. This chapter describes the WHCA governance model, which provides the structure to ensure high levels of coordination among consortium and implementing partners.

[12] Detailed descriptions of the unique and different roles of the partners can be found in the WHCA proposal which was approved by MoFA in July 2023.

3.2 Governance organigram

During the inception phase the governance model of WHCA (see Figure 1) was developed in response to the needs of the consortium to prepare for effective implementation. Each team or working group has their distinct function and role. The following criteria are reflected in the governance model:

- **Locally led decision making:** having mechanisms that would allow strategic decision-making at the country level in collaboration between government institutions, National Societies and other stakeholders. This reflects the commitment from the principles of locally led adaptation of devolving decision making as locally as possible.
- **Regional coordination:** the basin-level approach requires a mechanism that allows for quick coordination, as well as sharing and learning at the regional level involving the mandated regional institutions. It is expected that this will inspire coordination within the countries between government ministries and state departments, National Societies and other stakeholders.
- **Short lines to a higher leadership team:** ensures that unresolved challenges can be quickly escalated and resolved at the leadership level and that consultation with country teams, strategic guidance and feedback to the teams are communicated in a timely and people-centered way.
- **Representation of partners at all levels:** consortium partners are both horizontally and vertically represented at all levels of the consortium structures. This ensures all levels benefit of the new way of working and strengths and added value of the partners will be explored and leveraged for an effective and impactful value chain.

At country level, consortium partners are represented through their respective implementing partners as a member of the country team (see Annex VI). This ensures that decisions on how to use the available resources per country are made by those closest to the communities that face climate risk. The country team therefore consists of the Red Cross Red Crescent society, government offices for disaster risk reduction, hydrological and meteorological offices, offices for water and environmental management and SOFF operational partners (peer advisor and implementing entities). Each country team has their own structure of governance, suiting to the context and situation of the country (see paragraphs on coordination and governance in Chapter 3 for further details).

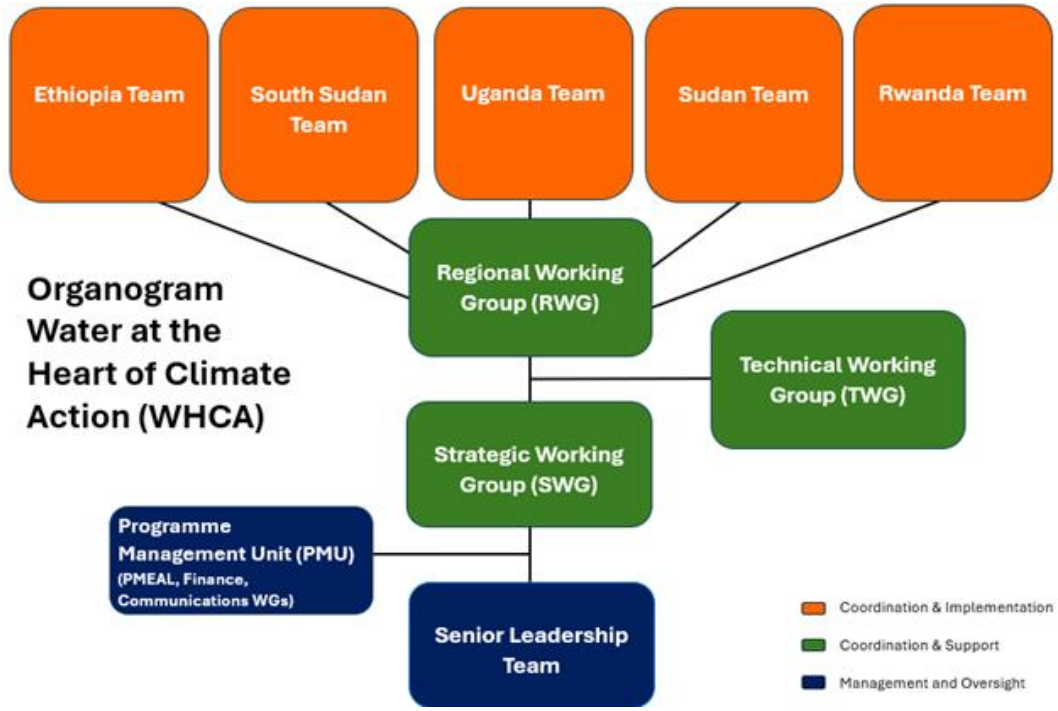


Figure 1: WHCA governance structure.

The **Regional Working Group** (RWG) convenes and supports country teams with coordination, peer to peer learning and support and contextualization of technical topics. The group virtually meets weekly or bi-weekly, depending on need. The RWG is chaired by the IFRC. Technical advisors, mostly with a regional role, of all consortium partners are members of the RWG and are available for online or in-person support to the country teams, which are represented by the country coordinators in the RWG. Topics of conversation include updates from country teams on progress of assessments, topical technical discussions per TFA, workshops planning and implementation of activities.

Technical topics that need more discussion and alignment between consortium partners can be escalated to the **Technical Working Group** (TWG). The TWG is chaired by the NLRC and consists of members from all consortium partners who are primarily based in global offices and meet virtually on a bi-weekly basis. The chair of the RWG is also a member of the TWG which facilitates quick escalation of technical challenges to this group and feeding back to the RWG and country teams on the topical technical issues that warrant further guidance. Discussions in the TWG focus on technical topics related to the overall implementation of the programme, including inter-TFA collaboration and alignment between the expertise areas of the consortium partners. Topics of conversation include the interoperability of systems and platforms in the space of EWS, the relevance of a basin approach and building synergies between organizations on information sharing, data exchange and joint working.

The strategic direction in the WHCA consortium is provided by the **Strategic Working Group** (SWG), which meets virtually on a bi-weekly basis. The SWG is chaired by the consortium coordinator and has management members from all consortium partners, and the chairs of the TWG and RWG. Topics include the governance structure, shared responsibilities, resource mobilization and upscaling and expansion of the programme, and budget.

The SWG also prepares for discussions within the **Senior Leadership Team** (SLT), which meets once or twice a year and provides strategic oversight with regards to the execution of the consortium agreement, the WHCA programme, risks, grant and budget, strategy and external relations. The SLT is chaired by NLRC.

The **Programme Management Unit** (PMU) consists of the consortium coordinator, the chairs of the monitoring, evaluation, accountability and learning (MEAL) and communications working groups, and the financial controller. These four positions are all NLRC staff. The PMU does not meet as a unit, but rather the consortium coordinator maintains close working relations with the aforementioned positions. The MEAL and communications working groups include members of all consortium partners who meet regularly. They jointly developed the MEAL framework and the communications strategy.

An overview of functions, roles and responsibilities has been developed for national, regional and global levels. A detailed overview can be found in Annex I.

4. ASSESSING IMPACT

4.1 Detailed results areas

The WHCA programme aims to increase **resilience in communities most impacted by water-related disasters** through an integrated, systemic, silo-breaking approach**.** Five outcomes (corresponding to the five TFAs of the programme) contribute to achieving this intended impact:

- **Outcome 1: Water-related risk knowledge and governance –** Weather- and water-related disaster risk information system(s), established through participatory and inclusive processes, and effectively applying local, national and global level data, inform(s) decision-making to support affected communities with community-centered solutions for risk management.
- **Outcome 2: Observations, monitoring and forecasting of weather- and water-related hazards** – Improved production of and access to climate, weather and water observation, monitoring and impact-based forecasting/prediction products in order to deliver flood and drought warning services to various stakeholders for decision-making.
- **Outcome 3: Water-specific early warning systems dissemination and communication** – Most at-risk communities access relevant, timely, understandable, and actionable water-related alert/early warning messages that could enable them to take actions to protect lives, livelihoods and critical infrastructure.
- **Outcome 4: Anticipatory action and locally led adaptation** – Strengthened preparedness to take anticipatory action in response to warnings and enhanced locally led water-related climate adaptation capacities that could contribute to the reduction of water-related risks.
- **Outcome 5: Cross-cutting** – These enabling activities are implemented to ensure effective community and stakeholder engagement, response to protection-gender-inclusion needs, strong inter-TFA linkages, a cross-fertilization of learning, efficient knowledge management and high-quality actions.

Figure 2 illustrates how the programme has developed its results chain, bringing the gap analysis and the impact together via the activities, outputs and outcomes.

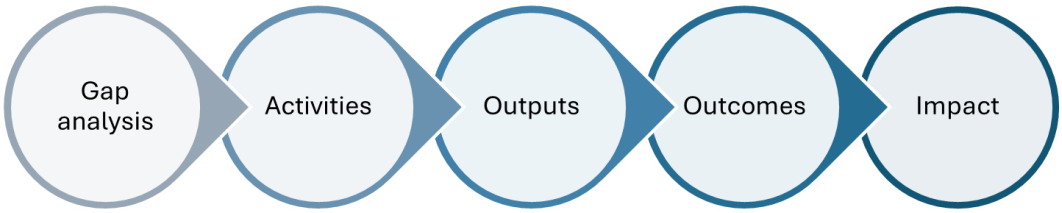


Figure 2: Process flow from gap analysis to impact.

The WHCA's consortium-level theory of change (ToC) in Figure 3 describes the logic of change between these five outcomes and the intended final impact of the programme. Risks of not achieving these outcomes have been included in the risk analysis of the programme. Each WHCA country team has produced a contextualized version of this consortium-level ToC, describing the logic of change at country level. Country-level ToCs started from the gap analysis conducted at national and local level, and describe the activities and outputs leading to making progress towards the consortium's intended outcomes and ultimately to impact, including related assumptions. The country-level ToCs can be found in the country sections of this report, and in Annex III.

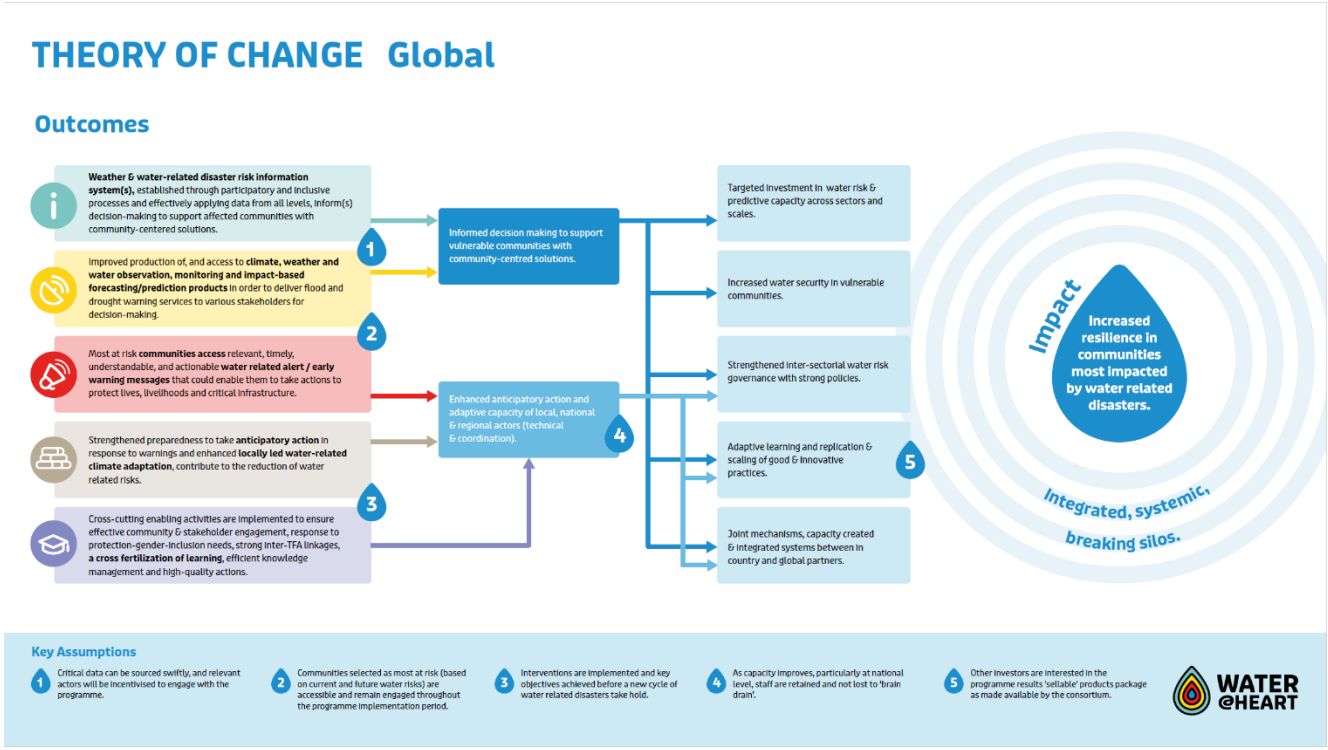


Figure 3: Consortium-level theory of change – from outcomes to impact.

4.2 Consortium reporting

A MEAL Working Group (MEALWG) has been established, consisting of MEAL representatives from each consortium partner as well as representatives of the different WHCA country teams. The MEALWG meets monthly to design, describe and implement jointly consortium-level MEAL requirements and tools. This includes the development and monitoring of the overall MEAL framework of the programme, provision of support to country teams in implementing MEAL activities, contributing to the learning agenda and providing quality data for reporting. Consortium-level MEAL requirements are aligned with the respective EW4All and MoFA results frameworks. Figure 4 gives an overview of consortium-level MEAL arrangements.

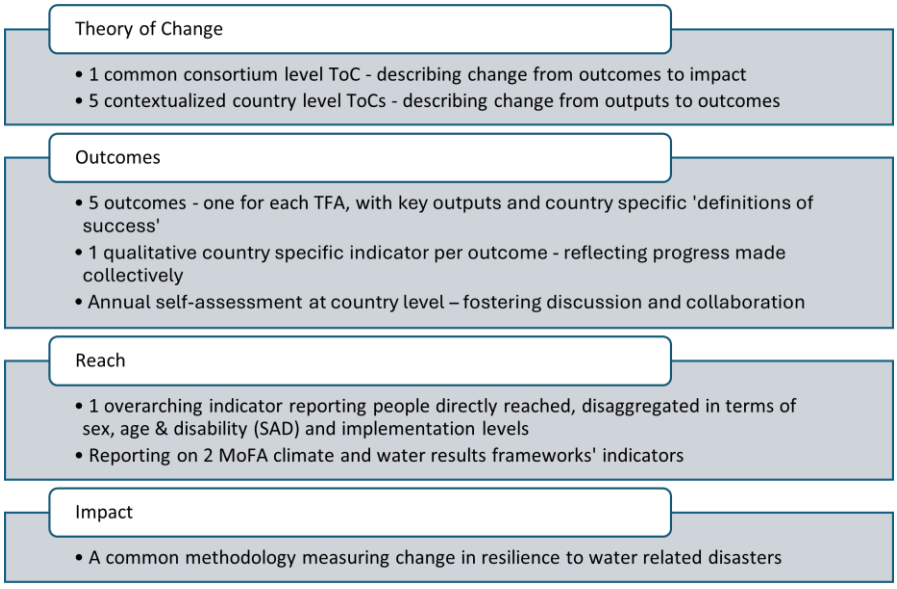


Figure 4: Consortium-level MEAL arrangements.

Consortium level indicator reporting is expected annually on:

- Five outcome level indicators (including narrative explanations per country)
- People reached (disaggregated by SAD and implementation levels plus MoFA water/climate indicator alignment).

Outcome progress assessment

For each TFA, an outcome statement and outputs have been formulated by the MEALWG in collaboration with the TWG and RWG. These outcomes and outputs together form the framework that will guide the reflection around and the documentation of progress made at national level. During the inception phase, country teams have adapted the outputs to their national context and plans, and have agreed on:

- Definition of success: describing and specifying their concrete ambitions to be reached by the end of the programme
- Risks and assumptions: making assumptions related to success explicit, questioning feasibility and potential risks as well as mitigation measures to take.

During the process of annual planning, country teams will review their definitions of success, their acknowledged risks and assumptions, and agree on goals and targets for the year to come to achieve their set ambitions. As part of the process of progress reporting, country teams will meet and discuss progress made, and collectively self-assess and agree on a progress score for the programme's outputs and outcomes. The self-assessed progress scores will be supported with an explanation and evidence materials to substantiate the analysis, and result in one semi-quantitative indicator per outcome. Annual progress on this indicator will be presented in a radar chart as in Figure 5, supported by a narrative.

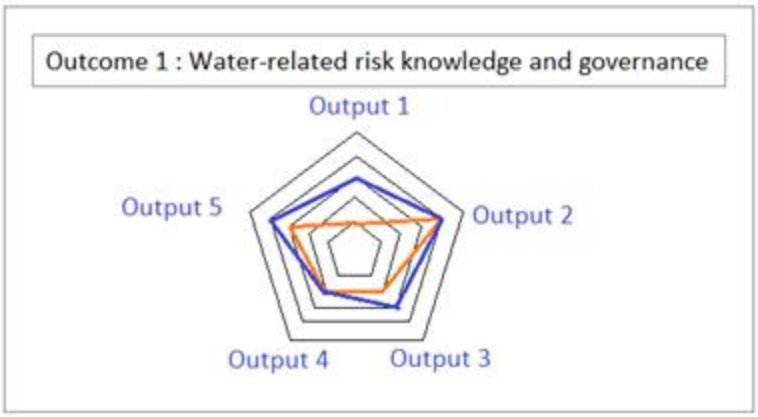


Figure 5: Example of a radar chart to present annual progress.

The scoring methodology that will be used during the self-assessment is the same for all countries. Each output receives a score: 0 – no progress, 1 – early stage progress, 2 – basic delivery, 3 – satisfactory results, 4 – full results, 5 – exceptional results. The progress score on each outcome corresponds to the average of the score obtained for each corresponding output. The score obtained for each outcome in September 2024 will be the baseline. Each country team will then estimate which score they expect to reach, for each outcome, by the end of 2026 (used for final evaluation)[13] and mid-2028 (end of the programme). A baseline and end evaluation gauge will then be built to visualize the progress realized on each outcome at different points in time.

[13] The final evaluation is scheduled to take place at the end of 2026/beginning of 2027.

Impact-level assessment

WHCA acknowledges that impacting on people's lives takes time, and that the extent to which the programme will be able to prove attribution or contribution to impacts and ultimately change will always be limited. WHCA therefore wants to take a qualitative and learning perspective on impact. The learning agenda of WHCA will guide learning activities and deliver learning products that are expected to substantiate the role of the programme in improving community resilience.

At impact level, WHCA will assess changes in community resilience. A common measurement method for assessing community resilience and water security will be applied in all targeted communities. WHCA will use, among other tools, the IFRC's enhanced Vulnerability and Capacity Assessment (eVCA)[14] – a participatory process developed for communities to become more resilient through the assessment and analysis of the risks they face and the identification of actions to reduce these risks[15] – to provide information on the six identified characteristics of a resilient community that …

- knows its risks, is healthy, and can meet its basic needs in terms of shelter, food, water and sanitation
- has economic opportunities
- has well maintained infrastructure and accessible services
- can manage its natural assets
- is socially cohesive
- is connected.

The eVCA is part of a wider toolbox developed by the IFRC, namely the community resilience measurement dashboard to help measure community resilience.[16] The tools are used for both baseline and endline assessments to enable measuring progress and change in community resilience in targeted communities. One specific tool that is used to measure a community's resilience, is the **resilience star** – a group-based assessment of community resilience informed by the eVCA and other community data. The group together analyses 11 identified dimensions that are connected to the six characteristics of a resilient community. Related hazard, capacities and vulnerabilities are defined. Eventually, the group rates the strength of its community on each dimension, resulting in the type of graph shown in Figure 6.

Figure 6: Example of result from a resilience star assessment.

Besides the community level, WHCA will also assess its impact at the national and regional level. In particular, the capacity and capabilities of the regional and national agencies or stakeholders related to the EWS. This part of measuring impact will focus on the operating of the EWS and the influence of the observations on hydro-meteo forecasting.[17]

[14] More information about the assessment method can be found here: https://preparecenter.org/site/evca/. eVCAs have been done at community level during the inception phase to inform the countries' programming.
[15] The underlying assumption is that increased capacity and reduced vulnerability equals increased resilience (Adger *et al.,* 2005c).
[16] More information can be found here: https://rmd.ifrc.org/.
[17] A study on the influence of observations is planned to be led by the European Centre for Medium-Range Weather Forecasts.

Reach

An indicator of the number of people reached will be reported on by all partners and all countries, to give a sense of the scale of the programme. The reach of WHCA is connected to the EWS value chain and the access people have to the established or strengthened EWS. The indicator will be disaggregated in a number of categories. Different categories are defined to account for the various groups of people reached. First of all, disaggregation by SAD is foreseen, and there will be disaggregation by community members, institutional partners at the regional/national/local level, and staff. Finally, people reached directly, with services provided by the programme, and people reached indirectly will be included.

With the available reach data, WHCA aims to contribute to the following indicators from MoFA's results frameworks on climate and water:

- Number of people reached with measures to increase their resilience and/or reduce their exposure to climate change
- Number of people reached with water management services aimed at river basins and deltas with good water quality and quantity.

The MEALWG will establish clear guidelines on what to count, how to count and how to record people reached. This guideline will be developed in close collaboration with MoFA to ensure the methodology is in line with the ministry's requirements and guidelines.

4.3 Learning agenda

With WHCA being the first large EWS programme that brings together all the necessary elements along the EWS value chain including anticipatory action and adaptation, a unique opportunity is created to learn from this process and programme. The learning agenda contributes to strengthening linkages and collaboration among partners with different mandates, with the aim to achieve end-to-end, people-centred EWS and enhance locally led water-related climate adaptation. Consortium partner Red Cross Red Crescent Climate Centre is leading on the learning agenda, in collaboration with all partners and working groups in WHCA, especially with the MEAL WG and TWG. The objectives of the learning agenda are:

- To facilitate an ongoing and diverse process of learning across consortium partners and stakeholders, including diversity of learning partners and types of knowledge.
- To promote inclusive processes generating a range of learning products that will support other resilience-building processes (including technical, scientific and process content).
- To share lessons learnt with a wider group of partners and stakeholders to inspire climate action and to further strengthen the WHCA model for expansion and replication.
- To implement and monitor programme performance and support programme adjustments as part of the integrated MEAL process.

The learning agenda is structured by four areas of learning activities: internal learning processes, sharing lessons learnt with a wider audience, a comprehensive monitoring approach (MEAL) and supporting the crafting of public facing outputs including technical and scientific publications. These areas are also shown in Figure 7.

Learning questions will be developed and reviewed annually, and focus on the diversity of disciplines, partners and countries in WHCA. Learning at the country level will be contextualized as much as possible.

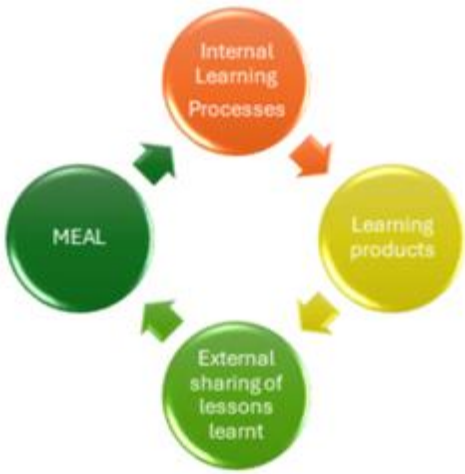


Figure 7: Four areas of learning.

Learning activities include learning webinars (both internal and external facing), regional learning exchanges, documentation of learning stories, internal training events, annual regional learning assemblies and MEAL-related processes.

Learning products include podcast series, a virtual library, technical videos, story maps, scientific journal publications and virtual reality experience. A detailed overview of the learning agenda can be found in Annex IV.

Climate Centre, June 2024, team exercise during the first regional learning assembly.

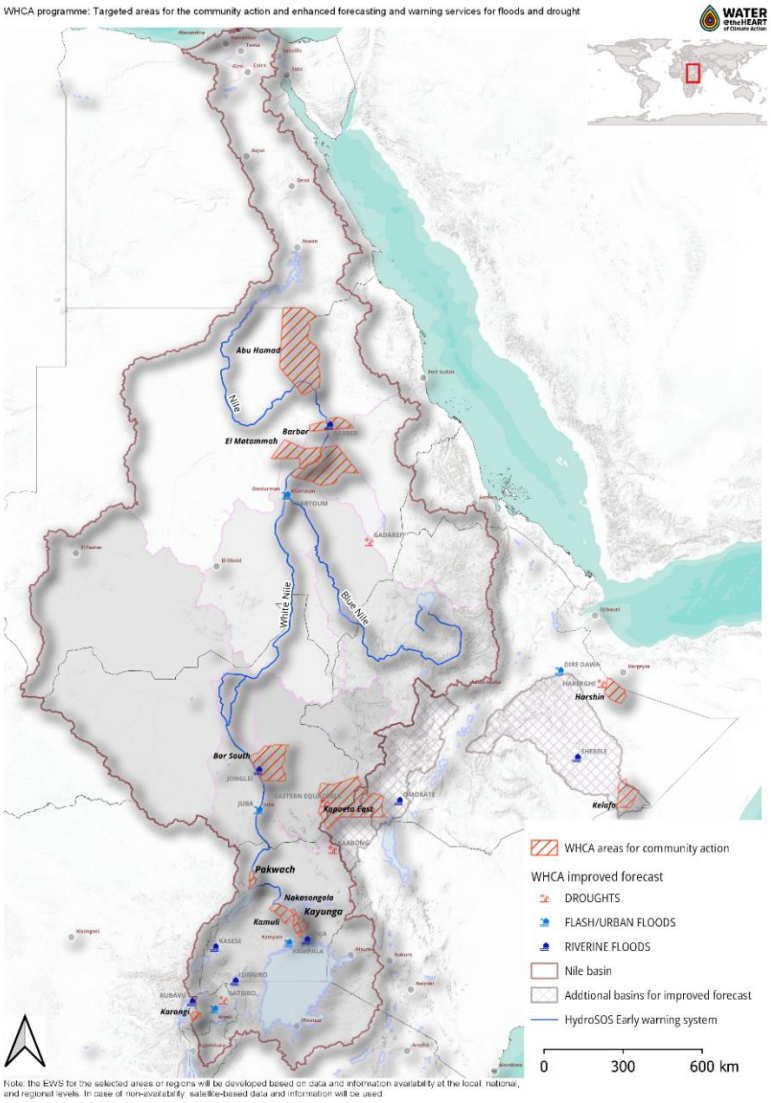
Climate Centre, June 2024, market place during the first regional learning assembly.

The first regional learning assembly took place during the inception phase in June 2024 in Kigali. Bringing all consortium and implementing partners together for a few days proved to be instrumental to aligning and completing the country plans with support from the regional and global teams. Picture 4 shows a team exercise which increases participants awareness on the importance of collaboration. Picture 5 shows a market place, where partners presented themselves.

5. COUNTRY PLANS

Since water does not respect country boundaries, the WHCA programme takes a basin approach. There are two main benefits of working in a basin rather having a country focus when looking at EWS. Firstly, there is a clear correlation between the characteristics of a basin and the density, location and type of data collection tools necessary to achieve a certain accuracy in forecast and consequently in warning messages. Secondly, a basin approach allows for the cascading effects of cross-border flooding events. Working in a basin also encourages partners to focus on the bigger picture, step out of silos, and learn from neighbouring countries.

In 2023, four countries were selected for WHCA implementation: Ethiopia, South Sudan, Sudan and Uganda. The selected countries represent a mix of fragile contexts and contexts where adaptation and risk mitigation have already been embedded in policies. Due to the active conflict in Sudan and related access challenges for some of the partners, and to mitigate the risk and limitations to implement WHCA, the SWG decided in January 2024 to allocate 50 per cent of the budget of Sudan to a fifth country. Based on a process and criteria shared earlier with the MoFA,[18] Rwanda was selected as the fifth country and approved by MoFA for inclusion into the programme on 8th March 2024. Map 1 (Annex XII) shows the Nile basin and the targeted areas in the five selected countries for community action and enhanced forecasting and warning services for floods and drought.



Map 1: Targeted areas for community action and enhanced forecasting and warning services for floods and drought.

[18] See Annex II.

The consortium provides an opportunity to scale up and strengthen EWS and community-led climate adaptation measures in other countries, which may be explored once implementation has started. This will allow additional countries to benefit from lessons learned and best practices that have been developed between the consortium partners in achieving end-to-end, people-centered EWS together with complementary climate adaptation interventions.

To identify the most impactful activities for each TFA, ensure decision-making within countries, use an evidence-based approach, strengthen partner collaboration and break silos, a common methodology for the countries was designed. The steps that were followed in all countries are:

- A national-level gap analysis to identify actions for strategic inclusion in terms of water-related risk governance and policy, and improving the availability of weather and water data and services. WMO and UNDRR held workshops with their implementing partners in the countries to collect existing information and conducted the assessments. UNDRR's assessment have been based on the minimum core capability tool within the EW4All implementation toolkit (see Annex VII). WMO's assessments focused on identifying needs and capacities for end-to-end EWS for floods and drought. The reports following these assessments can be found in Annex VIII. SOFF's peer advisors and NHMS jointly analysed the gap for compliance with the Global Basic Observing Network (GBON) and undertook hydromet diagnostics. These reports can be found in Annexes IX and X.

Observations exchange creates a global public good. In other words, investments to improve observations exchange in any country will have global benefits beyond those for the country itself. It is in the nature of global public goods that they will be underprovided unless special efforts are made through global institutions and financing mechanisms to support their provision.

The potential benefits directly enabled by the full implementation of GBON, primarily via its implementation in countries with the largest current data gaps, are estimated to exceed US$ 5 billion a year.[19]

- At community-level, National Societies led the eVCA, which was a joint effort with relevant government partners participating.
- Communities have been selected following these criteria:
  - Areas within the Nile basin severely affected by drought and flood hazards
  - Communities with limited access to EWS (last-mile communities)
  - Communities with limited coping capacities to drought and flood
  - Communities dependent on livelihoods which are sensitive to drought and flood impacts
  - Availability of staff and capacity to implement
  - States with minimal physical access constraints and relatively stable security
  - Areas that are not covered by other actors
  - Existing experience and knowledge of the area by WHCA partners.
- The global ToC was contextualized for the country, defining country-specific definitions of success for the outputs and discussing the assumptions and risks. This was done by the country teams with participation of National Societies and government staff representing the office of disaster risk reduction and hydrometeorological services.
- Country teams designed their joint intervention plan, prioritizing activities under all TFA's and discussing inter-TFA activities.

[19] SOFF Action Report 2023, https://www.un-soff.org/soff-action-report-2023/

What is the eVCA? The enhanced Vulnerability and Capacity Assessment is a participatory community risk-assessment process. It enables communities to assess and analyse the risks they face, explore where these risks come from, which members of the community are most exposed, what coping capacities are available, and what initiatives can be undertaken to strengthen coping capacities and reduce the risks. The eVCA includes climate change as well as gender and diversity considerations and is aligned with the road map to resilient communities.

This methodology used resulted in new levels and approaches to collaboration among partners. For example, joint assessments in the community were conducted by National Societies side-by-side with government representatives, which allowed for a better understanding of gaps and priorities in the targeted community. A workshop model was used for developing the country plans, which enabled all partners to discuss in-depth, share insights and information and align efforts. It created a new opportunity of learning between mandated agencies.

The following country sections summarize the application of the above presented methodology for each country and the ensuing country plan.

People living in southern Ethiopia have been facing the disastrous effects of climate change for years. The lack of water has a huge effect on the population, who rely on their livestock for food and income. (2011 photo: NLRC)

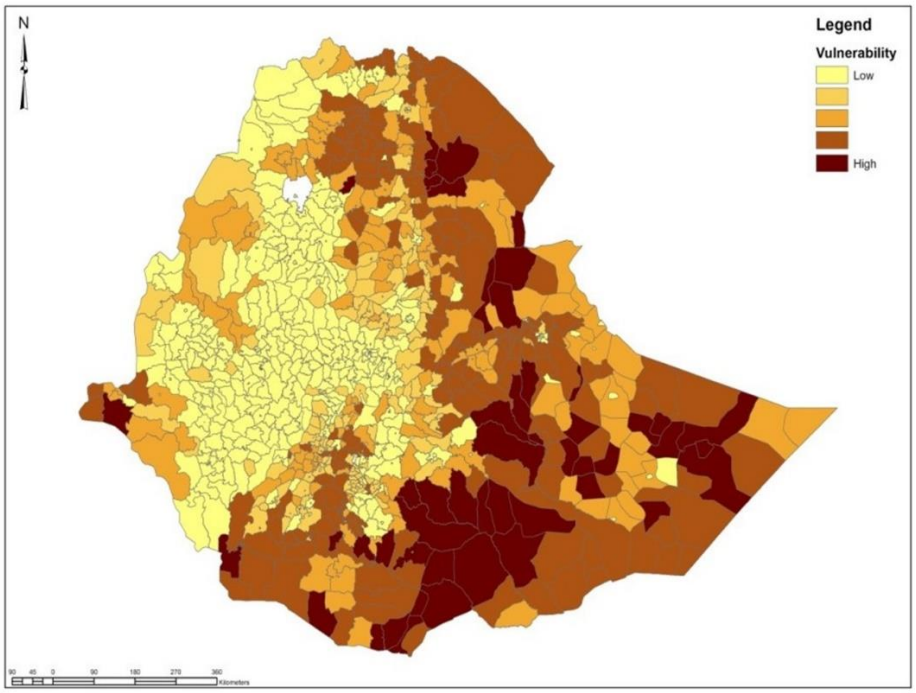
5.1 Ethiopia

> *Saving lives and livelihoods along with supportive anticipatory actions is a priority agenda for the government and its partners, civil society organizations, and the community at large*
>
> – Ambassador Dr Shiferaw Teklemariam, Commissioner, Ethiopian Disaster Risk Management Commission[20]

5.1.1 Context and contribution of WHCA to national plans

Ethiopia is highly vulnerable to the impacts of climate change ranking 163 (out of 185) in the ND-GAIN index.[21] This is largely because the country relies heavily on rain-fed agriculture and natural resources, combined with a low adaptive capacity. Since 1960, temperatures have risen by an average of 1°C and rainfall patterns have become highly unpredictable. Extreme weather events like droughts and floods are common and seem to be happening more often than they did a decade ago.[22] Climate change is already affecting nearly all areas of life in Ethiopia. To address this, the Ethiopian government has developed adaptation plans for nine key sectors.[23]

WHCA connects to these adaptation plans and supports the efforts in the area of climate services and disaster risk reduction (DRR). This includes increasing the amount and quality of climate and early warning data shared each year, adding more modern weather monitoring stations and increasing the reliability of climate data following the Ethiopia GBON national gap analysis[24] performed by SOFF and additional assessment on needs and capacities for floods and drought by WMO.



Map 2: Vulnerability map of Ethiopia. The vulnerability indicators – access to infrastructure, people with disabilities, and food insecurity hotspot woredas – were integrated to form a composite vulnerability indicator. This was developed using the INFORM risk framework.

The programme also supports other adaptation sectors by providing access to clean water, promoting tree planting, offering drought-resistant crops, and using solar power for water systems. Additionally the WHCA

[20] A Roadmap for Multi-Hazard, Impact-Based Early Warning and Early Action System 2023–2030, December 2022.

[21] https://gain-new.crc.nd.edu/country/ethiopia.

[22] Updated Nationally Determined Contribution, Ethiopia, July 2021.

[23] Ibid.

[24] https://www.un-soff.org/wp-content/uploads/2024/02/Ethiopia-GBON-National-Gap-Analysis.pdf.

programme is fully aligned with the new 2023–2030 Roadmap for Multi-Hazard Impact Based Early Warning and Early Action Systems (MH-IB-EWEA).[25] Approved in 2022, this road map provides overall direction on broader aspects of the early warning early action (EWEA) architecture and it has a DRM financing strategy that is waiting for approval by the government.

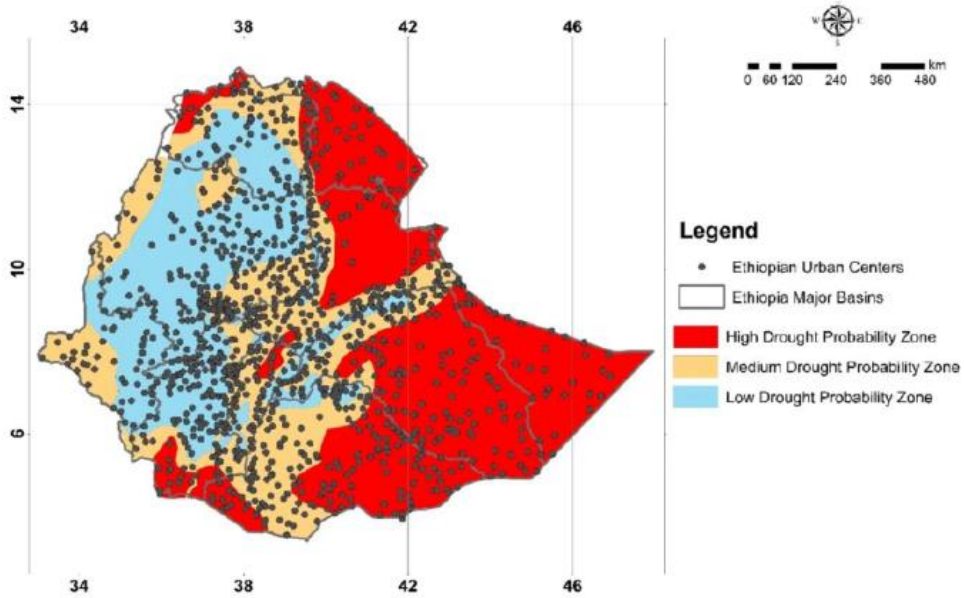
5.1.2 Coordination and governance structure

To support government strategies and enable fruitful collaboration between WHCA's partners in Ethiopia, three coordination mechanisms are in place:

1. The **National Early Warning Technical Working Group**, which already existed in the country and is chaired by the Head of the Early Warning Directorate at the Ethiopian Disaster Risk Management Commission (EDRMC). It brings together everyone involved in the UN EW4All initiative in Ethiopia and monitors progress monthly. WHCA country team members attend these meetings to stay aligned with other efforts, seek support from key stakeholders and engage in shared learning.
2. **Project Advisory Committee**, created by the WHCA programme, is chaired by the State Minister of the Ministry of Water and Energy (MoWE) and co-chaired by the Deputy Commissioner of EDRMC. It meets once a year to provide strategic direction and high-level political coordination. Members include representatives from the Ethiopian Meteorology Institute (EMI), UNDP, the Netherlands embassy, SOFF Peer Advisor Norwegian Meteorological Institute,[26] EthioTelecom, UNDRR, Ethiopian Red Cross Society (ERCS) and a representative of the WHCA programme team.
3. **Project Technical Working Group**, also established by the WHCA programme, is chaired by ERCS and co-chaired by EMI. They meet every two weeks to plan and implement the WHCA programme ensuring coordination among the consortium. Members include WHCA consortium partners and/or their implementing partners: NLRC, IFRC, the Climate Centre, EDRMC, MoWE, SOFF peer advisor Norwegian Meteorological Institute and UNDRR.

Terms of reference have been developed for the last two mechanisms, which detail the objectives, membership and ways of working.

5.1.3 Gap analysis and area selection



Drought risk areas Ethiopia (Abraha *et al.,* 2022).

[25] https://www.preventionweb.net/publication/roadmap-multi-hazard-impact-based-early-warning-2023-2030-building-disaster-resilient.

[26] SOFF peer advisors in Ethiopia are the Norwegian Meteorological Institute and the Finnish Meteorological Institute. However, SOFF's contract is with the Norwegian Meteorological Institute and therefore they represent as SOFF peer advisor in the Project Advisory Committee.

Water-related risk knowledge and governance

In alignment with the MH-IB-EWEA road map, EDRMC finalized the disaster risk management (DRM) policy, strategy and legal framework that includes mandatory legal provisions and associated directives to establish and operationalize the DRM system.

The aim is to have a comprehensive and automated disaster risk information and knowledge base available for all dimensions of disaster risk, including hazards, exposure, vulnerability, and capacity at household, community and organizational levels by 2030.

Gaps were identified including the lack of a disaster risk information management system and impact-based EWS, lack of institutional continuity and investment in loss and damage accounting, lack of updated disaster risk profiles at woreda level, absence of a situation room linked to Emergency Coordination Centre and the African Multi-hazard Early Warning and Action System, and the limited institutional capacity and interconnection of early warning actors. WHCA's contribution to close these identified gaps in TFA1 is described in paragraph 5.1.5 of this report (intervention plan).

Observations monitoring and forecasting of weather and water-related hazards

Assessments at the national level has been undertaken by WMO in collaboration with EMI and MoWE and by SOFF through peer advisors from the Norwegian Meteorological Institute and Finnish Meteorological Institute. Ethiopia has a strong technical capacity meteorology, agro-meteorology, crop and livestock production, nutrition monitoring, anthropometric data collection and analysis, computer programming, and the use of remote-sensing tools. EMI already provides short-term, medium-term and long-term forecasts and a numerical weather prediction facility supports weather research forecasts, from hourly up to ten days, with plans to extend to seasonal forecasts and other hazards like flash floods.

In Ethiopia, there are gaps in improving current facilities, especially in weather and climate services. The country has 17 manual synoptic stations, but none meet GBON standards.[27] Key gaps include:

- Limited hydrometeorological data: There are not enough automatic stations to gather, monitor, and forecast weather and water data in real time. This limits the exchange of information and the accuracy of forecasts.
- Financial and resource shortages: The country faces financial constraints and lacks sufficient skilled personnel, modern observation infrastructure, and ICT services needed for better data management.
- Outdated forecasting tools: There is a need to improve meteorological and hydrological models and forecasting tools to make hydrometeorological forecasting more effective.
- Infrastructure and engagement: Existing structures need upgrading, and there's a need for better engagement with stakeholders.

Additionally, early warning systems should be closely aligned with risk information, particularly with the Woreda risk profile and other urban initiatives. Figure 8 shows a spider graph with ratings for EWS in Ethiopia. Detailed assessments on gaps can be found in Annexes VIII and IX.

[27] Full details of the gap on GBON compliance can be found here: https://www.un-soff.org/wp-content/uploads/2024/02/Ethiopia-GBON-National-Gap-Analysis.pdf

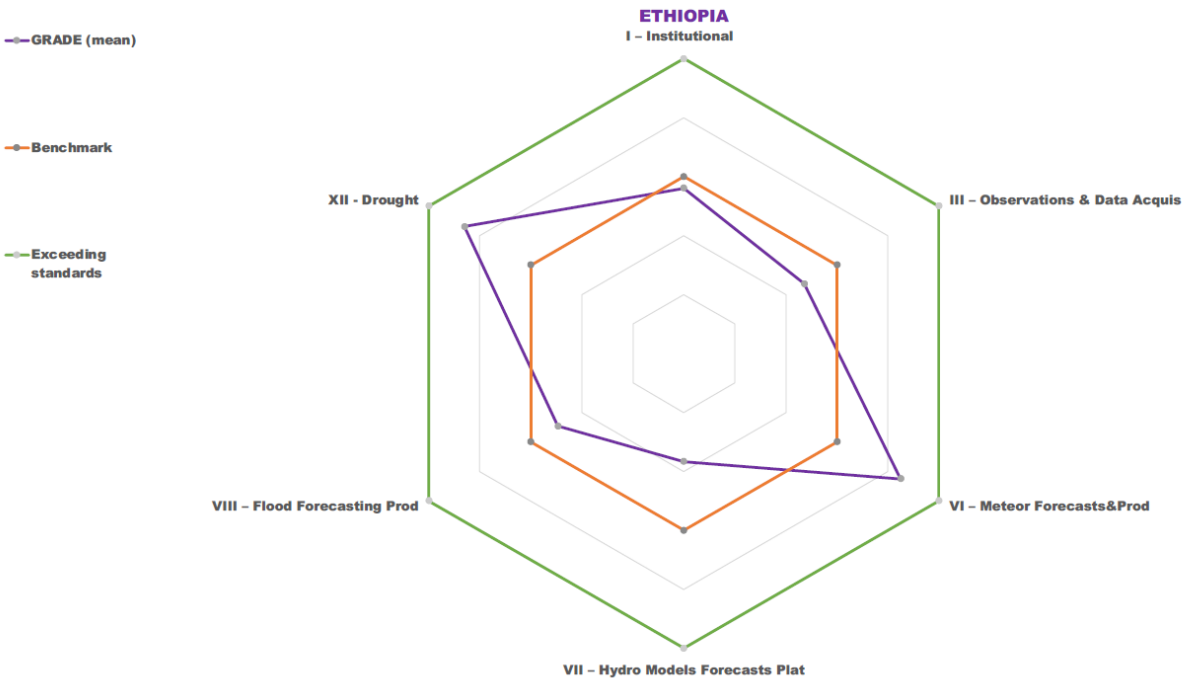


Figure 8: Spider graph rating for the end-to-end early warning system for Ethiopia.

Community early warning systems and locally led adaptation

Proposed interventions in TFA3 on water specific early warning systems dissemination and communication and TFA4 on anticipatory action and locally led adaptation will be implemented at the community level. The communities have been selected through extensive consultation with all implementing partners who designed criteria and made use of existing data on vulnerabilities and flood and drought risks in Ethiopia. These are the criteria that were developed to select regions:

- Areas severely affected by drought and flood hazards
- Communities with limited access to EWS (last mile communities)
- Communities with limited coping capacities to drought and flood
- Communities dependent on livelihoods which are sensitive to drought and flood impacts
- Availability of staff and capacity to implement
- Areas that are not covered by other actors
- Existing experience and knowledge of the area by WHCA partners.

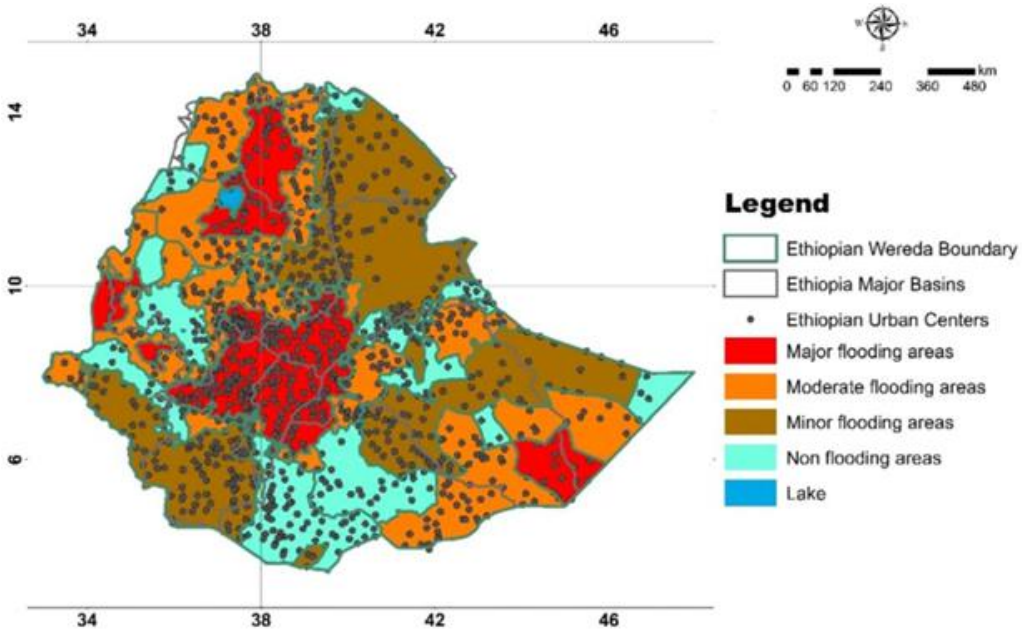
In Ethiopia the consortium was faced with the challenge that the most affected areas by droughts and floods complying with the criteria above are not part of the Nile basin, but rather in the extended watershed or region (see national risk maps 2, 3 and 4 provided by the Ethiopian government). The north-western Ethiopian plateau which is home to the Blue Nile basin is currently experiencing sporadic conflict and there is a risk that the lack of access could limit implementation of activities. Therefore the implementing partners selected the Somali Region for community-level activities. Within these regions and using similar criteria as described above, the implementing partners selected Harish woreda for activities with regards to drought hazard and Kelafo woreda for activities with regards to flood hazard. ERCS conducted the eVCA and a water survey in the Harshin and Kalafo area, using focus group discussions and key informant interviews. In these area there is good commitment from communities and government, availability of natural resources and key infrastructure and services sufficient security, and a relatively good local governance structure is in place.

Community mapping exercise during eVCA at Kellafo woreda, Somali Region, Ethiopia. (2024 photo: ERCS)

The community assessments highlighted the following key gaps that can be addressed in this programme: Lack of risk management knowledge and practices among the communities for water-related disasters

- Limited or no access to early warning systems
- Insufficient water management and water, sanitation and hygiene (WASH) practices to meet current and future risks
- Food production and livelihood systems (mostly agriculture) are not adapted to current and future climate and water risks
- Limited inclusion of marginalized groups (women, people with disabilities, religion and ethnic minorities) in decision-making.

Furthermore environmental degradation especially in the Harshin area is an additional challenge. The detailed eVCA reports can be found in Annex XI. WHCA's contribution to close these identified gaps in TFA3 and TFA4 is described in paragraph 3.1.5 of this report (Intervention Plan).



Map 4: Ethiopia flood risk areas. (Abraha *et al.,* 2022)

5.1.4 Theory of change

The change that WHCA will bring in Ethiopia can be summarized as increasing resilience in communities impacted by water-related disasters. A theory of change to achieve this final objective has been developed by the in-country consortium partners and is shown in Figure 9 and Annex III.

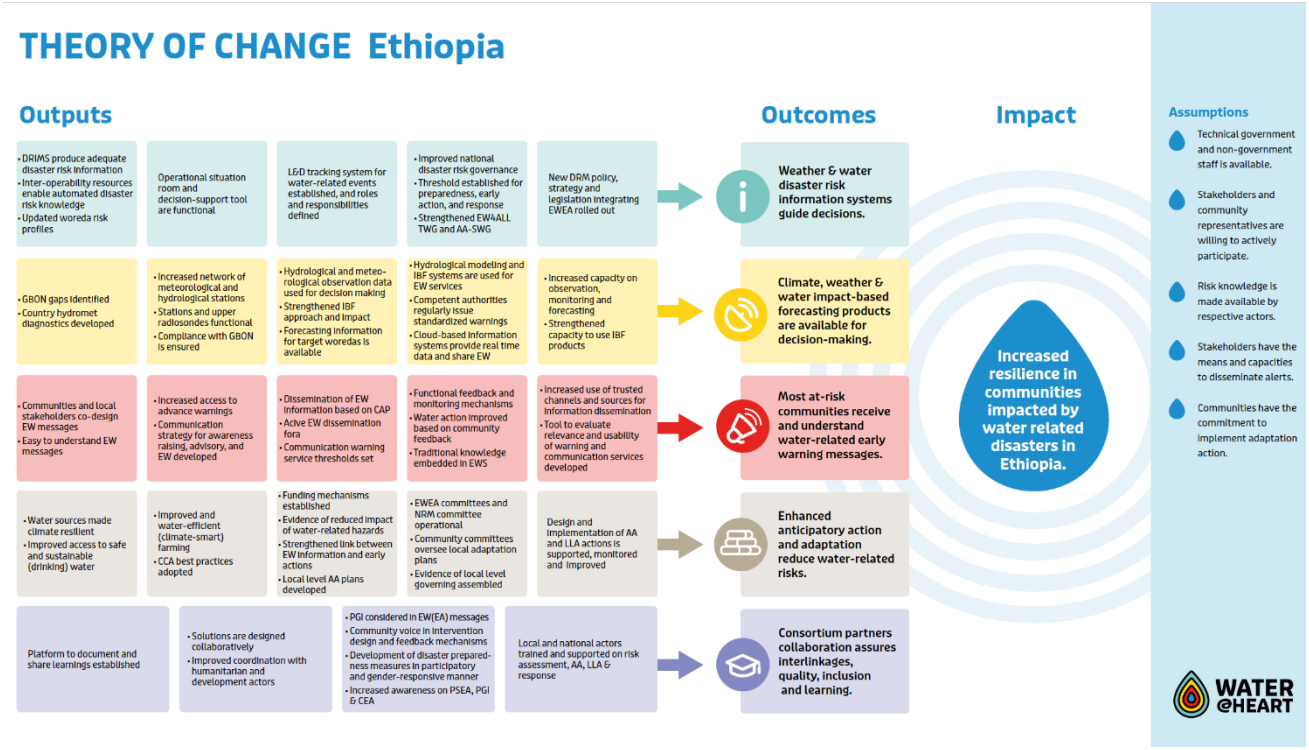


Figure 9: Contextualized ToC Ethiopia.

The five comprehensive outputs per outcome (TFA) were jointly defined by the consortium partners in-country. The different output-outcome trajectories of change, as elaborated upon in the MEAL chapter, are closely connected, for instance the foundational risk information used to contextualize and make relevant thresholds from TFA1 are aligned with operational hydrological modelling and IBF systems within TFA2 and connected with the co-designed EW messages under TFA3 and the EWEA committees under TFA4. As a very inclusive process is foreseen for the implementation, the main assumptions for Ethiopia relate to the commitment of stakeholders and communities to collaborate and implement developed solutions. The main risks identified in country include vandalism, staff retention, and lack of access to targeted communities.

5.1.5 Intervention plan

A detailed activity plan has been developed based on the gap analysis.

Water-related risk knowledge and governance

WHCA will address the lack of a disaster risk information management system and impact-based early warning systems in Ethiopia by supporting the government effort in establishing thresholds, triggers and SOPs for early actions in case of floods and droughts in different sectors as well as supporting the effort in digitalization of risk information and processes around the establishment of national EWS. WHCA will also contribute to tackle the coordination challenges between early warning actors by installing and operationalizing an operation room system that is linked to the Emergency Coordination Centre and African Multi-hazard Early Warning and Action System as well as providing the necessary training to the users.

Finally WHCA will tackle the gaps in loss and damage accounting and the lack of updated risk profiles by installing the new disaster loss database and scaling up the effort of EDRMC to compile Woreda risk profiles.

ERCS will collaborate with EDRMC to make risk information available in the target area and at the national level through different assessments conducted such as eVCA, through ERCS branches. This risk information will be utilized in the updating of the triggers and thresholds for the EAPs and jointly with the EDRMC, ERCS will engage in simulation exercises to support the strengthening of coordination, institutional capacities and testing of standard operating procedures (SOPs).

Observations monitoring and forecasting of weather and water-related hazards

WHCA will contribute to improving the production and accessibility of climate, weather, and water forecasting/prediction products to inform decision-making. A large effort will be made by SOFF's implementing partner in Ethiopia UNDP to increase the number of meteorological stations and to ensure Ethiopia shared meteorological data achieve compliance with the GBON standards.[28]

The availability of hydrological information will also be improved by, for example, improving the understanding of water flow at selected points in the basin and establishing rating curves. Upgrading and rehabilitating existing hydrological stations is also considered in the plan. Finally WHCA will improve the existing short term, sub-seasonal to seasonal forecasts and support the data management systems where hydro- and meteorological information is stored, as this is a key element to the development of a national EWS for floods and droughts.

WHCA will be key in developing Impact Based Forecasting (IBF) products for floods and droughts in Ethiopia. IBF for riverine and flash floods and hydrometereological droughts will be developed for the areas of Omorate (riverine floods), Dire Daua (flash floods) and Harerghe (droughts). These IBF products will be also benefitting the community of Harshin and Kalafo as the Harerghe zone IBF advisory will be relevant to organize early action as it covers the Shabelle basin that the two woredas selected for community based implementation are part of. An important step will be taken within WHCA to connect the impact-based advisory provided by EMI and MoWE to the humanitarian system, and more specifically to the system used within the ERCS emergency operation center, so that the advisory can efficiently be turned into early actions that reach the communities. To achieve this, the trigger monitoring tool for flood and drought early action protocols (EAPs) already in place at ERCS will be updated to connect and coordinate to the EDRC and EMI systems.

Community early warning systems and locally led adaptation

For effective early warning systems, information must reach communities quickly and be actionable. ERCS will identify gaps and barriers at the community level and work to improve how communities respond to warnings. This includes creating early warning messages that consider gender, age, and disability challenges.

ERCS will help communities manage water-related risks and disasters and strengthen national early action protocols by aligning them with community plans and feedback. They will focus on designing early warning systems with community input, scaling up local strategies for anticipating water-related disasters, and enhancing community-led adaptation efforts. Furthermore, ERCS will promote climate resilience by upgrading water facilities and integrating risk and climate data into WASH practices. Locally led innovation and capacity strengthening are integral components of this intervention.

[28] Full details of SOFF's intervention can be found in https://www.un-soff.org/wp-content/uploads/2024/02/SOFF_Investment_Funding_Request_Ethiopia-1.pdf.

Cross-cutting activities

Protection, gender and inclusion.

In Ethiopia the team will focus on establishing a community feedback mechanism, raising awareness on the role of women in decision making, facilitate locally-made menstrual hygiene products and support girls in schools with such kits, providing people with disabilities and elderly with radios for early warning messages, engaging Jigjiga university on a research on indigenous forecasting knowledge and existing local dissemination mechanisms and strengthen the capacity of local leaders on PGI, Community Engagement and Accountability (CEA) and Prevention of Sexual Exploitation and Abuse (PSEA).

Systems interoperability.

As part of the WHCA programme, the triggers in the trigger monitoring tool will be updated for the flood and drought EAP in collaboration with the NLRC data and digital team, using input data from the WMO IBF model. Leveraging hydrometeorological and risk data available from WMO and UNDRR, this information will be integrated into the EAP monitoring tool via an API connection. Additionally, with support of the NLRC data and digital team community feedback collection and dissemination of early warning messages to relevant stakeholders will be digitalized, enhancing the timeliness of anticipatory action.

In collaboration with the NLRC data and digital team, and other stakeholders, ERCS has developed a trigger monitoring tool for flood and drought EAP. This tool translates technical hydrometeorological data into easily understandable and actionable information for ERCS, helping ERCS identify when and where a trigger level is reached, thus enabling timely decisions for action implementation.

5.1.6 Sustainability and exit strategy

1. The Ethiopia country team will use the following strategies to ensure the sustainability of the WHCA intervention:
   Working closely with national stakeholders and communities to own and lead on water actions. Participatory processes and tools (such as eVCA) are used to assess water-related risks, community needs and priorities and define water actions at community level.
2. Ensuring that all the water and early warning actions under WHCA programme are aligned with and anchored in the national polices and commitments such as the MH-IB-EWEA road map, NDC and the Early Warning for All initiative.
3. Ensuring local and national stakeholders have enough capacity to sustain and replicate the programme's positive impacts. This contributes to the institutionalization of early warning system within the relevant national and local stakeholders.
4. Strengthening the existing governance and coordination system for water action and early warning system both at the national and local levels.
5. Supporting national actors to access international funding from sources such as Green Climate Fund (GCF) and Climate Risk Early Warning System (CREWS) to enable scaling up of EWEA.
6. Coordinating stakeholders to work together through the MH-IB-EWEA road map and building capacities at national and local levels to implement early action.
7. Conducting advocacy on policy change, implementation of risk-informed strategies, integration of EWEA in developmental, social protection, and emergency response.
8. Signing an MoU with relevant government and non-government stakeholders clarifying roles and ensuring smooth and responsible exit at the end of the programme period.

Woman filling jerry cans at water point. (Photo: Rwanda Red Cross)

5.2 Rwanda

> *This incident [the May 2023 floods] resulted in the loss of 135 lives, numerous injuries, and extensive infrastructure damage. These circumstances require our immediate attention [strengthening EWS]*
>
> – Philippe Habinshuti, Permanent Secretary, Ministry in Charge of Emergency Management (MINEMA), Rwanda[29]

5.2.1 Context and contribution of WHCA to national plans

Rwanda faces significant challenges due to its hilly terrain and changing climate. The country has experienced a 1.4-degree Celsius temperature rise since 1970, leading to more frequent and intense weather events like floods and droughts. According to the ND-GAIN Index, Rwanda is 124 out of 184 countries. It has a moderate level of vulnerability and a relatively low capacity to adapt to climate change. Despite efforts to manage these risks, unpredictable rainfall continues to disrupt agriculture, with many small farmers struggling due to limited irrigation. Additionally, widespread poverty and food insecurity, particularly in rural areas, further complicate the situation.

To address the need for targeted intervention to enhance resilience and adaptive capacity, Rwanda has integrated climate adaptation and resilience building into its national policies and strategies. These encompass the National Strategy for Transformation 2017–2024, the Strategic Plan for Agriculture Transformation 2018–2024, the National Environment and Climate Change Policy, the Green Growth and Climate Resilience Strategy, and the National Strategy for Disaster Risk Reduction 2020–2025. MINEMA is the government-mandated institution responsible for establishing a disaster-resilient nation, underscores the significance of anticipatory action, early warning strategies, sustained commitment to initiative implementation, and collaboration with stakeholders.

The WHCA initiatives aligns with the national strategic plans and initiatives and representatives from MINEMA are actively involved in ensuring the alignment. At the same time, the involvement of the Rwanda Water Resources Board (RWRB) is key to the alignment of WHCA to national strategy in ensuring that the programme will address gaps in the water landscape and thereby supporting government priorities.

The updated NDC for Rwanda[30] emphasizes adaptation strategies such as improving water management, boosting agricultural resilience, and enhancing infrastructure and EWS. The WHCA programme supports these goals by focusing on EWS and locally led adaptation efforts, thereby contributing significantly to Rwanda's NDCs and strengthening the country's climate resilience.

5.2.2 Coordination and governance structure

To support government strategies and enable fruitful collaboration between WHCA's partners in Rwanda, a country team has been put in place that assumes a pivotal role in providing in-country coordination and governance for WHCA. Its primary focus lies in the practical design, planning, and implementation of the programme, combined with routine monthly or bi-monthly reviews of progress, challenges, and upcoming activities, thereby instilling confidence in the team's dedication and effectiveness. This robust governance ensures the programme's trajectory is on course and that all activities are undertaken with the utmost professionalism and efficiency.

Furthermore, the WHCA country team aligns with the EW4All coordination mechanism and actively participates in the sub-national level EWS governance. Rwanda's decentralized system houses well-established and functional grassroots structures at various government levels, which can be leveraged for anticipatory action coordination. While disaster management committees (DIDIMAC, SEDIMAC, and DASSO) operate at district and sector levels, efforts to reinforce and operationalize them are warranted.

[29] Quoted during the launch of the initiated Joint Programme on Climate Change and Early Warning Systems in 2023.

[30] https://climatepromise.undp.org/research-and-reports/rwandas-enhanced-ndc.

The Rwanda country team, comprising representatives from WHCA consortium and implementing partners, coordinates and/or implements WHCA activities. Key members include the Rwanda Red Cross (RRC), IFRC, MINEMA, Rwanda Meteorological Agency (RMA), RWRB, Finnish Meteorological Institute, UNDP, the Climate Centre, and the ICT ministry.

5.2.3 Gap analysis and area selection

The gap analysis in Rwanda has been based on standard assessment tools by WMO, the GBON national gap analysis, and information from a recent feasibility analysis done for ECHO. The involvement of technical government teams with MINEMA and Meteo Rwanda validated these gaps and shaped activities to be addressed by the WHCA programme.

Water-related risk knowledge and governance

The analysis by the consortium partners, in coordination with MINEMA and supported by UNDRR identified the following gaps for Rwanda:

- **Outdated disaster risk atlas:** Published in 2015, this needs to be revised and updated to reflect the rapidly changing patterns of disaster risks influenced by climate change and other factors.
- **Lack of up-to-date risk information:** There is an acute need for current and accurate risk-related information to be disseminated to all stakeholders.
- **Insufficient digital strategy for risk governance:** There is a gap in the formulation and implementation of an overarching digital risk management strategy to proactively address, mitigate, and respond to potential risks and disasters.
- **Need for enhanced disaster risk governance portal:** The national disaster risk governance information portal requires significant improvement in its accessibility and functionality to better serve stakeholders.
- **Limited stakeholder capacity for resource mobilization:** There is a need to develop a comprehensive strategy to enhance stakeholders' ability to effectively mobilize resources for DRR.
- **Inefficient disaster impact reporting mechanism:** The existing processes for reporting disaster impacts require refinement to ensure accurate and timely information, which is crucial for effective response and recovery.
- **Insufficient data collection capacity:** There is a critical need to strengthen the capacity for data collection and analysis, which is essential for informed decision-making in disaster risk management.
- **Learning and development database:** The new database needs extensive user training to fully leverage its capabilities and ensure it supports continuous learning and improvement effectively.

SOFF/GBON national analysis, Rwanda, October 2023: surface weather station in Nyagatare.

Observations monitoring and forecasting of weather and water-related hazards

The October 2023 GBON national gap analysis report (Annex IX) by the Finnish Meteorological Institute and Meteo Rwanda, screened by WMO and supported by SOFF, has highlighted several areas of concern regarding weather and climate data collection in Rwanda. The report highlights challenges related to the aging automatic observation sensors at weather stations, financial constraints impeding timely sensor replacements, and the need to upgrade the data loggers. The report emphasizes the importance of modernizing the climate database management system, addressing deficiencies in data management, monitoring, and quality control mechanisms, and improving data transfer processes. Picture 9 shows a surface weather station in the north-east town of Nyagatare.

Additionally, it recognizes the inefficiency of the internal training system and the excessive reliance on internationally funded training programmes. The programme aims to mitigate these challenges through the installation of a weather radar system, automatic weather stations, and the strengthening the calibration centre's capacity. It also aims to address the limitations of manual weather forecasting by adopting an automated forecast verification system. The report also identifies gaps in scaled down NWP models, weather observation systems, and the absence of a customer feedback mechanism.

Challenges in disseminating early warning alerts in disaster-prone communities, bureaucratic and logistical delays in disaster risk financing, and limited budget for early warning activities are also highlighted. Despite these challenges, the study concludes that implementing early warning alerts in Rwanda for floods and drought is feasible, but emphasizes the need to strengthen capacity for forecasting landslides and strong winds. Ongoing capacity enhancement activities by international institutions for Meteo Rwanda show promise in addressing these gaps. On the other hand, WMO carried out the national baseline study (Annex VIII) to understand the existing capacities, gaps and needs which the WHCA programme can support in establishing or strengthening of the EWS for floods and drought. Based on the consultation with the various stakeholders in Rwanda, Figure 10 highlights the baseline situation on the hydro-met monitoring, forecasting and warning systems for floods and drought.

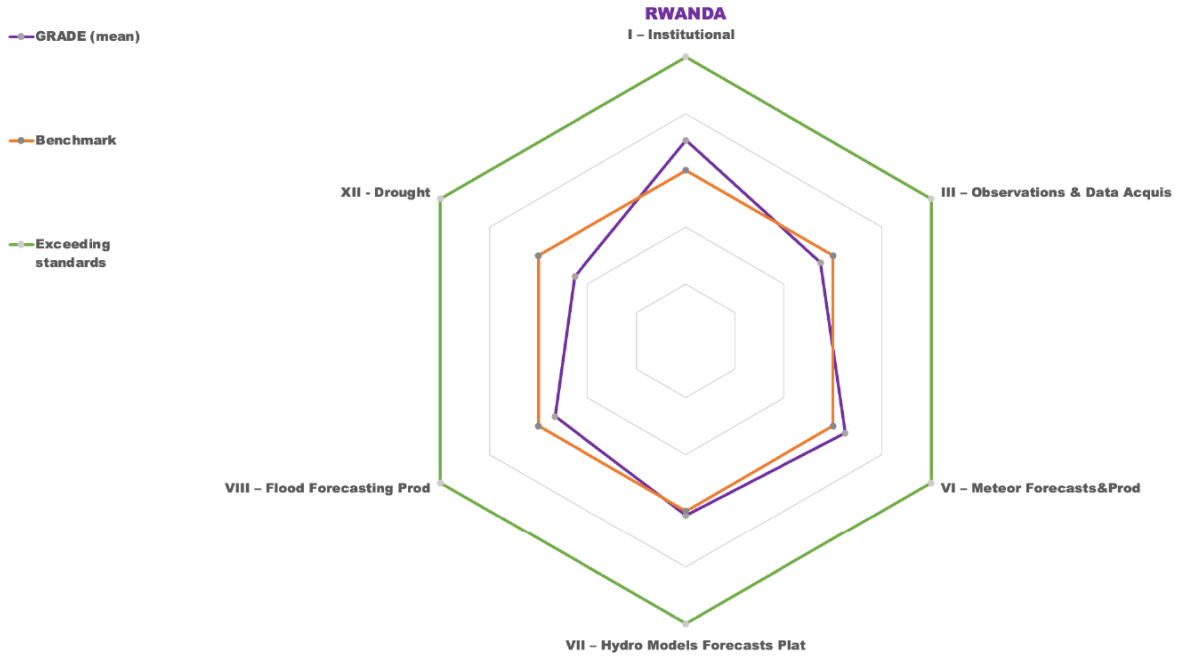


Figure 10: Spider graph ratings for the end-to-end early warning system for Rwanda.

Community early warning systems and locally led adaptation

In Rwanda, flash floods and riverine floods are common, particularly in low-lying areas. At-risk communities in several districts were identified and collected data on frequent hazards, early warning systems, elements at risk, community resilience, and adaptive capacity through direct observation and engagement with local communities.

Based on this data, the criteria described in the introduction of Chapter 5 and in consultation with MINEMA, the area of Karongi has been selected by the consortium for implementation. The district is heavily affected by the impacts of climate change that has caused a shift in the predictability of seasons, resulting in excessive rainfall that has led to flooding, destroyed homes, and driven vulnerable people into extreme poverty.

The gap analysis carried out by the consortium with the support of MINEMA identifies several critical areas in need of improvement to enhance local anticipatory action strategies:

1. **Outdated plans:** Existing plans are not adequately aligned with current and evolving climate-related hazards.
2. **Limited early warning capabilities:** The current early warning systems, particularly in flood-prone areas, are underdeveloped and lack the necessary investment to provide timely and effective alerts.
3. **Vulnerability of households:** A significant number of households remain highly susceptible to the impacts of disasters.
4. **Lack of pre-positioned resources:** Communities do not have sufficient essential resources readily available in the event of a disaster.
5. **Inadequate support for DRR:** Present DRR activities are insufficient to effectively mitigate risks and enhance community resilience. Additionally, there is a need for better dissemination of DRR and early warning information.
6. **Poor water facilities:** Within communities these are inadequate, particularly during emergencies, compromising access to safe water.
7. **Insufficient community assessments:** There is a lack of thorough community assessments to accurately identify and address specific risks and vulnerabilities.
8. **Need for local authority training:** Local authorities are currently undertrained in managing disaster risks, limiting their effectiveness in preparedness and response efforts.
9. **Need for community and stakeholder capacity building:** There is a significant gap in the capacity of communities and stakeholders to understand and utilize EWS, which is crucial for enhancing preparedness and resilience.

The Rwanda team will conduct an eVCA at the beginning of the implementation phase, which will provide further details and community perspectives on the gap and intervention plan.

Cross-cutting

Rwanda, like many developing countries, struggles to integrate climate change considerations into its policy and legal frameworks due to limited stakeholder involvement. It is vital to ensure comprehensive participation and incorporate adaptation and mitigation measures for climate change into the PGI and CEA into governmental policy.

5.2.4 Contextualized theory of change

The ToC for the WHCA programme in Rwanda is a meticulously structured framework that has been developed by customizing the overarching consortium-level ToC to suit the country context. This customized framework takes into account the five technical focus areas of WHCA. It serves as a comprehensive road map for understanding the pathways through which the programme is expected to bring about change.

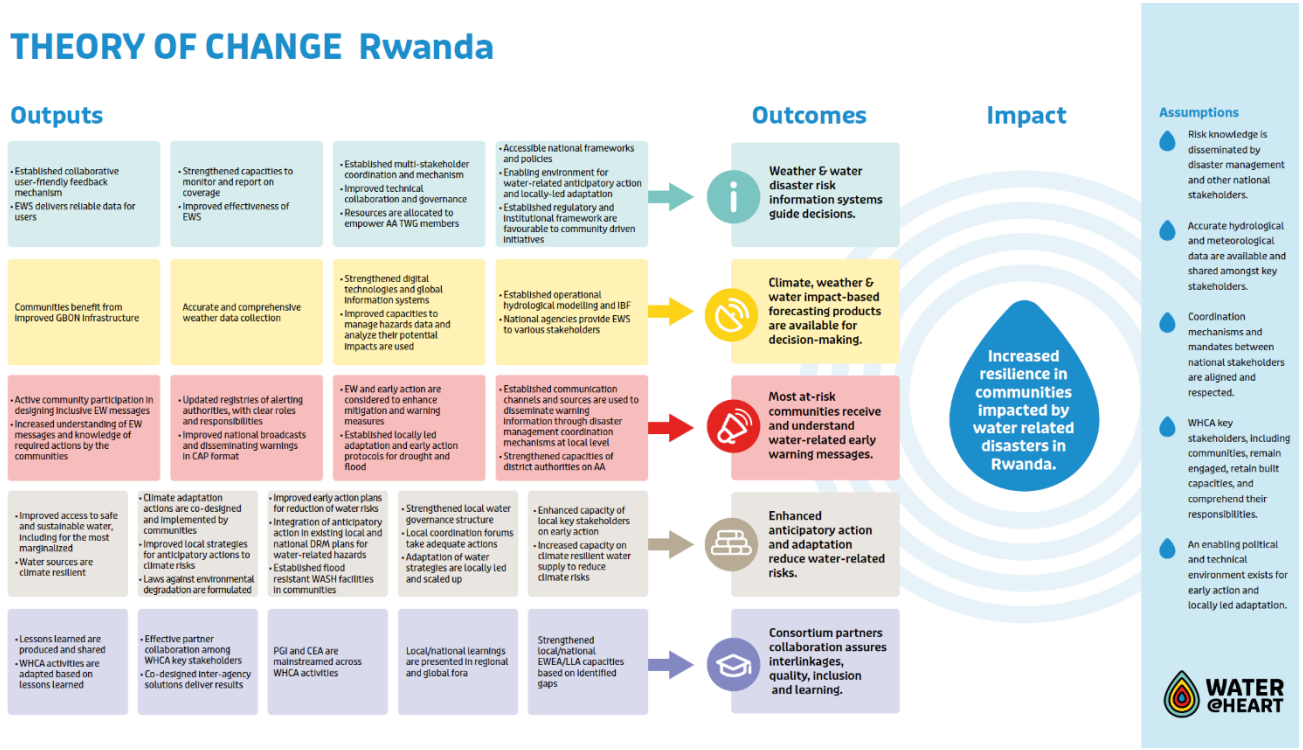


Figure 11: Contextualized ToC for Rwanda.

5.2.5 Intervention plan

Water-related risk knowledge and governance

The programme encompasses a series of activities aimed at strengthening Rwanda's disaster risk management and early warning systems. Key actions include updating and digitalizing the disaster risk atlas, enhancing risk governance through the development of a digital risk management strategy, and improving resource mobilization for DRR. The programme also focuses on enhancing data collection, disaster impact reporting, and strengthening the capacity of local stakeholders to utilize early warning systems effectively.

Additionally, the initiative prioritizes the selection of high-risk districts and communities for targeted interventions, builds national and local capacities to monitor and report on early warning system effectiveness, and develops inter-agency coordination protocols. Finally, the programme seeks to influence national policies and frameworks to create an enabling environment for anticipatory action and locally-led adaptation, integrating early warning and climate change adaptation into disaster risk management laws and strategies.

Observations monitoring and forecasting of weather and water-related hazards

The programme includes a range of activities to enhance Rwanda's meteorological and hydrological capabilities and achieve GBON data compliance as foreseen in the SOFF investment plan. These involve the installation of a weather radar and multiple automatic weather stations (AWS) to improve weather forecasting and data collection. Efforts also focus on building the capacity of meteorological professionals and technicians, including training for radar engineers and IT staff, and developing a national meteorological strategy.

The programme will establish and utilize a hydrometeorological database for EWS and develop specialized forecasting products for priority areas like agriculture and flood-prone regions. Additionally, it aims to improve drought monitoring and integrate gender-sensitive approaches into EWS for floods and droughts. Enhanced collaboration and communication with stakeholders will also be prioritized, including the development of bulletins and standardized procedures for disseminating information.

Community early warning systems and locally led adaptation

WHCA intervention plan will focus on enhancing early warning systems and community engagement for disaster risk reduction and climate adaptation. Key activities include:

- **Improving early warning communication**: Specialized workshops will identify gaps in understanding early warnings and involve local communities in co-designing actionable messages. Community warning devices will be installed, and dissemination of early warning information will be supported through various media and community leaders.
- **Enhancing early warning systems**: Efforts include setting up feedback mechanisms to address misinformation and barriers, training volunteers and local disaster management teams, and developing SOPs and MoUs for effective communication.
- **Strengthening local adaptation and resilience**: The programme aims to build climate-resilient water supply systems, including training local authorities and Red Cross staff in anticipatory actions and disaster management. It also includes constructing and maintaining water infrastructure, promoting rainwater harvesting, and distributing water purification chemicals.
- **Community-driven adaptation and risk reduction**: Activities involve developing and implementing locally led adaptation plans, such as constructing drainage channels and supporting vulnerable households with shelter and livelihood support. Training and simulations will enhance local disaster management capacities.
- **Capacity building and advocacy**: The programme will support gender-sensitive and inclusive early actions, develop protective policies, and train teams in gender equality. It also involves analyzing existing policies, holding community sensitization meetings, and gathering feedback to inform future strategies. CEA/PGI studies will be conducted on the ground to understand trust in early warning, preferred channels, perception and the inclusivity of EWS.

5.2.6 Sustainability and exit strategy

The WHCA programme will allow a collaborative framework involving the Rwanda Red Cross, MINEMA, RWRB and METEO Rwanda, alongside other government entities. The programme aligns with Rwanda's national development plan to bolster resilience against climate change. It aims to strengthen community capacity, enhance early warning systems, and empower communities to manage climate risks. The programme will foster stakeholder ownership through MoUs, elevate guidelines, and policies for stakeholder functions, and promote community engagement and empowerment. The government's role and Red Cross involvement extend beyond the programme's lifespan, supporting sustainability and widespread adoption.

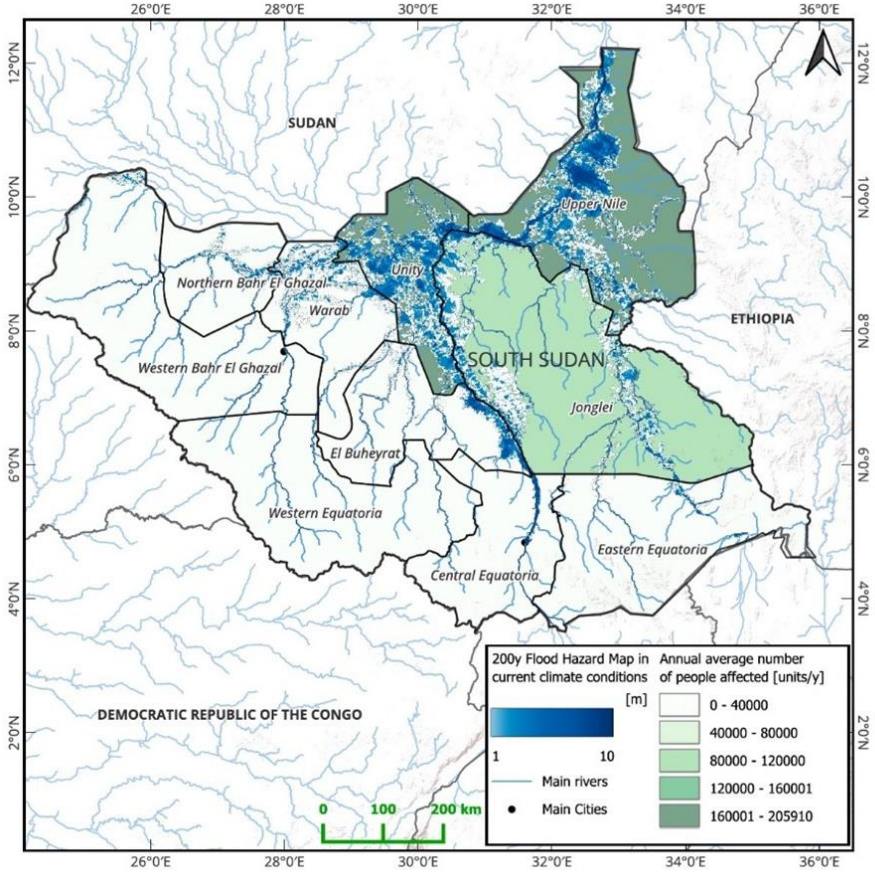
SSRC volunteers help to evacuate households affected by floods to higher ground in Old Fangak county of Jonglei State, South Sudan. (Photo: SSRC)

5.3 South Sudan

> *First, we must start with the end in mind. Why is early warning for all needed? What is the vision that needs to be actualized? What purpose needs to be fulfilled? What is it about the current strategy that will prevent the actualization of the vision and purpose for the intentions of Water at the Heart of Climate Action?*[31]
>
> – Pal Mai Deng, Minister for Water Resources and Irrigation, South Sudan

5.3.1 Context and contribution of WHCA to national plans

Climate change has significantly exacerbated water-related risks in South Sudan, a country already grappling with a range of environmental and socio-political challenges. According to the 2023 INFORM Risk Index,[32] South Sudan is ranked as the second most vulnerable country globally to the impacts of natural hazards, including droughts and flooding. With increasing variability in rainfall patterns, the country experiences both widespread and localized droughts and floods. Flash floods often occur when the Nile River and its tributaries overflow during the rainy season in August and October. In fact, South Sudan has struggled with five consecutive years of flooding since 2019; and in 2022 alone, more than one million people were affected by flooding in South Sudan. Drought-prone areas are often vulnerable to a combination of climate variability, strained water supplies and storage and irrigation facilities, and environmental degradation. Map 5 shows the population at risk of floods in South Sudan.



Map 5: Population in flood risk for South Sudan, classified by first order administrative units.

[31] Quote from a personal conversation between NLRC staff in South Sudan and Hon. Pal Mai Deng.

[32] In the other four WHCA countries reference is made to the ND-GAIN ranking. However, South Sudan is included in the data of Sudan in ND-GAIN, hence the INFORM Risk Index is referenced for South Sudan. https://crisisresponse.iom.int/response/south-sudan-crisis-response-plan-2023-2025

The increasing frequency and intensity of extreme weather events have impacted the nation's water resources, agricultural productivity, and overall food security. Prolonged periods of drought have led to water scarcity, affecting both human populations and livestock, while intense flooding has resulted in widespread displacement and destruction of infrastructure. According to the 2023 Humanitarian Needs and Response Plan (HRP), an estimated 9 million people (73 per cent of the country's population of 12.4 million people) will need humanitarian assistance in 2024, including 5 million children, 2.2 million women and 1.3 million people with disabilities. Approximately 7.1 million people (57 per cent) face acute food insecurity at crisis levels or worse during the peak of the lean season from April to July 2024.[33] The most affected regions include Jonglei, Unity, parts of Upper Nile, northern Warrap, Eastern Equatoria, Lakes and Northern Bahr el Ghazal states. The recurring flooding and prolonged drought not only threaten food security and livelihoods but also contribute to ongoing humanitarian emergencies caused by political instability, conflict and poverty, complicating efforts towards peace and development in South Sudan.

In response to the challenges faced by climate change, the South Sudanese government updated the Nationally Determined Contribution in 2021, with 14 priority sectors identified. WHCA will contribute to priority sector DRM by supporting two strategies: Strengthen EWS and Awareness raising and capacity building of stakeholders. WHCA will further contribute to priority sector Water by rehabilitation of the hydrometeorological monitoring network.

5.3.2 Coordination and governance structure

The South Sudanese government[34] organized the national launch of the EW4All initiative and the WHCA programme on 20-22 November 2023. This event brought together stakeholders with varying expertise at the global and national level. Building on this, two coordination mechanisms play a critical role:

1. The **National Early Warning Technical Working Group (NEWTWG)**: formed by the South Sudanese government in 2014, is led by the Ministry of Humanitarian Affairs and Disaster Management (MHADM). It includes representatives from key government ministries, embassies (including the Netherlands Embassy), UN agencies, NGOs, and the media, and meets monthly in Juba. The group gathers and shares information, monitors risks, and coordinates early warning efforts by assessing risks, developing and communicating early warning information, coordinating early action plans, creating a nationwide contingency plan, and strategizing resource mobilization for proactive measures. The membership of this pre-existing group has been extended to include all relevant ministries to WHCA and will take care of alignment with government plans and other in-country initiatives.
2. The **WHCA Technical Working group (WHCA TWG)**: chaired by the South Sudan Red Cross (SSRC) and co-chaired by the Ministry of Water Resources and Irrigation (MWRI), was established to coordinate the WHCA programme at national, state and local levels. It includes partners like MHADM, Ministry of Environment and Forestry (MoEF), South Sudan Disaster Management Department (SSDMD), and various international organizations, focusing on stakeholder engagement and technical expertise exchange. Representatives from SSRC and MWRI participate in the NEWTWG to align efforts with national early warning initiatives. Initially meeting bi-weekly, the group will shift to monthly meetings during programme implementation.

Additional structures at the community level, ensuring community feedback through local committees and NGOs, will be added during the implementation phase.

Terms of reference have been developed for the two coordination mechanisms, which clarify in more detail the objectives, membership and ways of working of the coordination mechanisms.

[33] https://humanitarianaction.info/plan/1111

[34] Including the Ministry of Humanitarian Affairs and Disaster Management (MHADM), Ministry of Water Resources and Irrigation (MWRI), & Ministry of Transport & Roads (Meteorological Department).

5.3.3 Gap analysis and area Selection

Water-related risk knowledge and governance

During the inception phase UNDRR and MHADM (with the support of IGAD Climate Prediction and Applications Centre (ICPAC)) undertook a national gap analysis, using the minimum core capability checklist (part of the EW4All implementation toolkit)[35]. From the analysis it emerged that there is a large gap in terms of risk knowledge in South Sudan: the capacity to produce and use risk information is low, there is no system in place to collect, store and retrieve loss and damage data, there is no risk information data infrastructure in place and no situation room. Establishing and operationalizing a situation room poses many challenges, particularly human resources and connectivity. The assessment showed that the legal and institutional frameworks for disaster risk reduction and management generally are weak.

Community-level investigations during the joint eVCA and water assessments in Jonglei State and Eastern Equatoria revealed several gaps related to TFA1: authorities and local communities have inadequate knowledge of early warning systems and climate change, there is a reliance on local knowledge for weather and water related forecasting, disaster response structures are limited at state, county, and boma levels, the capacity to run these structures is insufficient, and coordination among stakeholders at different levels is lacking.

Observations monitoring and forecasting of weather and water-related hazards

During the inception phase, WMO in collaboration with South Sudan Meteorological Services (SSMS) and Directorate Hydrology and Survey in the MWRI conducted an assessment to identify needs and capacities for end-to-end EWS for floods and droughts (Annex VIII). Figure 12 highlights the baseline situation (capacities, gaps and needs) on the hydro-met monitoring, forecasting and warning systems for floods and drought in South Sudan. This assessment complemented the National Gap Analysis performed by SSMS and peer advisor GeoSphere Austria with the support of SOFF in March 2023, which focused on the compliance of South Sudan's climate data with GBON standards.

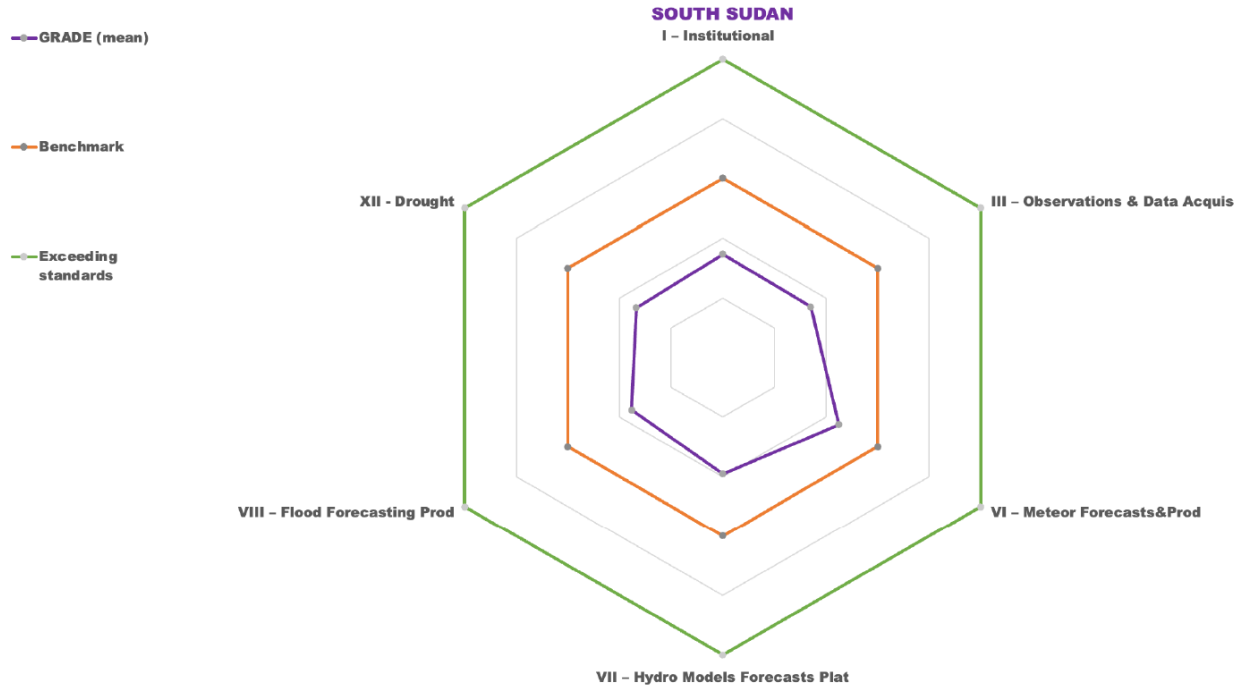


Figure 12: Spider graph ratings for the end-to-end Early Warning System for South Sudan.

[35] https://earlywarningsforall.org/site/early-warnings-all/implementation-toolkit

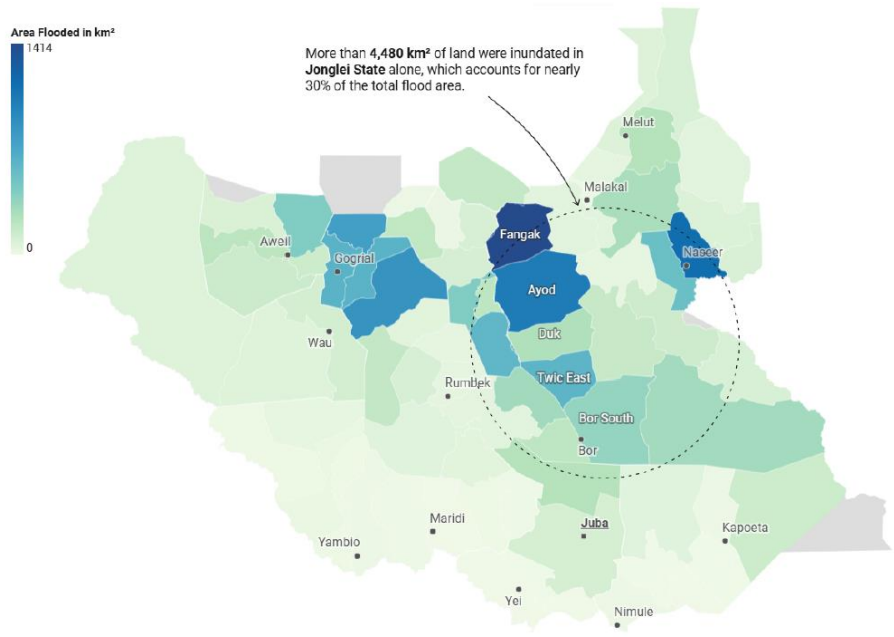
The assessments showed that there are many gaps across various stages of monitoring, forecasting and response. In short,[36] these gaps are:

- lack of a formalized and comprehensive governmental mandate for authorities involved in EWS activities
- lack of adequate coordination and data/information sharing among stakeholders and authorities involved in EWS
- lack of adequate physical facilities to host staff and equipment
- very poor observation networks with only two of five weather observations stations being operational and no regular upper air observations
- lack of an adequate technical infrastructure, e.g., IT equipment, observational equipment, enabling system like Wi-Fi and fixed, internet cables
- limited number of skilled and specialized staff

Joint eVCA and water assessments in Jonglei State and Eastern Equatoria highlighted key community-level gaps, including limited equipment and tools for weather and water related forecasting—often underutilized—and insufficient human resources for weather observation, monitoring and forecasting at all levels.

Community early warning systems and locally led adaptation

Based on the criteria described in the Introduction of Chapter 5 the area of Bor South in Jonglei State was selected as a location to focus increasing the resilience of communities facing flood-related risks (see Map 6), and the area of Kapoeta East in Eastern Equatoria was selected as a location to focus increasing the resilience of communities facing drought-related risks.



Map 6: Recent flood affected areas in South Sudan. (World Bank, 2023)

The eVCAs and water survey in Jonglei State and Eastern Equatoria were conducted jointly with in-country consortium partners (lead by SSRC and joined by representatives of the Ministry of Water, Ministry of Humanitarian Affairs, Ministry of Agriculture and Ministry of Communication).

A first round of assessments took place in the communities of Anyidi Payam and Kolnyang Payam, which are the two payams that are most affected by floods in Bor South.

[36] A detailed overview of the gaps can be found in Annex IX and https://www.un-soff.org/wp-content/uploads/2023/11/South-Sudan-GBON-National-Gap-Analysis-Report.pdf

The assessments revealed key gaps, including the absence of water-specific early warning systems and communication strategies at the county and payam levels, a lack of translation of early warning messages into local languages, limited integration of local knowledge and insufficient dissemination of early warning alerts. Additionally, in terms of anticipatory action and locally led adaptation, there is inadequate access to safe water, leading to water-related disease outbreaks, limited knowledge on constructing flood-resistant latrines, a lack of settlement planning near the Nile, and the absence of flood control structures like dykes.

A second assessment took place in Eastern Equatoria and was conducted in Kapoeta East County, targeting two payams that meet the selection criteria and are prone to droughts. Key gaps identified include the lack of telecommunication services, communication strategies and translation of early warning messages into local languages, as well as limited integration of local knowledge and dissemination of alerts. Additionally, there is limited access to safe water for human, animal, and agricultural use, reliance on non-climate-resilient WASH infrastructure, low awareness of hygienic practices, limited access to menstrual hygiene items and poor access to sanitation facilities.

5.3.4 Contextualized theory of change

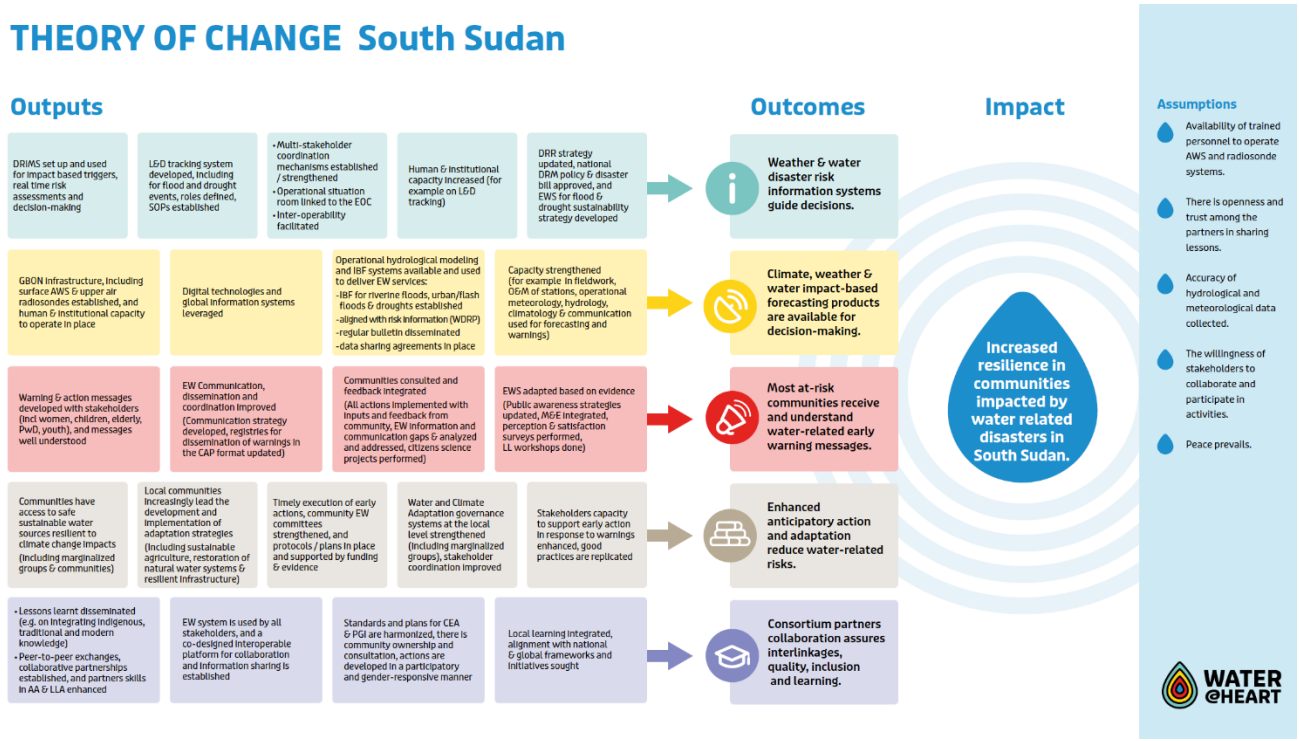


Figure 13: Contextualized ToC South Sudan

In South Sudan, the consortium partners together agreed on five extensive outputs per outcome (TFA), eventually aiming for increased resilience in the targeted communities. The team is committed to establish disaster risk information management systems (DRIMS) as well as GBON infrastructure. These will inform decision making in relation to weather and water-related risks, and facilitate the development of forecasting products. An important assumption for South Sudan is that the hydrological and meteorological data collected is accurate. Furthermore, for the current plans it is assumed that peace will prevail. Incapability by stakeholders to react to EW messages, insufficient maintenance of installed stations and instability affecting data sharing agreements have been identified as the main risks for the implementation. See Figure 13 and Annex III for the ToC.

5.3.5 Intervention plan

A detailed activity plan has been developed based on the gap analysis.

Water-related risk knowledge and governance

MHADM will map vulnerabilities to hazards like floods and droughts using insights from at-risk communities and scientific data. This process will help create risk profiles and prioritize areas for intervention, ultimately guiding water investment decisions across the country. To ensure community involvement in risk management, MHADM will lead consultations with various stakeholders, integrating local knowledge into development plans and policies. Supported by UNDRR, MHADM will align water-related governance with national and international standards. As the central agency for disaster risk reduction, MHADM's leadership offers key opportunities for coordination across sectors. There is also a strong commitment to strengthening South Sudan's legal and institutional frameworks for disaster management. Once finalized, the DRM policy and disaster law will provide a solid foundation for managing risk in the country.

In order to operationalize the use of risk information and improve the timely information sharing among stakeholders, the government has prioritized the establishment of the situation room, linked to the national and sub-national Emergency Operation Centers (EOC). This is an activity that will involve all the partners to ensure that disaster management mandated authorities and SSRC in their auxiliary role can act as one in preparation and response to disasters. This activity is expected to be reflected in the policy during the revision of the DRM policy (the bill is not yet approved) and the DRR policy, which will also include the SSRC auxiliary structure to enhance the capacity to reach out to communities.

Under the leadership of MHADM, partners will further collaborate to establish impact-based triggers and thresholds, which is closely linked to the co-design of warnings and advisory.

Observations monitoring and forecasting of weather and water-related hazards

The primary objective for the intervention is to improve the quality and coverage of hydrological and meteorological observations. SSMS, Directorate Hydrology and Survey in MWRI with support of WMO, plan to expand and maintaining monitoring networks for rivers, lakes and rainfall in hazard-prone regions, deploying advanced technologies like remote sensing and satellite imagery for real-time data collection, and ensuring data compatibility across national and international observation systems. SOFF investment will enhance forecasting capabilities by improving the accuracy and timeliness of predictions, including for water-related events, coordinating with national hydrometeorological agencies for data translation and sharing, and promoting innovation in forecasting models and early warning technologies. SOFF's implementing partner in South Sudan is the African Development Bank and the intervention will focus on developing the GBON institutional and human capacity through national consultations, capacity building and recruitment of technical staff. It will further focus on getting GBON infrastructure in place, including new and improved land-based stations and conducting a feasibility study for a new upper-air station. Efforts will also focus on achieving sustained compliance with GBON through generating SOPs, a training plan and providing finances.[37]

Additionally, MWRI supported by WMO will also improve the availability of hydrological information by upgrading and rehabilitating stations and increase the technical capacity of the dedicated staff. Efforts will be made to improve the database management and sharing of hydro-met data, and to ensure that meteorological modelling and forecast are available and used, for example by upgrading the current WRF model with ECWMF products and capacity building of NHMS staff.

WHCA will provide impact-based forecasting for the target areas for floods (riverine and flash floods) and droughts for the areas of Jonglei (riverine floods), Juba (flash floods) and Eastern Equatoria (droughts). These areas overlap with the areas chosen by the consortium for community implementation, where the full

[37] For a detailed overview of SOFF's support: https://www.un-soff.org/wp-content/uploads/2023/11/South-Sudan-SOFF-Investment-Phase-Funding-Request-1.pdf

concept “from satellites to sandbags” (moving the meteorological advisory into early action) will be tested. Thresholds and triggers will be developed in collaboration with all stakeholders according to their mandate. A visualization tool will be co-designed with consortium partners for efficient sharing and making the advisory actionable.

Community early warning systems and locally led adaptation

With support from NLRC and IFRC, SSRC will focus on creating people-centred early warning systems (EWS) and clear communication strategies for early warnings. Their goal is to translate complex weather predictions into simple, inclusive messages for local communities. Key objectives include educating various audiences on how to receive and respond to warnings, co-designing early warning messages with communities (including translation into local languages), improving telecommunication services, developing communication plans, and conducting research to build trust and enhance the impact of early warnings. A key activity in this area will be a study on the ground to understand trust in EW messages and channels, risk perception and inclusivity of EWS. SSRC staff and volunteers will be trained in the use of the improved training package of IFRC on community EWS.

A key aspect of this intervention plan is ensuring that the IBF products disseminated by the NHMS are quickly translated into actionable messages in the SSRCS humanitarian system and able to reach communities as fast as possible. SSRC uses a digital platform (IBF platform) to coordinate early actions and translate technical hydro-meteorological data into easily understandable and actionable information for SSRC. In collaboration with the NLRC data and digital team, this product will be updated to use input data from the WMO IBF model.

SSRC will also lead the development of flood EAPs for Bor South in Jonglei state in collaboration with the consortium partners. With the support of IFRC, SSRC is currently developing a national simplified EAP for floods. The WHCA programme will support the development of a national simplified EAP for drought. During the EAP development process, the communities and stakeholders in targeted locations will be involved when priorities of the early actions for both floods and drought are set to ensure that the actions selected are appropriate and can be implemented within the agreed time lead.

To lead the delivery of climate action in the selected communities, sufficient capacities are required and as such, SSRC, with the support of the Climate Centre , will integrate a Climate Action Journey in the interventions. This will entail conducting a national climate risk analysis in coordination with all partners, reviewing a climate smart screening of the SSRC programmes and projects. Both these processes will lead to a multi-year climate action strategy. Linked to this strategy, SSRCS will also focus on a key aspect of adaptation, which is access to safe and sustainable water: this will be improved in all target communities in a climate-resilient manner, benefiting especially the most marginalized. Rehabilitation and upgrade of water sources to make them climate resilient, monitoring of water quality and promotion of resilient agricultural and water management practices.

Cross-cutting activities

Protection Gender and Inclusion

In South Sudan, the team will be guided by the DAPS (Dignity, Access, Participation and Safety) principles. Through these principles, all consortium and implementing partners will ensure protection, gender and inclusion criteria are reflected throughout all processes, e.g., in the design of water strategies, and facilitate co-design sessions with diverse community groups, including disability and women's rights groups, for inclusive early warning and action strategies. Partners will focus on activities that promote equal participation and benefit sharing among all social groups, incorporate gender-responsive and culturally sensitive approaches into programme interventions, and establish data collection systems that are disaggregated by age, gender and disability to monitor impact on different population groups.

Systems interoperability

Codesign of the visualization system for IBF and ensuring that there is a connection between (digital) systems for early warning will be key in this programme (eg., the digital situation room, the EOC of SSRCS and the NHMS IBF platforms). The consortium will cooperate in designing an interoperability framework and ensure that systems have a connection so that fragmentation does not hinder a smooth communication of the early warning information to the community that needs to act on it.

5.3.6 Sustainability and exit strategy

The South Sudan country team will use the following strategies to ensure the sustainability of the WHCA intervention:

1. working closely with national stakeholders and communities to own, lead and contribute the water actions. Participatory processes and tools (such as eVCA) are used to assess water-related risks, community needs and priorities and define water actions.
2. actively advocating for and supporting the approval of the developed DRM policy awaiting approval by the cabinet, supporting the development of the DRM policy implementation and operational guidelines.
3. ensuring that all the water and early warning actions under WHCA programme are anchored in the national policies and commitments such as NDC and EW4All.
4. ensuring local and national stakeholders have enough capacity to sustain and replicate the programme's positive impacts. This contributes to the institutionalization of early warning systems within the relevant national and local actors.
5. strengthening the existing governance and coordination system for water action and early warning systems both at the national and local levels.
6. replicating the success of the programme through on-going and new programmes
7. signing a Memorandum of Understanding (MoU) with relevant government and non-government stakeholders clarifying roles and ensuring smooth and responsible exit at the end of the programme period.

Impact of the recent floods in Dalgu locality, Northern State, Sudan.
(Photo: SRCS)

5.4 Sudan

> *Disasters don't wait for conflicts to end; they demand proactive preparedness and resilience-building at the frontline*
>
> – Dr Hanan Magzoub Rabbah, General Director and WMO Permanent Representative of Sudan[38]

5.4.1 Context and contribution of WHCA to national plans

The conflict between the Rapid Support Forces (RSF) and the Sudanese Armed Forces (SAF) has been the biggest humanitarian disaster affecting Sudan since 15 April 2023. Additionally, climate change continues to impact the lives and livelihoods of people in Sudan. The work of WHCA in the country can be seen as an operationalization of the Declaration of Climate, Relief, Recovery and Peace[39] signed by 78 national governments (including the Netherlands) and 40 organizations and is a commitment to achieve a "*bolder collective action to build climate resilience at the scale and speed required in highly vulnerable countries and communities, particularly those threatened or affected by fragility or conflict"*.

Sudan is highly vulnerable to the impact of climate change with a rank of 179 (out of 185) in the ND-GAIN index[40]. By 2060, temperatures are expected to rise by 1.5°C to 2.6°C in Sudan. The IPCC AR6 report predicts that river flooding could cause a huge increase in displacement in sub-Saharan Africa, including Sudan, by the late 21st century, especially if temperatures rise significantly and populations grow. Such an increase in temperature will lead to increased water insecurity,[41] increased food insecurity and reduce social cohesion.

In 2020 and 2021, 17 of Sudan's 18 states were affected by flooding. In 2020, farmlands were left underwater in North Darfur, Khartoum, Blue Nile, West Darfur and Sennar states. The Blue Nile state region recorded the highest floods in over 100 years. In response to these climatic changes and before the conflict started, the government of Sudan formulated their priorities to adapt to the changing climate.[42] Water, agriculture, public health and coastal zones are the priority sectors to build resilience to climate risks. WHCA will contribute to the First NDC of Sudan (2021), namely to priorities one and two.[43]

The conflict has severely disrupted the delivery of safe drinking water and other WASH services across the country. Government risk information was lost due to the damage to computers, servers and data stored in Khartoum. Government departments are working to restore this information. Similarly, the facilities and servers of the Sudanese Meteorological Authority (SMA) were severely impacted and remain inaccessible. The SMA is working to recover lost data and re-establish its forecasting system. The conflict also further exacerbated water-related risks by destroying infrastructure, displacing populations, restricting access, and causing economic and environmental disruptions. These compounded challenges make it increasingly difficult for millions of people to secure safe and reliable water sources, thereby expanding their vulnerability to disease and further instability.

The need for early warning systems to reduce the impact of floods and droughts and the need to increase the resilience of communities in Sudan in the face of climate change is dire. During the inception phase, the consortium partners all assessed the feasibility of implementing WHCA in Sudan given the ongoing conflict. SOFF does not currently have an in-country implementing partner and has temporarily put operations on hold. The other consortium partners consulted their implementing partners in Sudan and concluded that,

[38] https://meteosudan.sd/news/sudan-meteorological-authority-at-the-frontline-of-climate-action-in-a-fragile-violent-and-conflict-fvc-context/
[39] https://www.cop28.com/en/cop28-declaration-on-climate-relief-recovery-and-peace
[40] https://gain-new.crc.nd.edu/country/sudan
[41] Climate, Peace and Security Fact Sheet Sudan, 2022, SIPRI & NUPI.
[42] First Nationally Determined Contribution under the Paris Agreement, Republic of Sudan, updated October 2021.
[43] Priority 1: achieve access and sustainable utilization of water resources through increased water resilience of households in vulnerable rural areas. Priority 2: building resilience against floods through risk assessment and mapping, strengthening preparedness and early warning system, enable forecasting of extreme weather events.

with some adjustments to the usual way of working, the programme can be implemented. One of the criteria for target area selection is on access and a relatively stable security, resulting in the selection of target areas in Sudan that are currently accessible and still less affected by the active conflict. This will be closely monitored by consortium and implementing partners, and if needed adjustments will be made. Within the selected target area, WHCA will also built upon existing disaster risk management efforts, which has been an ongoing project during the time of the conflict and funded through the Swedish Red Cross. Implementing partners in Sudan are committed to improving the early warning system and are confident in their ability to implement climate adaptation activities, especially in flood-prone areas where thousands of Internally Displaced Persons (IDPs) are hosted. In light of the conflict, WHCA partners will regularly review the country's context and activity plan and make adjustments if needed based on in-depth risk analysis.

5.4.2 Coordination and governance structure

The conflict in Sudan forced government offices and national and international NGOs to relocate their offices. The Government of Sudan, the Sudanese Red Crescent Society (SRCS), IFRC, many UN agencies and INGOs relocated their offices to Port Sudan. NLRC and WMO support their implementing partners from Nairobi, and UNDRR supports its implementing partner from Cairo. This has added some challenges for the consortium partners in supporting their implementing partners, but as the inception phase progressed, a way of working was found. Coordination is largely based in Port Sudan, where all implementing partners have an office.

UNDRR's implementing partner in WHCA to work on water-related risk knowledge and governance is the National Council of Civil Defense (NCCD). Meteorological and hydrological services in Sudan are provided by two different agencies: the Sudan Meteorological Agency (SMA) and the Ministry of Irrigation and Water Resources (MoIWR). Both agencies are implementing partners of WMO in WHCA to work on observations, monitoring and forecasting of weather and water-related hazards. Annex VIII provides detailed information on the different roles and responsibilities of these three government agencies in developing and regulating EWS activities in Sudan. Activities to disseminate and communicate early warning messages and support anticipatory action and climate adaptation activities at the community level within WHCA are implemented by SRCS, with support from the IFRC network partners.

During the inception phase, several workshops took place focusing on one or two TFAs per workshop; but due to travel restrictions in different agencies, the consortium and implementing partners were unable to meet in one location. In June 2024, The Regional Learning Assembly provided an opportunity for all to meet and discuss alignment and jointly develop the activity plan. This has laid the foundation for collaboration between the SRCS and the respective government agencies in Port Sudan, where the main coordination of the WHCA programme takes place. The Assembly also inspired the set-up of a coordination and governance structure for WHCA — which will be activated for the implementation of the programme — consisting of the following mechanisms:

1. **National Coordination Platform**, chaired by the SRCS and representatives from all relevant government agencies based in Port Sudan: NCCD, SMA, MoIWR, Ministry of Agriculture and Forestry (MoAF), the Higher Council for Environment and Natural Resources (HCENR). This group will initially hold meetings once a month. The role of the National Coordination Platform is to coordinate the efforts of key stakeholders across the four TFA across the global, national and local levels, ensuring consistency of four TFAs, and support in advocacy or policy efforts.
2. **Project Steering Committee**, chaired by the SRCS with representatives of all the implementing partners based in Sudan (NCCD, SMA, MoIWR, MoAF, HCENR) and all consortium partners. The Project Steering Committee will meet on a monthly basis and the main functions are: 1) monitoring WHCA's progress, 2) monitoring, mapping and analysing of gaps in the implementation of WHCA, and 3) development of recommendations on measures and tools to fill these gaps.
3. The **Technical Working Group (TWG)** will meet on a monthly basis. The TWG consists of technical people from different partners of WHCA, including NCCD, SMA, MoIWR, MoAF, SRCS. This group

provides technical support for WHCA, including risk information; forecast; development of trigger or threshold for AA; provision of technical support for the development of EAP; discussion and suggestions of new approaches, methodologies, tools; review and validation of results from relevant studies.

5.4.3 Gap analysis and area Selection

Water-related risk knowledge and governance

Proposed interventions in TFA1 (on water-related risk knowledge and governance) and in TFA2 (on observations, monitoring and forecasting of weather and water-related hazards) focus on the national level. Some efforts to develop and implement comprehensive disaster risk management systems for flood and drought were made before the conflict. The gap analysis is partly informed by assessments (eVCA) done before the conflict with corrections for the current situations through conversations with representatives of government agencies, and partly by community assessments that have been done during the conflict.

Significant gaps existed in Sudan before the conflict started around climate impact projections, loss and damage data tracking, and vulnerability assessments. Assessments facilitated by UNDRR before the conflict found that while some progress had been made in establishing standardized processes and databases for risk information, there were still issues with data availability and integration. Moreover, local and indigenous knowledge was not fully integrated into risk assessments, emphasizing the need for greater engagement with rural and urban communities. Additionally, while efforts have been made to promote innovations for risk knowledge scale-up and improvement, there was still a need for more investment in new technologies and digital platforms.

This modest progress has been eroded by the conflict, as national entities like the NCCD, previously committed to advancing this agenda, have shifted their resources and activities to address the severe consequences of the conflict. The NCCD has suffered many losses, both in terms of physical assets and information assets, e.g., the platform containing all the data (climate change information, loss and damage information, risk informed planning, climate risk management) has been lost.

Observations monitoring and forecasting of weather and water-related hazards

Several government agencies handle different aspects of early warning systems. The SMA forecasts the weather and issues bulletins, while the MoIWR manages flood alerts and scenarios. Both use weather stations and broadband to share information. They send their updates to the NCCD and other members, who then issue humanitarian and environmental alerts and coordinate aid through the Ministry of Health (MoH) and the Humanitarian Aid Commission (HAC). Radio is used in remote areas with poor telecom coverage. Some NGOs and UN agencies set up weather stations in western Sudan for local communities, but many are now non-functional. HAC coordinates with NGOs to use any working weather stations for planning and delivering aid.

Before the conflict, drought early warning systems were not well-developed, and there was no clear process for monitoring and forecasting droughts among NCCD members. Drought forecasts were part of seasonal reports that tracked rainfall, SPI and NDVI.[44] The Ministry of Agriculture and the Ministry of Finance use drought monitors and food security indicators to predict famines and manage trade. Sudan has a drought plan from the higher council on desertification and follows the regional drought strategy (2019-2024) from IGAD's IDDRSI initiative.

During the inception year of WHCA, an assessment by WMO to identify needs and capacities for the End-to-End EWS for flood and drought shows that Sudan scores below the benchmark on the institutional setting, observations and data acquisition, hydro models forecast platform, flood forecasting products and drought. It scores just above the benchmark for meteorological forecasting and products. Based on the consultation

[44] Both are meteorological monitoring terms: SPI is Standard Precipitation Index, NDVI is Normalized Difference Vegatation Index

with the various stakeholders in Sudan, the below figure highlights the baseline situation on the hydro-met monitoring, forecasting and warning systems for floods and drought.

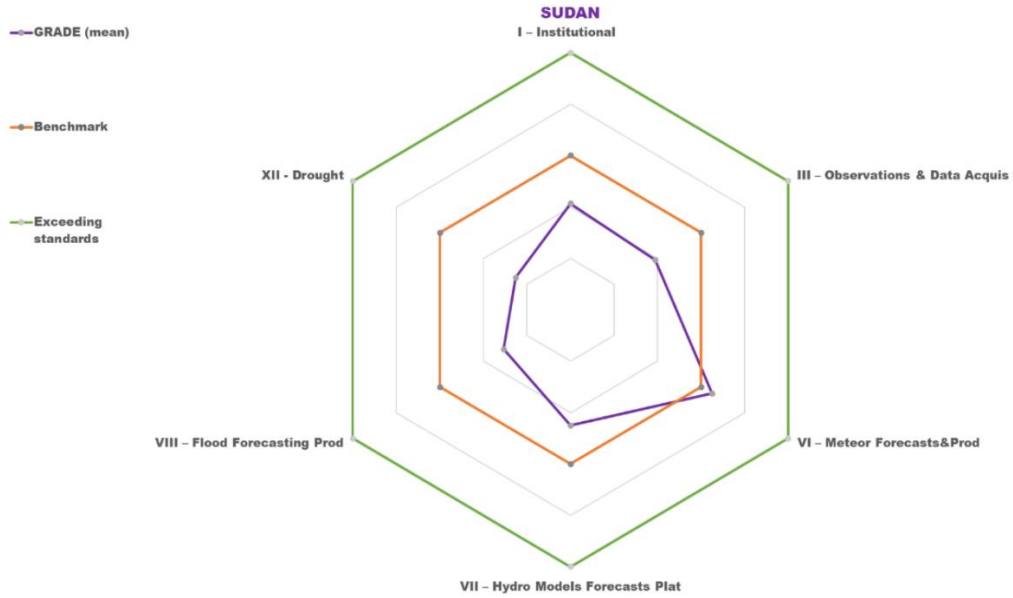


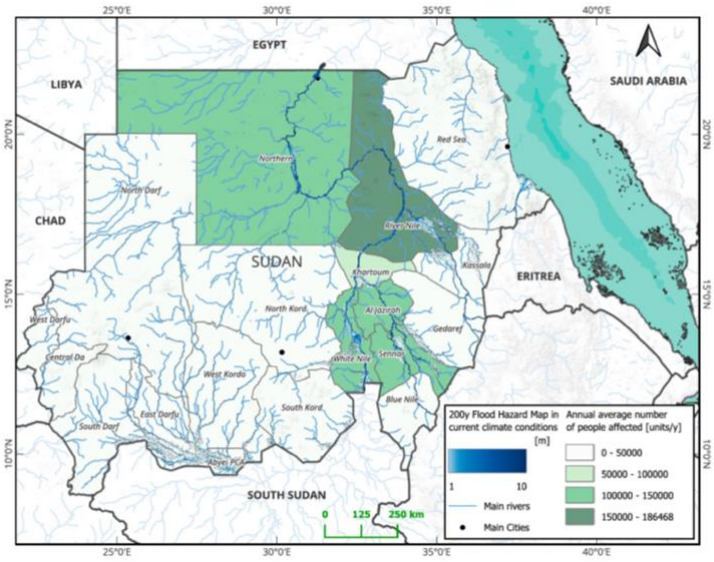
Figure 14: Spider graph ratings for the end-to-end Early Warning System for Sudan.

The detailed assessment can be found in Annex VIII. WHCA's contribution to close these identified gaps is described in paragraph 5.4.5 of this report (Intervention Plan).

Community early warning systems and locally led adaptation

Based on the criteria described in the Introduction of Chapter 5, River Nile State scored highest in the selection, followed by Northern State. Due to the volatile context and redistribution of the budget (see Annex II), the WHCA programme will focus first on River Nile State with community-level interventions and reassess the situation and budget in 2025 with the ambition to start community-level interventions of the programme in Northern State.

River Nile State consists of both desert and semi-desert zones, where agriculture is the dominant economic activity with irrigated cultivation concentrated around the River Nile and the River Atbara (a tributary of the Nile) banks and delta area. Flood risk is concentrated mostly around the River Atbara. Increasing temperatures and a reduced rainfall are leading to a decrease in agricultural production, especially in winter crops and in rain-fed agriculture. Flooding also causes widespread damage in the form of destruction of property and the loss of livestock herds.



Map 7: Flood hazard map Sudan.

The following communities were selected by the consortium in River Nile State to implement community actions: Nadi (in Berber District), Al Sadabiya (in Shendi District), Al Gilaiaat (in the Al Matammah district) and Kalli (in the Atbara district). These communities will participate in all activities under TFA3 and TFA4. SRCS also plans to target additional states in the Nile River basin with a lighter approach that will only consist of dissemination of EWS messages at state level through social media and radio.

The WHCA programme builds on the efforts of a previous intervention using the eVCA assessments and the community plans for early action that were developed in Nadi and Al Sadabiya communities before the conflict began, as part of a DRR project implemented by SRCS with support of the Swedish Red Cross. These eVCAs have been complemented by Key Informant Interviews in these communities that were conducted during the Inception phase. Both eVCA's and the additional Key Informant Interviews can be found in Annex XI. eVCAs will also be conducted in Al Gilaiaat and Kalli at the start of the implementation period. Key hazards identified through the eVCA in Al Sabadiya are floods in the western part of the village near the Nile River, and flash floods in the eastern part of the village. In the past, floods and flash floods have damaged houses, water sources, schools, latrines and hindered access to a health facility. Key hazards identified in Nadi are floods in the western part of the village and torrents in the eastern part of the village. These have caused damage to houses, farms and palm trees. The railway which divides the village into two, acts as a barrier because it is built on higher lands preventing water from running off during floods and flash floods. Gaps that make both communities vulnerable include the absence of early warning systems, lack of knowledge to predict seasons, limited knowledge in preparing and response for floods and flash floods, weak emergency teams and no clear emergency plan. Both communities have water sources that are highly vulnerable to flooding and water committees that are not prepared to anticipate and protect the sources in preparation for flooding events. The DRR project, implemented with the support of the Swedish Red Cross, has helped these communities to set up community disaster response teams and EWS committees. The WHCA programme will further contribute to closing these identified gaps, as described in paragraph 5.4.5 of this report (Intervention Plan).

Community-level interventions and early warning messages do not take place in a vacuum, but need to be embedded in a nationally established Common Alerting Protocol (CAP). Before the conflict, a CAP was not fully established, leaving early warning messages at risk of not being taken seriously by communities, especially in the current context where a lot of disinformation is spread among communities on social media. The WHCA programme provides the opportunity to revisit message dissemination options, ensure proper co-design and validation with communities and to leverage the collaboration between SMA and SRCS to amplify the dissemination of the messages using tailored communication channels as well as the improvements in the disaster management policy and the set-up of early action protocols for the advisory to be acted upon.

Before the conflict, some initiatives on forecast-based financing and anticipatory action had been undertaken by government agencies, NGOs and UN agencies, but this work was at an early stage and could not be completed. Activities in TFA4 will build upon lessons learned from such initiatives.

5.4.4 Contextualized theory of change

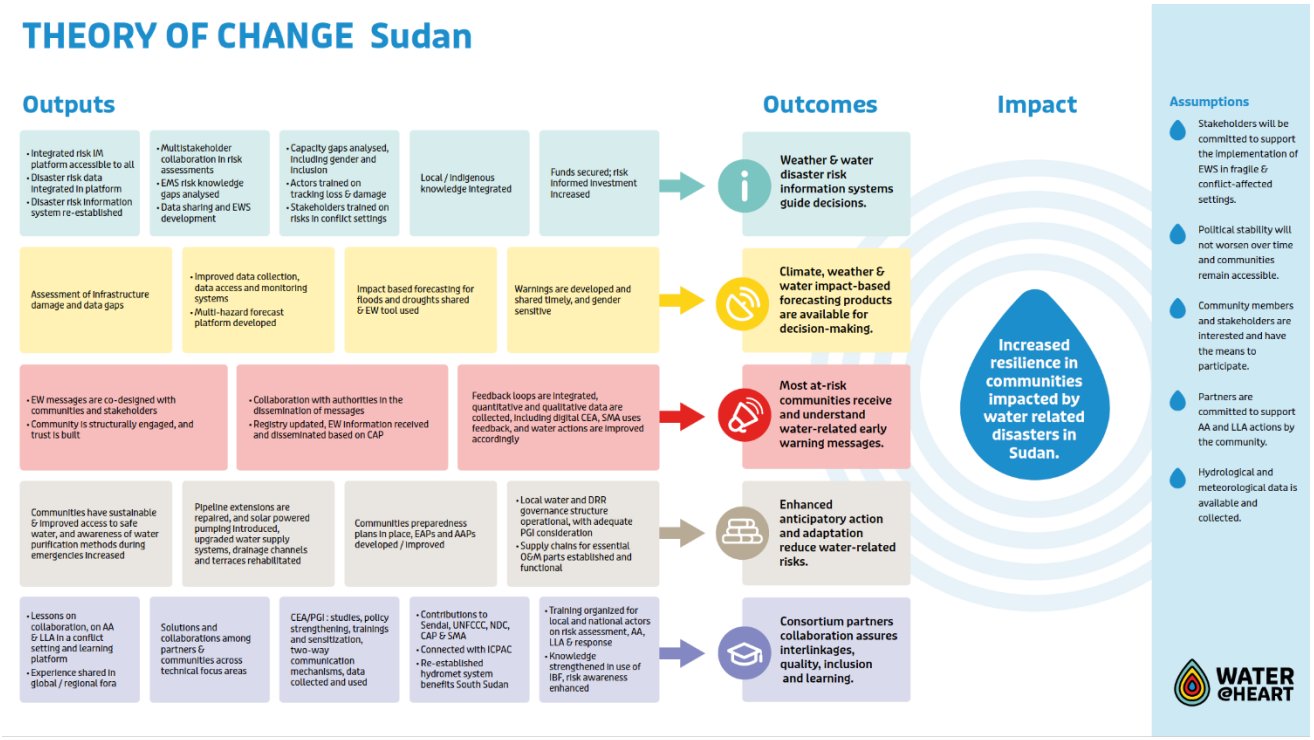


Figure 15: Contextualized ToC Sudan.

In Sudan, the consortium aims to achieve an extensive set of expected outputs, feeding into the five defined outcomes. There is emphasis on starting with gap analyses and knowledge sharing on EWS, anticipatory action (AA) and locally led adaptation (LLA) in a fragile conflict setting. The assumption is that stakeholders will be interested in supporting the implementation of EWS in fragile conflict-affected settings. Another assumption for the Sudan context is that the risk, hydrological and meteorological data needed will be available. The unstable context is a risk to monitor, together with the related functioning and capacity of stakeholders, access to the target areas, feasibility of logistics and functionality of local markets and banking system. Figure 15 and Annex III show the ToC.

5.4.5 Intervention plan

In response to the gaps identified at national and community levels, a detailed activity plan has been developed and alignment between the TFAs has been considered. The plan for Sudan takes into account the limitations imposed by the conflict situation: for example, there is no SOFF investment plan in Sudan and government activities are limited. Most of the partners have staff displaced outside the country or in Port Sudan and the security situation, and access changes daily. This intervention plan is subject to a shorter cycle of review by the country team and contingencies are in place should the situation change. A summary of the focus of this activity plan is provided below.

Water-related risk knowledge and governance

UNDRR and NCCD will focus on strengthening risk knowledge capacity by improving government tracking and reporting of risk data such as L&D, Sendai Framework target G and other relevant national documentation, and updating the risk information exchange data platform. A gap analysis of current practices for producing and managing risk information in support of early warning systems will be conducted. Within the context of the EWS road map, WHCA will contribute to the national risk knowledge enhancement plan and facilitate the development of protocols, strategies and SOPs. Furthermore, risk information management will be improved by developing risk assessment capabilities, technical assistance for data sharing and collaboration, and training on integration of vulnerability and exposure data into early warning messages.

Risk information will be integrated in the impact-based forecasts of SMA. A situation room will be also established to support real-time analysis of hazards and risks.

Observations monitoring and forecasting of weather and water-related hazards

WMO will support to ensure that global meteorological models and forecast products are available. ICPAC is supporting the restoration of the database and the backup of data. WMO and MoIWR will improve the observation network for hydrology with radar stations and discharge measurement devices, and provide other data for hydrological monitoring and forecasting. WMO, SMA and MoIWR will work jointly on a hydro-meteorological database management system and data sharing for EWS. WMO and MoIWR will further strengthen hydrological modelling and forecasting for 0-7 days, ensure that IBF for riverine floods is available, calibrated, and validated for priority areas, make flash floods related products available for selected areas, ensure IBF for urban floods are available for priority cities and ensure hydrological drought related products are available (Soil Moisture, Low Flow Index, Water Bodies Extent). All partners will work together on EWS visualization platforms and warning communication.

The chosen areas for improved forecast are Barbar (riverine floods), Kharthoum (flash floods) and Gedaref (droughts). Due to the limited accessibility in Sudan, it was not possible at this stage to select areas that would overlap with the area selected for community implementation, but consultations with WMO, MoIWR and SMA will continue during the implementation phase to identify suitable overlapping areas, should the access situation improve.

Community early warning systems and locally led adaptation

SRCS, with the support of the IFRC network, focuses on ensuring that early warning messages are properly co-created and contextualised so that they are understood by communities, and that the messages reach communities and are effectively acted upon. This will be done through understanding the information gaps and barriers at the community level, improving the ability of communities to act upon an early warning message and develop national-scale EAPs.

SRCS will also work with the community through community-based water committees (that are still active irrespective of the conflict in the target areas) to improve early actions related to water risks, accelerate and scale up local water strategies for locally led adaptation and make water facilities in the community climate resilient. For example, a joint assessment among consortium partners is planned in the target areas to assess the climate resilience of local water sources and map existing water resources (in collaboration with WES). The intervention plan also includes adaptation measures such as building and upgrading water systems to withstand extreme weather, training local committees on climate and water management, and constructing water storage facilities. A key activity will include the establishment of a coordination mechanism among local ministries and councils for better risk information sharing.

Cross-cutting activities

Protection, Gender and Inclusion

Under the cross-cutting activities of TFA5, a mapping exercise on protection services will be done to establish safe referral pathways for cases in all target areas. A feedback and complaint mechanism linked to SoPs on PSEA response and other SSRC processes will be developed. All will follow a PGI approach, by setting up a PGI-responsive early warning system through proper inclusion of women and other vulnerable groups (based on a detailed gender and diversity analysis). The use of DAPS (dignity, access, participation and safety) principles in the design and implementation of locally led water strategies and adaptation measures will be adopted. EWS and water committees at community level will be mentored on PGI and consultations with a variety of community members and groups. SRCS, SMA, NCCD and other partners engage with the community and ensure the community voice is captured in the solutions they design under the consortium. The consortium partners will effectively link local learning in Sudan to global monitoring frameworks and policy responses (reporting on the performance against Sendai Framework for DRR and

the application of these policies in conflict setting). Relevant training will be organized for local and national actors and partners on risk assessment, AA, locally-led adaptation and response, and field support will be provided. The data and digital team of NLRC will support SRCS with developing and digitalizing their community feedback and complaint mechanisms. Under this programme, a disability inclusion checklist will be introduced with national partners and a gender marker assessment will be conducted.

Systems interoperability

An advisory will be developed for the codesign of the visualization system for IBF and an interoperability framework with the aim to ensure that systems are connected so that fragmentation does not hinder a smooth communication of the early warning information to the community that needs to act on it.

5.4.6 Sustainability and exit strategy

The EWS stakeholders in Sudan are severely affected by the conflict: inaccessible data, server, power outage, network connectivity, understaffed, overstretched and underfunded. Institutional and financial sustainability of EWS remains a challenge in Sudan as the impact of the conflict will have long lasting consequences. Even in the context of a ceasefire it will take years of recovery work to rebuild institutional assets and capacities and institutions will need further support than the current WHCA timeline to be able to take up their responsibility for the technical systems that predict and issue hazard warnings. The Sudan context poses many sustainability challenges related to hazard detection, monitoring, analysis, and forecasting.

To mitigate the weakness around institutional and financial sustainability, the programme will invest significantly in social sustainability. The implementation of WHCA in Sudan will focus on setting up a community based EWS as this may be the most effective and sustainable approach amid widespread acute conflict. This programme will follow a locally led approach through eVCA that empowers community members to assess the hazards they face, the factors that affect their vulnerability, and the capacities that are in place to respond. Together with CEA, eVCA builds ownership and trust, with strong feedback loops for incorporation of users' knowledge and experience, which are essential ingredients to the long-term sustainability of EWS as the system can adapt to changes over time.

In refugee camps, access to drinking water and sanitation is often problematic. People come to one area in large groups at a time in search of a safe place to stay. For example, in Uganda, where there are refugees from the Democratic Republic of Congo, among others. (Photo: Hugo Nijentap/NLRC)

5.5 Uganda

Early warning systems are not just about warning people of impending disasters, but also about empowering communities to take charge of their own destiny

Dr Mary Goretti Kitutu, Minister of Karamoja Affairs, Uganda

5.5.1 Context and contribution of WHCA to national plans

Between 2018 and 2020, the Government of Uganda with support of the United Nations Development Fund (UNDP) developed the National Vulnerability and Risk Atlas of Uganda (NVRAU) to collect data about key hazards and vulnerabilities affecting the country and lay a basis for an informed decision making process in relation to these hazards.[45] According to the Atlas, Uganda is mostly affected by hydrological and meteorological hazards (including, among others, floods and droughts), which are further exacerbated by the effects of climate change and cause displacement and severe loss of life, health, property and livelihoods. Uganda is highly vulnerable to the impacts of climate change with a rank of 173 (out of 185) in the ND-GAIN index.[46] INFORM Climate Change 2024 indicates a possible large increase in the risk level and vulnerability in Uganda in the future, if no measures are taken.[47]

In response to these climate risks, the Uganda Government described their priorities in the Nationally Determined Contributions to the Paris Agreement. WHCA contributes to the NDC objectives as formulated in the priorities for disaster risk reduction, such as incorporate climate and disaster risk reduction in planning, budgeting and reporting, expanding climate information, building effective early warning systems, promoting local, indigenous and traditional knowledge and practices in disaster risk reduction and strengthen policy linkages and actions on climate change, migration and disaster risk reduction.[48]

5.5.2 Coordination and governance structure

The established coordination structure is designed to integrate with both global and regional coordination, and governance frameworks for the programme. This comprehensive structure aims to enhance collaboration, streamline efforts and ensure effective implementation of the objectives across all levels. The following three mechanisms are essential:

1. **National Project Steering Committee (NPSC)** led by the Ministry of Water and Environment (MWE) and comprising of: Uganda Red Cross Society (URCS), NLRC, the Netherlands Embassy in Uganda, Office of the Prime Minister (OPM), Uganda National Meteorological Authority (UNMA), Ministry of Information and Communication Technology (MICT), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Health (MoH), Ministry of Local Government (MoLG) and Ministry of Finance Planning and Economic Development (MoFPED). The NPSC convenes bi-annually and is responsible for programme governance, overall programme oversight and monitoring at national level, and for ensuring quality and timely implementation. The NPSC's role includes advising on implementation strategies, political coordination and linkages with regional and national initiatives, for example with EW4All, IGAD Climate Prediction and Applications Centre and Nile Basin Initiative. The NPSC works closely with the WHCA National Technical Working Group and the national Project Management Unit, as well as with the regional and global WHCA coordination structures to liaise on strategic directions and linkages.

[45] https://www.undp.org/uganda/news/risk-and-vulnerability-atlas-launched-boost-uganda-efforts-identify-and-mitigate-disasters
[46] https://gain-new.crc.nd.edu/country/uganda
[47] INFORM report 2024, *10 years of INFORM*, 2024.
[48] https://unfccc.int/sites/default/files/NDC/2022-09/Updated%20NDC%20_Uganda_2022%20Final.pdf

2. **Project Management Unit (PMU)** coordinated by URCS and comprised of NLRC, MWE, UNMA and OPM. The PMU is convening on a weekly basis and is responsible for identification and coordination of all joint activities, collaboration with consortium partner and authorities, and ensuring programme goals are delivered on schedule. The PMU coordinates closely with the global and regional WHCA partners.
3. **National Technical Working Group (NTWG)** coordinated by URCS and comprised of NLRC, OPM, MWE, UNMA, MICT, MoFPED, MAAIF, MoLG, MOH and the Climate Centre. The NTWG convenes weekly and is responsible for effective coordination and collaboration among stakeholders to enhance EWS and integrated water management strategies in the context of Climate Change Adaptation and DRR efforts. This includes tasks such as conducting assessments, developing plans guiding the implementation, developing programme sustainability mechanisms and capacity development plans.

Terms of References have been developed for the above mentioned mechanisms, which clarify in more detail the objectives, membership and ways of working of the coordination mechanisms.

5.5.3 Gap analysis and area selection

Water-related risk knowledge and governance

The proposed interventions in TFA1 on water-related risk knowledge and governance and in TFA2 on observations, monitoring and forecasting of weather and water-related hazards have a major focus on the national level. A checklist of minimum core capability was applied by UNDRR and OPM to assess the gaps in risk knowledge and governance. Two areas of greatest need emerged in Uganda:

- Production of risk knowledge is the area of greatest need due to the limited availability of key equipment and data. The capacity to monitor impacts and losses is also a weaker point. In particular, exposure and vulnerability data are recognized for having a weak foundation and the availability of a common platform and risk information management strategy and approach will help to harmonize the basis of risk information for EWS.
- The combination of data production, collection, harmonization and application with reinforced risk information governance structures is weak.

Observations monitoring and forecasting of weather and water-related hazards

MWE and UNMA, supported by WMO, carried out an assessment to identify the needs and capacities for the end-to-end EWS for flood and drought. The assessment shows a mix of strengths and gaps across various stages of monitoring, forecasting and warning services as shown in Figure 16.

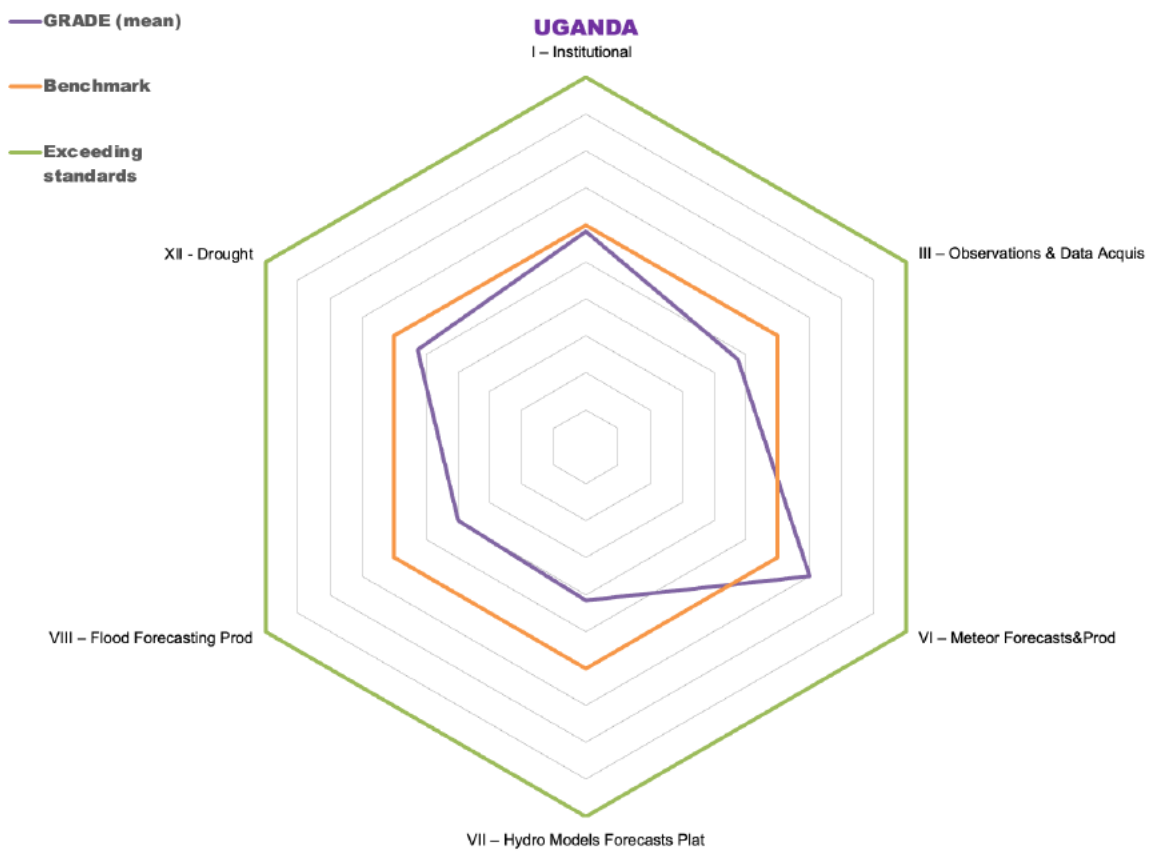


Figure 16: Spider graph ratings for the end-to-end Early Warning System for Uganda.

The early warning systems are supported by multiple agencies, including UNMA, MWE, and OPM. While there are several robust mechanisms in place (such as clear mandates, SOP), significant gaps hinder the full effectiveness of these systems. Despite the well-defined institutional framework and a strong meteorological institution, Uganda has no comprehensive multi hazard EWS, particularly for floods and also drought.[49]

Following the Country Hydromet Diagnostics report by Koninklijk Nederlands Meteorologisch Instituut (KNMI) from April 2024,[50] as part of the country SOFF implementation, some of the key gaps which will be in focus for TFA2 include:

- **Maintenance and observation network:** UNMA's observation infrastructure is in dire need of rehabilitation, particularly the Automatic Weather Stations (AWS) and data connectivity (e.g., via GTS or WIS). Observation quality and consistency are further compromised by inadequate maintenance and calibration capacity, necessitating serious attention.
- **Forecasting and data management:** There is a gap in the current system due to the lack of an automated forecast verification system and the underdevelopment of impact-based forecasting and advanced climate predictions, which are crucial for enhancing service accuracy and relevance. .
- **Strategic cooperation and international support:** A gap exists in the current approach due to insufficient regional cooperation, strategic partnerships, and international support, which are essential for effectively leveraging resources, knowledge exchange and technical expertise .

The desired future situation includes reliable and timely forecasts generated through a centralized and coordinated forecasting system. This requires improvements in observation networks, an increase in hydrological stations and the centralization of forecasting efforts. To fill these specific gaps, the SOFF investment plan for Uganda will transition from the design to the investment phase, upgrading existing

[49] Full details of the assessment can be found in Annex VIII.
[50] https://www.un-soff.org/wp-content/uploads/2024/06/DEF-FINAL-CHD-UGANDA-signed.pdf

forecasting stations and installing new ones. WHCA's contribution to close the above identified gaps in TFA1 and TFA2 is described in paragraph 5.5.5 of this report (Intervention Plan).

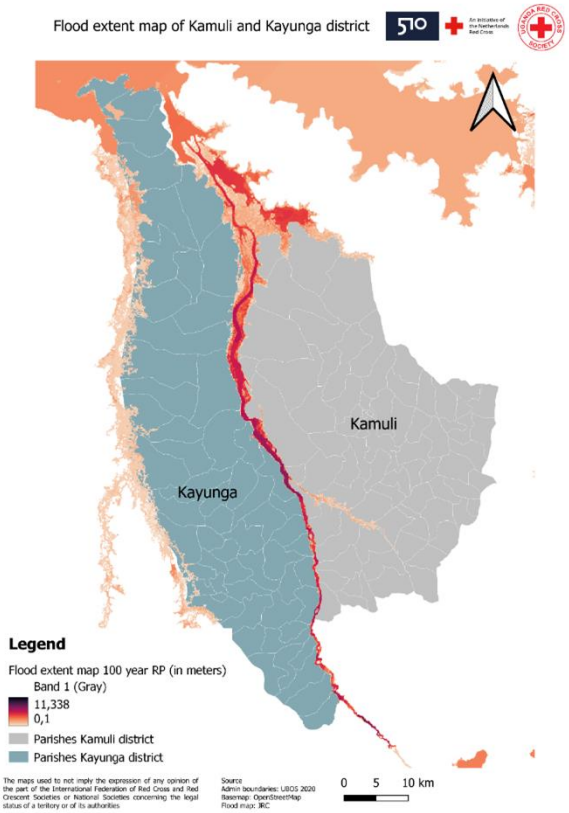
Community early warning systems and locally led adaptation

In consultation with global and national consortium partners and key stakeholders, selection criteria were developed and adopted during the WHCA stakeholders' engagement and planning meeting in April 2024. URCS employed the Strategic Targeting Methodology (STM) tool to select intervention communities, leveraging the National Vulnerability and Risk Atlas of Uganda (NVRAU) by OPM and the catchment management plans by MWE. This approach ensured the identification of the most vulnerable and underserved communities, promoting a collaborative decision-making process and enhancing the programme's impact at the grassroots level.

Given that many areas with very high flood and drought risks are already receiving support from multiple actors, the districts of Kamuli and Pakwach were selected for the WHCA programme. These districts were chosen due to their high risks and lack of supporting actors.

- Flood-prone districts: Kamuli
- Drought-prone districts: Pakwach (also experience flooding).

The selection of specific sub-areas and communities was guided by consultations with local authorities and stakeholders. For flood-prone areas, particular attention was given to communities residing along riverbanks (River Nile). A significant part of the community selection process was informed by the eVCA conducted in Kamuli and Pakwach districts to address both flood and drought components respectively.



Map 8: Flood extent map of Kamuli and Kayunga district, Uganda.

The communities in Pakwach are downstream of the area of Kasese where the improved forecast from UNMA supported by WMO will be implemented. This ensures that the areas selected for community activities will benefit from the improved forecast that will be provided under TFA2 activities.

Proposed interventions in TFA3 on water specific early warning systems dissemination and communication and TFA4 on anticipatory action and locally led adaptation will be implemented in the above mentioned target communities. The eVCA, conducted by URCS in these communities, highlights the following key gaps in early warning systems, anticipatory action and adaptation:

- Lack of information on EWS
- Communities do not receive EW messages (at all, or not timely, or not relevant)
- EW messaging formats are not inclusive and communities do not act upon EW messages
- Lack of unified anticipatory action approaches and limited coordination among stakeholders
- Stakeholders lack access to a forecasting tool based on reliable data, which would allow for a timely decision making and early action
- Limited flood resistant infrastructure
- Lack of awareness on natural resource management and alternatives which minimize impact on the environment
- Lack of environmental conservation and adaptation knowledge and practices
- Lack of knowledge on better farming methods.

WHCA's contribution to close the above identified gaps is described in paragraph 5.5.5 of this report (Intervention Plan).

5.5.4 Contextualized theory of change

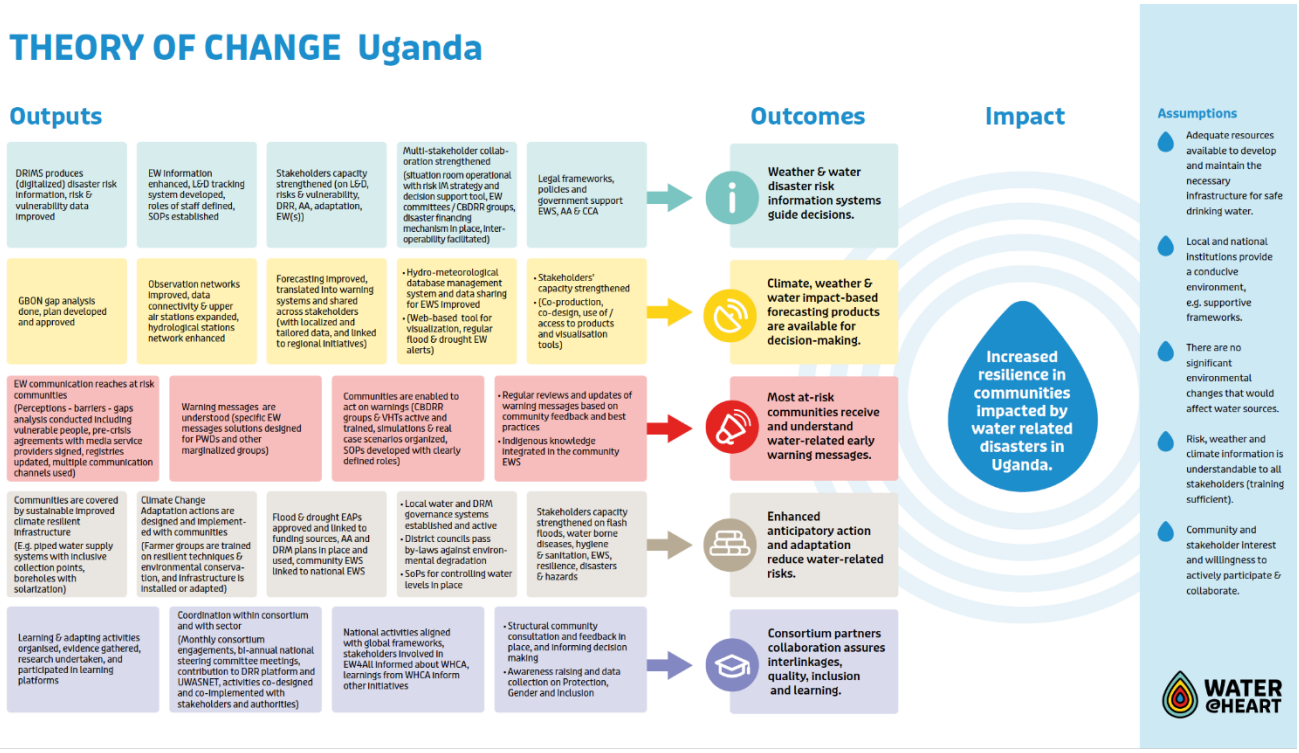


Figure 17: Contextualized ToC Uganda.

Within the ToC for Uganda, all outputs contribute to the anticipated impact of increased resilience in communities through outcomes. Specific attention is paid to ensuring the developed systems are inclusive. For instance, there are plans to design tailored EW messages for persons with disabilities (PWDs). One aspect that is unique to Uganda is the community-based disease surveillance that will be an integral part of the programme. Important assumptions identified by the team in Uganda are that all stakeholders are

committed to actively collaborate and that relevant actors understand the risk, weather and climate information produced. A defined risk foreseen is that the multi-stakeholder mechanisms may face challenges in decision-making processes. Furthermore, unstable internet and limited bandwidth may cause risks for effective data transmission.

5.5.5 Intervention plan

Responding to the gaps identified at national and community levels and considering the available resources in WHCA, a detailed activity plan has been developed and alignment between the TFAs has been considered.

Water-related risk knowledge and governance

With support of UNDRR, OPM will focus on enhancing the production and accessibility of risk information for informed decision-making through, among others, updating the National Risk and Vulnerability Atlas and operationalizing the situation room.

Additionally, OPM will strengthen the capacity of national and local stakeholders to utilize risk information in decision-making, through for instance strengthening the functionality of the Sub-county Disaster Management Committees (SDMCs).

Observations monitoring and forecasting of weather and water-related hazards

WHCA aims to unlock barriers across the entire hydro-meteorological value chain and to bridge gaps in early warning systems. In terms of the hydro-meteorological value chain, the key actors include MWE, which coordinates both UNMA and the Monitoring and Assessment department, which hosts the hydrological component. Another key stakeholder is the Ministry of Energy, which manages the Hydro Power generation dams, and OPM which decides on the actual actions to be taken in the face of a forecast or a disaster. MWE is responsible for setting national policies and standards for the management of water resources.

UNMA is a semi-autonomous institution and is responsible for establishing and maintaining weather and climate observing stations network, collection, analysis and production of weather and climate information. With the support of WMO and SOFF, UNMA will enhance the collection of basic weather and climate observation data, as well as production and accessibility of climate, weather, and water forecasting or prediction products to inform decision-making. UNMA is also responsible for issuing warnings and advisories for extreme weather events to various key sectors and the public. The Ministry of Disaster Preparedness and Refugees under the OPM is the lead agency for disaster preparedness and management. The Ministry facilitates collaboration among ministries, sectorial departments, local governments and communities for disaster preparedness and management.

To strengthen meteorological and hydrological monitoring, several key initiatives are being undertaken. These include enhancing the density of weather observation networks and increasing the automatic transmission of data to ensure real-time, interoperable and resilient systems. Efforts are also focused on improving marine weather observation and expanding hydrological stations in critical areas, with rehabilitated stations for better data collection.

A comprehensive hydro-meteorological database management system is being established, incorporating the latest WMO standards and advanced hydrological modelling for accurate forecasting. Special emphasis is placed on urban flood and flash flood forecasting systems, integrating risk-related data and coordinating with various partners. The area chosen by the partners for improved forecast is Kasese, Isingiro, Jinja (Riverine Floods), Kampala (Flash Floods) and Kaabong (Droughts).

Additionally, capacity-building initiatives are in place to strengthen the use of meteorological and hydrological models, particularly in drought and flood early warning systems. This includes developing tools for stakeholders to visualize data and issue standardized warnings, ensuring effective communication and preparedness for hydro-meteorological events. The infrastructure, training and operational support needed to sustain these systems are also being prioritized.

Community early warning systems and locally led adaptation

A comprehensive plan is underway to enhance resilience against water-related disasters and promote climate adaptation. Key actions include scaling up local strategies for anticipatory measures, such as the construction of solar-powered piped water systems, borehole drilling and the protection of water sources using community-based approaches. Efforts are also focused on expanding water supply systems, distributing water purification chemicals, and constructing flood-resistant infrastructure, including latrines and communal sanitary facilities.

To further mitigate flood risks, drainage channels will be constructed and dredged, with additional measures like the installation of cross culverts, slum dams, and elevated road sections. The initiative also emphasizes the regulation and desilting of community dams and reservoirs, alongside the mapping and strengthening of early warning systems.

In the selected communities, URCS will focus on water specific early warning systems and better understanding of the information gaps and barriers that currently exist. Through training of community members, installation of communication equipment and agreements with media service providers, URCS aims to improve the ability of communities to act upon EW messages and respond to water-related risks and disasters. Furthermore, URCS will focus on anticipatory action at community level and locally led adaptation through the construction and rehabilitation of climate resilient water facilities, in a collaborative and inclusive manner. This goes hand in hand with the improvement of early actions related to water risks in those communities. On top of that, environmental conservation and adaptation activities, like training of farmers on drought resistant varieties and establishment of nursery beds for tree seedlings, will be conducted.

The WHCA programme offers numerous opportunities to enhance IBFcapabilities in Uganda. With the support of UNDRR, WMO and SOFF[51], the data quality of national institutions will be markedly improved. Moreover, the impact-based forecasting models and systems developed by WMO will augment the precision of predictions, thereby improving decision-making processes for anticipatory action. URCS already has an established IBF platform developed as part of a five-year Response Preparedness Programme (IARP) in partnership with NLRC. This platform is integrated with the EAP for floods, providing notifications of when and where flood thresholds are reached. When such a threshold is met, URCS can activate the EAP and secure funding to implement early actions. The portal enables URCS to determine the timing and locations for these early interventions based on the information provided. The current data model for the portal is derived from the Global Flood Awareness System (GLOFAS). The integration of local data sources from UNMA and MWE would substantially enhance accuracy.

Finally, in support of climate-smart operations, a Climate Action Journey plan is being developed that includes a national climate risk assessment, climate-smart screening of sector programmes and a multi-year climate strategy.

Cross-cutting activities

Protection Gender and Inclusion

Consortium members in Uganda will collectively address cross-cutting issues such as gender and diversity, through strengthening community feedback mechanisms and sensitization meetings at different levels with different kinds of stakeholders (e.g., cultural and religious leaders). Involved staff and volunteers will be carefully trained on how to approach, engage and protect different types of groups throughout implementation and beyond. In addition, CEA and PGI studies and research will be conducted on the ground to understand the trust in EW messages and channels, risk perception and inclusivity of EWS.

[51] Full details of SOFF's intervention in Uganda can be found here: https://www.un-soff.org/wp-content/uploads/2024/05/SOFF-Investment-Phase-Funding-Request_Uganda.pdf

Systems interoperability

Codesign of the visualization system for impact-based forecasting and ensuring that there is a connection between (digital) systems for early warning will be key in this programme (eg., The digital situation room, the system of URCS and the NHMS's IBF platforms). The consortium will cooperate in designing an interoperability framework and ensure that systems have a connection so that fragmentation does not hinder a smooth communication of the early warning information to the community that needs to act on it. To ensure the harmonization of data flows and systems among consortium stakeholders, co-design sessions will be scheduled at the commencement of the programme. The outcomes of these sessions will form the basis for agreements and decisions regarding data sharing and integration among the various organizational systems.

5.5.6 Sustainability and exit strategy

WHCA emphasizes sustainability through several strategic approaches. A key element is the use of participatory methods from the outset, ensuring active involvement from both community members, national and district-level stakeholders. This involves employing tools such as eVCA, developing community action plans and establishing feedback mechanisms. At the national and district levels, regular meetings, consultations, information sharing, and joint decision-making processes will be implemented. This inclusive approach fosters shared ownership and accountability, which are crucial for the sustainability of programme outcomes.

A significant aspect of the strategy is the establishment and support of District Disaster Management Committees (DDMCs) in the targeted districts. By enabling DDMCs to fulfil their mandate in EW and AA, the programme ensures that local institutions are empowered and capable of sustaining these activities beyond the programme's duration. This institutional strengthening is vital for the long-term resilience of the communities involved.

Advocacy plays a critical role in the sustainability plan, focusing on enhancing and setting up institutional frameworks that support effective EW and AA. These efforts aim to secure political and institutional buy-in, creating an enabling environment for sustained disaster risk reduction and climate resilience initiatives.

Furthermore, the programme will outline maintenance measures for DRR and IBF. These measures will be designed to extend beyond the WHCA programme timeline, ensuring that the systems and structures put in place continue to function effectively. By detailing these maintenance protocols, the programme aims to provide a clear road map for ongoing support and development, ensuring that the benefits of the programme are long-lasting.

Overall, the exit strategy for the WHCA Uganda programme is built on the principles of participatory engagement, capacity development, institutional empowerment, strategic advocacy and comprehensive maintenance planning. These elements collectively ensure that the programme's impact is sustainable, resilient and capable of adapting to future challenges.

A meeting of rural villagers in Western Bahr el Ghazal State, at a small village near the town of Wau, South Sudan in 2021. People gather to provide feedback on community activities funded by different donors and talk with project officials who present results from recent work. Their feedback is collected in small focus groups. Women are shown pictures to illustrate progress and challenges and facilitate discussion. (Photo: Juozas Cernius/IFRC)

5.6 Regional alignment

With WHCA being implemented in the Nile basin in five countries, it is important to coordinate and support the country teams from a regional and basin perspective. Such regional alignment in support of country activities is an important component aimed at linking local experiences from the country level programme engagement with regional and global trajectories, thereby ensuring strong connections through processes and thematic engagements. The below mentioned points and need for alignment were identified during the inception phase. During the implementation phase, the need for additional alignment will be closely monitored as the process progresses and new avenues for alignment emerge. This will be reviewed annually. There is one consortium partner that will take the lead on a specific priority area, and initiate the collaboration across all the relevant consortium partners that will be involved in the priority area. The RWG is the coordination mechanism that is critical for discussion and alignment, with support from the TWG on technical topics. The following key priority areas for regional alignment have been identified:

1. Regional and international climate policy events and stakeholder alignment

WHCA programme staff will actively participate in relevant regional and global policy events with the twofold aim of sharing lessons learnt and informing regional and global policy messaging, linking (but not limited) to EW4All. At the same time, key policy decisions on the global and regional level will be shared with the wider consortium and implications will be reflected in programme implementation processes and activities. Consortium participation in these spaces will be guided by an agreed strategy and key messages from the consortium members. Regional and international stakeholder alignment with actors such as IGAD/ICPAC, Nile Basin Initiative (NBI) and the African Union will be coordinated similarly, including a mapping exercise of regional programmes on EWS and hence avoid duplication of different initiatives in the region.

Special attention is given to alignment with the IGAD road map, which was launched in 2023 with support of all members of the Regional AA Technical Working Group (RAATWG) (Secretariat members IGAD/IFRC/FAO/WFP). IFRC participates in this working group, ensuring that the investment of WHCA is coordinated with other initiatives to maximise joint impact.

> **Examples***: 9th Africa Regional Platform for DRR,[52] Africa Union DRR working group, Africa Climate Week, UNFCCC COP processes.*
>
> ***Partner leading these processes:*** *UNDRR*

2. Regional capacity strengthening and facilitation of cross-country learning

WHCA consortium members will strengthen the capacity of national implementing partners across the five countries on a range of topics of relevance to the programme. Beyond enhancing local capacity to ensure sustainability, this will serve as an opportunity for cross-country exchange and learning. Regional lessons learnt are exchanged between two or more countries to support a regional perspective and the ability to learn from different approaches to stimulate action.

The process will also facilitate thematic linkages in the region, enhancing national capacity and providing technical support. This process will support the exploration of specific themes and facilitate a multi-step mentoring process as a basis for country teams to successfully engage with national processes. Thematic linkages in the region will be progressively explored and documented in this process and country teams can request thematic mentoring processes to be initiated.

[52] https://www.undrr.org/implementing-sendai-framework/regional-platforms/afrp

Example: *Regional trainings on warning dissemination and communication, preparedness to respond to warnings, locally led adaptation and legislative advocacy; exchange visit on operationalizing IBF between two or more countries. Supporting all country teams in engaging in NDC and NAP processes at national level, while providing technical guidance and support to exchange and document lessons learnt in the process; supporting country teams to enhance the integration of EWEA in DRM laws and policies; supporting country teams on different aspects of the early warning early action value chain.*

Partner leading these processes: *Red Cross Red Crescent Climate Centre*

3. Basin perspective

A basin does not respect administrative boundaries or national borders. This is especially clear with events caused by climate change such as floods and drought. Therefore, a regional approach is also needed for WHCA to benefit from a basin perspective. All consortium partners will contribute towards a larger basin perspective and will support country teams in actively contributing to this process, while also benefiting from a system understanding of the Nile basin. Cross border early warning and early action challenges will also be assessed in an attempt to strengthen cross-border collaboration and data sharing.

Example: *Mapping extreme events across the region, regional stakeholder forum on warning dissemination and communication in a transboundary context.*

Partner leading these processes: *WMO*

4. Interoperable systems for early warnings

Fragmentation of digital systems in a country's early warning systems can lead to inefficiencies and delays in responding to emergencies. This fragmentation can cause gaps in communication, duplication of efforts, and inconsistencies in data, ultimately reducing the effectiveness of early warning systems and putting lives at risk. To enhance resilience and preparedness, it is crucial to ensure that these systems are interoperable and well-coordinated.

During the inception year, partners discussed the current availability of digital platforms used by government offices and National Societies. It was agreed to set up a sub-working group on interoperable systems to operate during the first year.

One of the key sources of forecast products to be used alongside the national (from the meteorological and hydrological agencies) and international ones (including from WMO implemented programmes in the Nile Basin countries) to trigger readiness and early action activities, is ICPAC. ICPAC organizes the Greater Horn of Africa Climate Outlook Forums (GHACOF) on regular basis to release seasonal forecasts[53] (including El Nino and La Nina predictions). The WHCA regional team will participate in these forums to ensure the alignments of different forecasts to avoid confusion and reduce chances of acting in vain.

Example: *Co-design how the current systems can better connect, avoid duplication and increase efficiency in information sharing and sharing of early warning messages by government to the communities.*

Partner leading these processes: *WMO*

5. Contribution to EW4All initiative

Though regional in nature, a programme like WHCA (including other programmes and initiatives as highlighted below in the table) can significantly benefit the EW4All initiative on a global scale by serving as a model of best practice and demonstrating scalable solutions. WHCA's setup in timeframe and budget has the capacity to test and ensure concrete interpillar ways of working and synergies across all four EW4All pillars, from national to local level, which can be transformative in terms of leading to the desired improvements in end-to-end, people-centred Multi Hazard Early Warning Systems (MHEWS). Progress and lessons learned (for example from the work on interoperable systems) will be brought to the EW4All Inter-pillar Technical Coordination Group (ITCG) to be considered for wider application. In essence, a regionally

[53] https://www.icpac.net/

focused programme like WHCA can serve as a catalyst for global change by demonstrating effective approaches and providing a blueprint for other regions.

Partner leading these processes: *IFRC*

6. Alignment with other regional EWS programmes

There are a number of EWS programmes being implemented in the region where WHCA will be implemented. Alignment with these programmes is important to avoid duplication, share learning, align efforts and resources, and develop synergies and complementarities with WHCA. The table below is a list of projects, programmes and initiatives where synergies and complementarities with the WHCA programme will be developed.

Name of the project/ programme/ initiatives	Overall objective and main outputs	Synergies and complementarities with the WHCA programme
CREWS East Africa in Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda	Enhance the capacity of NMHSs to produce and deliver short-term and severe weather forecasts and impact-based, people-centred predictions and warnings.	The WHCA will use the necessary meteorological data, products and tools in the development of the hydrological monitoring, forecasts and EWS
CREWS Horn of Africa	Enhancing capacity of members to produce, disseminate and communicate information services through WMO's Climate Services Toolkits (CSTs) tailored to the operational needs of NMHSs and National Climate Outlook Forums.	The WHCA will build upon the climate services implemented in the CREWS project to support the implementation of early warning services to various stakeholders.
Danish government's support to EW4All	Enable implementation of multi-hazard early warning systems (MHEWS) in five LDCs in Africa (Niger, Somalia, South Sudan, Uganda and Tanzania). Production, analysis, interpretation and use of climate and risk information to strengthen MHEWS. The countries will get the capacity to monitor and forecast priority hazards to generate and disseminate actionable early warning responses, in line with the Multi Hazard Early Warning for all Africa Action Plan 2023 – 2027, to save lives, protect property and livelihood.	The WHCA will build on the MHEWS strengthened in the overlapping countries, notably the production of risk information, and capacities to monitor and forecast priority hazards – mainly water-related and within fragile, conflict and violent (FCV) contexts.
Swedish government's support to EW4All	Support to strengthen MHEWs through the 4 EW4All pillars, Coordination, Monitoring and Tracking Investments Towards Enhanced Alignment, and Catalyzing Action through Multi-stakeholder platforms in Mozambique, Liberia, Bangladesh, Somalia and Haiti.	The WHCA will build on the strengthened MHEWS and learn from best practices in the Greater Horn of Africa region.
WMO Flash Flood Guidance System in Rwanda	WMO's Flash Flood Guidance System (FFGS) provides operational products needed to support the development of flash flood warnings from rainfall events using remote-sensed precipitation (that is, radar and satellite-based rainfall estimates) and hydrological models.	The WHCA programme, especially under TFA 2, will take technical support to develop similar flash flood products for the other Nile Basin countries where flash floods are priority hazards and lead to socio-economic impacts.
WACCA project in Ethiopia	The WACCA project is implemented by the Swedish Meteorological and Hydrological	The WHCA will check the feasibility to implement the riverine forecasting

	Agency to support the development of the riverine flood forecasting system for Ethiopia.	system of Ethiopia in other countries of the WHCA programme.
World Bank funded project to NBI (NELSAP and NILE-ENTRO)	NILE-ENTRO works on a range of areas including water resources planning and management (including modelling); irrigation and drainage; flood and drought preparedness; forecasting and early warning systems; watershed development and management; power interconnection and power trade; dam safety; coordinated operations of a cascade of dams; social development, media and communication; knowledge management and capacity building. NELSAP-CU facilitates jointly agreed transformative in-country projects with regional impact or significance and trans-boundary cooperative investment projects related to the common use of the Nile Basin water resources. It also builds regional capacity of countries and provides a platform for implementation coordination of trans-boundary investment projects.	The WHCA TFA2 will check and build necessary synergies and complementarities with the work of the NILE-ENTRO and NILE-NELSAP to ensure the affordable, integrated and tailored EWS is developed for the WHCA programme countries. The involvement of NILE-NELSAP and NILE-ENTRO will be crucial for the long-term sustainability of the products and tools developed at the regional level of the Nile Basin region.
IGAD Climate Prediction & Applications Centre **ICPAC (https://www.icpac.net/about-us/)**	ICPAC is a Climate Center accredited by WMO that provides Climate Services to 11 East African countries. The services aim at creating resilience in a region deeply affected by climate change and extreme weather. ICPAC has been implementing several projects in the WHCA countries, especially supporting them in hydrological and meteorological EWS and warning services including capacity development More information is available here: https://www.icpac.net/our-projects/	The WHCA programme, especially under TFA 2, will build synergies and complementarities with the on-going projects and activities of the ICPAC. The capacity development and tools provided to the Nile Basin countries will be strengthened through the WHCA programme activities ensuring tailored and sustainable EWS are developed for the Nile Basin region.
IFRC/WFP/FAO - led ECHO programme in Great Lakes region	Focus on AA scale-up and contribution to AA in FCV with focus on innovation and learning – innovation hub establishment planned in Rwanda.	Build on AA systems-building, with focus on learning on EWEA in FCV through the innovation hub in Rwanda and partnerships with local government and humanitarian actors.
IGAD/IFRC/WFP/FAO - led ECHO programme in Greater Horn of Africa	Focus on scaling up AA in IGAD region, operationalizing the IGAD regional AA road map. Specific focus on alignment of AA efforts and guidance for the region through the Regional AA Technical Working Group (RAATWG) and AA with a focus on migration and population movement with pilot countries in Somalia and Ethiopia.	Alignment with coordination efforts and mechanisms setup in IGAD region, as well as in Ethiopia under AA and link with EW4All.

7. Use of standardized approach

The regional team will support in-country implementation with, where possible and relevant, standardized approaches.

a. The Climate Action Journey

The IFRC network aims at standardizing the methodology to include locally led adaptation in the overall programming. To this purpose the Climate Action Journey has been developed with the support of the Climate Centre. A Climate Action Journey is a structured approach aimed at making National Society programmes climate-smart and supporting the scaling of locally led adaptation efforts. It involves a national climate risk assessment, a climate-smart screening and planning (to review existing programmes and operations and determine how climate risk might affect them) and finally the development of a multi-year climate strategy. The Journey emphasizes using climate information and forecasts, collaborating with various stakeholders including governments and local communities, and integrating traditional and indigenous knowledge. All WHCA countries will engage on the Climate Action Journey, with slight adaptations in Sudan.

b. Technical guidance on effective dissemination and communication of EW to communities

This technical guidance, developed by the consortium during the inception phase outlines a standardized approach to enhancing water-specific EWS with a focus on effective dissemination and communication. It underscores the need for a consistent, reliable framework to ensure that early warning information reaches communities in a clear and actionable format.

Key elements include:

- **Standardized protocols**: The Common Alerting Protocol (CAP) is emphasized for its role in standardizing alert messages across various communication channels. This ensures consistency and effectiveness in the dissemination of warnings.
- **Tailored communication**: Forecasts and warnings from meteorological and hydrological services should be adapted to meet community needs and should use multiple, accessible communication channels to reach all segments of the population.
- **Feedback mechanisms**: Implementing robust feedback systems allows for continuous improvement of early warning messages and their delivery. This involves engaging communities to refine messages and communication strategies based on their input.

The guidance promotes a coordinated approach involving National Societies, governments, UNDRR, WMO, ITU, and other stakeholders to ensure that EWS are both effective and inclusive, leveraging standardized protocols to enhance the clarity and timeliness of warning communications.

200 families were affected by floods in Karrary locality in Khartoum State (Sudan) in September 2020. Families were warned about the floods in advance and evacuated to higher ground before the water flashed through their community. This action saved lives. Sandbags were used to protect houses and belongings, but the scale of destruction and loss was very high as the houses were situated beside the riverbank. (Photo: Rita Nyaga/IFRC)

6. UPDATED BUDGET

6.1 Overview consortium budget

With the detailed country plans now available, all consortium partners have updated their budget resulting in the below consortium budget:

Top level WHCA budget 2024																									
Water at the Heart of Climate Action	Totals			Spread per year %							Budget per year (incl ICR)														
General details			Total	2023-8	2024	2025	2026	2027	2028-7	**Total**	2023-8		2024		2025		2026		2027		2028-7		**Total**		
Total grant		€	55,000,000	5%	40%	22%	16%	12%	6%	**100%**	€	2,539,910	€	21,920,354	€	12,045,801	€	8,866,906	€	6,352,328	€	3,274,701	€	**55,000,000**
												8		16										
Split per partner & subpartner	%	€		%	%	%	%	%	%	%	€		€		€		€		€		€		€	
Alliance lead PMU	4%	€	1,980,000	2%	15%	18%	18%	26%	20%	**100%**	€	46,742	€	290,000	€	365,481	€	365,481	€	515,480	€	396,816	€	**1,980,000**
IFRC Network	43%	€	23,531,039	5%	16%	26%	24%	19%	9%	**100%**	€	1,084,646	€	3,799,101	€	6,224,903	€	5,722,034	€	4,480,314	€	2,220,040	€	**23,531,039**
Climate Centre	4%	€	2,337,571	5%	20%	20%	19%	20%	16%	**100%**	€	128,000	€	462,000	€	461,571	€	450,000	€	460,000	€	376,000	€	**2,337,571**
IFRC	13%	€	6,963,520	3%	21%	28%	22%	18%	9%	**100%**	€	198,817	€	1,432,813	€	1,920,504	€	1,511,797	€	1,243,099	€	656,490	€	**6,963,520**
NLRC	26%	€	14,229,948	5%	13%	27%	26%	20%	8%	**100%**	€	757,829	€	1,904,289	€	3,842,829	€	3,760,237	€	2,777,215	€	1,187,550	€	**14,229,948**
UNDRR	12%	€	6,742,772	4%	20%	46%	17%	9%	5%	**100%**	€	289,575	€	1,320,199	€	3,081,879	€	1,121,913	€	619,057	€	310,149	€	**6,742,772**
WMO	13%	€	7,296,060	7%	31%	30%	20%	8%	3%	**100%**	€	530,000	€	2,250,000	€	2,206,060	€	1,490,000	€	570,000	€	250,000	€	**7,296,060**
SOFF	27%	€	14,850,000	4%	96%	0%	0%	0%	0%	**100%**	€	588,947	€	14,261,053	€	-	€	-	€	-	€	-	€	**14,850,000**
Contingency and acceleration	1%	€	600,129	0%	0%	28%	28%	28%	16%	**100%**	€	-	€	-	€	167,478	€	167,478	€	167,478	€	97,695	€	**600,129**
Total	100%	€	55,000,000								€	2,539,910	€	21,920,354	€	12,045,801	€	8,866,906	€	6,352,328	€	3,274,701	€	**55,000,000**

[redacted]

Water at the Heart of Climate Action	Totals			Spread per year %							Budget per year (incl ICR)														
			Total	2023-8	2024	2025	2026	2027	2028-7	**Total**	2023-8		2024		2025		2026		2027		2028-7		**Total**		
Split per technical focus area	%	€		%	%	%	%	%	%	%	€		€		€		€		€		€		€	
1: Water Related Disaster Risk Knowledge and Governance	14%	€	7,874,962	5%	19%	43%	18%	10%	5%	100%	€	372,115	€	1,475,255	€	3,399,332	€	1,441,148	€	782,949	€	404,163	€	**7,874,962**
2: Observations, Monitoring, Analysis and Forecasting of Water Related Hazards	37%	€	20,365,086	5%	80%	8%	5%	2%	1%	100%	€	1,028,947	€	16,317,053	€	1,640,556	€	929,496	€	329,496	€	119,539	€	**20,365,086**
3: Water Specific Early Warning Systems, Dissemination and Communications	10%	€	5,247,616	4%	14%	31%	26%	18%	7%	100%	€	191,929	€	729,179	€	1,621,700	€	1,374,101	€	959,401	€	371,307	€	**5,247,616**
4: Anticipatory Action and Locally Led Adaptation	24%	€	13,288,615	4%	14%	27%	26%	19%	9%	100%	€	562,074	€	1,884,997	€	3,552,218	€	3,516,244	€	2,587,934	€	1,185,148	€	**13,288,615**
5: Crosscutting Activities	15%	€	8,223,721	5%	18%	22%	20%	21%	15%	100%	€	384,845	€	1,513,869	€	1,831,995	€	1,605,919	€	1,692,549	€	1,194,545	€	**8,223,721**
Total	100%	€	55,000,000	5%	40%	22%	16%	12%	6%	100%	€	2,539,910	€	21,920,354	€	12,045,801	€	8,866,906	€	6,352,328	€	3,274,701	€	**55,000,000**
Split per implementation country	%	€		%	%	%	%	%	%	%	€		€		€		€		€		€		€	
Ethiopia	23%	€	12,731,242	4%	59%	15%	11%	8%	3%	100%	€	488,384	€	7,497,547	€	1,904,486	€	1,346,572	€	1,077,601	€	416,652	€	**12,731,242**
South Sudan	16%	€	8,699,473	6%	34%	28%	16%	11%	6%	100%	€	486,787	€	2,919,316	€	2,409,818	€	1,431,950	€	947,260	€	504,342	€	**8,699,473**
Sudan	8%	€	4,574,774	5%	19%	32%	24%	17%	4%	100%	€	226,516	€	849,408	€	1,464,047	€	1,108,991	€	759,813	€	165,999	€	**4,574,774**
Rwanda	12%	€	6,459,333	3%	51%	23%	12%	7%	4%	100%	€	181,457	€	3,262,299	€	1,492,416	€	802,714	€	438,901	€	281,546	€	**6,459,333**
Uganda	19%	€	10,682,380	5%	49%	20%	15%	7%	4%	100%	€	482,765	€	5,223,419	€	2,158,741	€	1,606,448	€	768,513	€	442,494	€	**10,682,380**
Global/ regions	22%	€	11,852,799	6%	18%	22%	22%	20%	12%	100%	€	674,001	€	2,168,366	€	2,616,292	€	2,570,232	€	2,360,240	€	1,463,668	€	**11,852,799**
Total	100%	€	55,000,000	5%	40%	22%	16%	12%	6%	100%	€	2,539,910	€	21,920,354	€	12,045,801	€	8,866,906	€	6,352,328	€	3,274,701	€	**55,000,000**

6.2 Budget update in comparison with previous budget

During the inception phase, the detailed country plans were developed, based on the different assessments conducted in each of the countries. Results of these assessments showed the need to make some changes to specific programme activities in each country as compared to the proposal, and consequently to the budget. As a result, the following three major changes in the budget overview were made compared to the budget that was submitted as part of the 2023 proposal:

1. The budget line 'Contingency and acceleration' of 5m euros has been allocated to strengthen local action. The allocation process followed for this has been transparent and was open for input from all stakeholders. During this process, the criteria for allocating this fund were agreed across the consortium, with input from national, regional and global teams. This has resulted in a much smaller contingency of 600,129 euros, and an allocation of 4,399,871 euros for the implementation of WHCA programme activities in the five countries. See Annex XIII for a description of the process that was followed for the allocation of these funds.
2. SOFF's part of the WHCA funding was labelled as 'global/regions' budget during proposal submission in 2023, because at that time it was not yet clear which country would receive which kind of funding from SOFF. During the SOFF readiness phase, which was concluded during the inception phase, four of the five WHCA countries have developed detailed plans and submitted an investment funding request to SOFF, which have all been approved by the SOFF Steering Committee.[54] This resulted in SOFF now having insight into how much funding will go to which country and being able to now label the WHCA funding[55] in the budget to the four countries. This resulted in a much larger part of the WHCA budget specifically shown being allocated to the countries.
3. As explained in the Introduction of Chapter 5 and Annex II, implementation in Rwanda was added to the WHCA programme. The consortium partner generally responsible for the work of the National Society in WHCA is NLRC. However, since NLRC does not have a bilateral relationship with the National Society in Rwanda, IFRC has taken responsibility as consortium partner for WHCA with the Rwandan Red Cross. From a budget perspective, this means that a portion of the budget that was meant for Sudan under the responsibility of NLRC, has been allocated for Rwanda under the responsibility of IFRC.

[54] The following amounts have been approved: Ethiopia – $10,094,582 / Rwanda – $3,600,294 / South Sudan – $2,612,754 / Uganda – $6,316,536. SOFF Steering Committee prioritized approval of countries selected for WHCA. The total request from these countries to SOFF is $22,624,166, which is significantly higher than budgeted for SOFF under WHCA. Due to the nature and set-up of SOFF the gap will be financed from other sources that flow into their Trust Fund. Hence making funds immediately available to WHCA countries before having received the funds in full from MoFA.

[55] SOFF receives 14,850,000 euro under WHCA, and total amount of the country request equals $22,624,166. To reflect this reality in the WHCA budget, SOFF's amount has been proportionally assigned to the four countries.

6.3 Resource mobilization

The needs in the selected countries (and other countries in the region) to have fully functioning and effective end-to-end community-centred EWS for multiple hazards are much larger than the available resources in WHCA. The consortium will therefore actively mobilize other resources to respond to these needs with the aim of expanding the scope of the programme within the selected countries and to other countries. Some of the needs that have already been identified include:

- investments in hydro-meteorological infrastructures such as hydrological monitoring stations and measurement instruments
- investment to improve numerical prediction and hydrological models through high performance computing
- multi hazard EWS for other hazards that are not included in the scope of WHCA such as severe weather, landslides, etc.
- include more at risk communities within the selected countries for activities related to EWS messages communication and dissemination and community-led anticipatory action
- expand IBF support to other communities (within WHCA only the hotspot areas have been selected due to limited resources)
- scaling up of disaster risk information management systems for IBF and EWEA
- development of situation rooms linked to the national hydro-meteorological services to promote the use of forecast information and warning services for community level planning and decision making.

All consortium partners are committed to using existing structures and networks to open new doors for resource mobilization on EWS and build on the foundation laid out within WHCA. The consortium partners also look forward to collaborate for acceleration of investment with the Netherlands government.

7. RISK ANALYSIS

The risk matrix in Annex V builds upon the WHCA Proposal of 2023. A review of this matrix revealed that the majority of the risks that were identified at the time of proposal development, are still valid today. The development of the country plans also resulted in the identification of risks at the country level. These have now been included in the risk matrix. Key risks and mitigation measures include:

- Insecurity, political instability and conflict can lead to areas being inaccessible.
    - Accessibility has been one of the criteria during the inception phase when selecting communities. If the situation deteriorates during implementation, activities will be moved to other areas and expectations with stakeholders will be proactively managed. Contracts with suppliers and third parties will include a force majeure clause and security protocols will be followed.
- There is a high expectation from the WHCA programme in countries, while the investment per TFA per country is relatively low. This may also lead to investment at community level being low.
    - Transparency on available resources, proactive management of expectations and a resource mobilization strategy.
- Administrative barriers hinder sharing of hydro-meteorological, social and topographic data, which could risk progress in TFA1 and TFA3.
    - Relevant consortium partners will reach out to their implementing partners if needed to ensure required data and information is shared. The consortium partners will also ensure there is a clear explanation and understanding of the objectives of WHCA within the implementing partner agencies.
- Government offices may not feel ownership over the programme and TFAs because there is a limited transfer of funds to government bank accounts.
    - Consortium partners will ensure that WHCA activities are designed in collaboration with government staff and government priorities are included in the WHCA activity plans (which are funded directly by some of the consortium partner budgets).

The detailed risk matrix can be found in Annex V.

8. COMMUNICATION STRATEGY

With WHCA being the first large programme under the EW4All initiative that supports interpillar linkages, communication and visibility is important. During the Inception phase a Communications Working Group (CWG) has been established, with representatives of all consortium partners. The CWG discussed communications and visibility topics related to WHCA, and started the development of a Communication Strategy.

To ensure consistency in communication related to WHCA, ensuring key messages and framing to different audiences is aligned. Key messages have been designed around three key themes:

1. **Understanding the interconnected crises**

Key messages will highlight how climate, weather and water-related risks are deeply intertwined. The worsening climate crisis has intensified the global water crisis, leading to more frequent and severe disasters like floods, droughts, and waterborne diseases. Marginalized groups are especially vulnerable.

2. **Promoting inclusive and sustainable locally-led solutions**

Key messages will emphasize the need for inclusive, sustainable and locally-led solutions to manage water-related risks. This involves multistakeholder and multi-level engagement, ensuring communities are central to decision-making. Partnerships across sectors can create integrated solutions to reduce the impact of water-related disasters and increase the resilience of communities.

3. **Fostering prevention, coordination and long-term investment**

Key messages will focus on the need for better coordination and increased long-term investment in managing water-related risks. Current efforts are challenged by lack of data, poor coordination and a focus on short-term responses after a disaster. WHCA will contribute to strengthening government institutions to fulfill their mandate on EWS, for a coordinated approach and alignment with stakeholders and communities to improve anticipation and prevention.

Different audiences, both internal to the consortium and external, will be targeted through different online and offline channels with consistent messages. Online visibility will make use of photos, videos and human-interest stories, which will be shared through the existing social media channels of consortium partners. Online visibility through the websites of consortium partners will also be explored, with the aim to share longread, success stories and programme updates.

Offline visibility will focus on media interactions and field activities. Banners will be used as a tool to reinforce the consortium message and highlight partners' contributions. The CWG will facilitate the design of different types of banners to cater for different needs and levels of customization. Some banners need to prominently feature consortium partners, while other banners need to emphasize the in country implementing partners.

Logos of consortium and implementing partners will be used in a consistent way and should support visual identity and branding where relevant. Achievements of the WHCA programme and how these were accomplished will be communicated about to publicly highlight how the policy of MoFA relates to the programme. Therefore, in any communication about the programme, where possible and relevant, it will be mentioned that the activities are financed by MoFA. The visibility and communication guidance of MoFA will be followed.

The Learning Agenda and Communications Strategy have been aligned to each other and aim to strengthen and support each other. Regular discussions between the CWG (leading on the Communication Strategy) and the Climate Centre (leading on the Learning Agenda) are taking place. The WHCA programme will ensure visibility and communication around relevant international events and UN recognised days and weeks. Examples include International Day of Disaster Reduction, COP29, World Climate Day, World Water Day/ Week, World Meteorology Day. The Communication Strategy aims to provide sufficient guidance for global, regional and national communication efforts, while at the same time aiming to provide space for contextual adjustments.

”I am a Drop of Water” by Rojo Ham. Created for the General Learning Assembly in Kigali, 2024.

ANNEXES

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IV. Learning agenda

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VIII. WMO flood and drought capacity assessments Ethiopia, Rwanda, South Sudan, Sudan and Uganda

IX. SOFF GBON National Gap Analysis Ethiopia, Rwanda, South Sudan and Uganda

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