Weather and Climate Information Services: a thematic evaluation across three regions

Annexes for Final Report

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Annex 1 - Terms of Reference

Weather and Climate Information Services (WISER) - A thematic evaluation across three regions

1. Contents

2. Introduction

FCDO is seeking a supplier to conduct a three-part thematic evaluation of 5 (concluded and active) FCDO programmes supporting delivery of UK Met Office's Weather and climate Information Services (WISER) across three regions (Middle East and North Africa, Africa, and Indo-Pacific). The work consists of three elements:

i. *Evidence & Learning summary* based on the evaluative products from 2 historical programmes. The summary will inform development of three new regional programmes by highlighting which approaches have proved most effective in co-producing useful, relevant, and accessible weather and climate information services and in ensuring this information was actively used for evidence-based decision making. The review should also highlight the mechanism behind change happening: why and how changes occurred, particularly in Fragile and Conflict Afflicted States (FCAS) and -where relevant- how change might have happened differently for women and girls.
ii. *Sustainability of results* from two historical programmes to assess which results have proved sustainable after programme closure and why.
iii. *Opportunity to support additional data collection exercises* for three new regional programmes supporting WISER. With possibility to seize opportunities for rapid testing of interventions to maximise value for money, demonstrating impact, and filling-in evidence gaps around the theory of change

3. FCDO and strategic, thematic evaluation

Strategic, centrally managed thematic evaluations are a priority for evaluation at FCDO. Thematic evaluations draw together evidence and learning from FCDO funded programmes on 'what works' across different contexts to address high priority development challenges, such as what has worked to address the primary and secondary impact of the Covid19 pandemic in LMICs, climate change and other key Ministerial priorities.

Thematic evaluations are commissioned by the FCDO's Evaluation Unit, within the FCDO Economic and Evaluation Directorate, but are led on by the relevant policy, regional and programme teams within FCDO. In the case of this specific thematic evaluation, work is led by Middle East and North Africa (MENA), Pan-Africa, and Indo-Pacific Regional Departments

4. FCDO support to WISER

Funded by UKAid, WISER intervention was first implemented in East Africa (Weather and Climate Information Service for Africa, 2015-2021) and then in Asia as part of Asia Regional Resilience to Changing Climate (ARRCC) Programme (2018-2022).

WISER intervention will now be implemented as part of 3 new regional climate programmes at their very early stages:

- Pioneering a Holistic approach to Energy and Nature-based Options in MENA for Long-term stability programme (PHENOMENAL) for MENA region;
- Africa Region Climate and Nature (ARCAN) for Africa; ARCAN will partner with Ecorys for monitoring and evaluation services.
- Climate Action for Resilient Asia (CARA) for the Indo- Pacific region.

Within each programme/geographic area, a set of projects are delivered across a range of priority countries.

Note that WISER is one of the components delivered by each of the three regional programmes alongside other components promoting climate adaptation and resilience and better natural resource management. More information about other components delivered by PHENOMENAL, ARCAN and CARA can be found in business cases in the dedicated DevTracker websites linked above.

5. About WISER

High-quality and accessible climate and weather information are pivotal to build resilience to climate change: from informing farming decisions to improving early-warning systems, reliable and user-oriented
information services provide vital data to enable evidence-based decision making[1].

The UK Met Office's WISER is working in collaboration with FCDO to deliver transformation in the generation and use of co-produced weather and climate services tailored to user needs, to support decision making at local, national, and regional levels, building resilience to the impacts of climate change.

6. Purpose and objectives

WISER promotes a co-production model, where climate information generated is tailored to user needs. Evaluative work to date has been mostly partner-led and has been conducted within the boundaries of East Africa and Asia. However, we have no independent evaluation of WISER across geographies to understand i) which approaches have been more effective in co-generating weather services -in relation to local contexts- particularly in Fragile and Conflict Affected States (FCAS) and humanitarian settings, ii) whether these have been effective in informing decision making at various level and iii) whether uptake of results have proved sustainable.

A thematic evaluation of WISER, cutting across 3 regional programme portfolios, will put FCDO in the unique position to produce rich and nuanced conclusions on how weather and climate information services can be co-produced and used in a variety of different contexts in order to shed light not only on "what works" but also on "what works where and for whom".

Following an evaluability assessment, the envisaged evaluation questions are:

I. Which approaches have been more effective in co-producing useful, relevant, and accessible weather and climate information services across contexts, particularly FCAS? What contextual factors enabled or limited successful programme delivery / effectiveness, particularly for women and girls?

II. What were the key operational and delivery lessons learnt from delivering the WISER model across differing contexts for future programming?

III. To what extent, and in what ways, were improved climate information services effective in informing decision making at local, national, and regional levels across contexts? What approaches or combination of improved climate service activities were successful in supporting this and how was gender a consideration?

[1] See for example Fosu et al. (2018). Also, Appendix B contains a list of evaluative studies around effectiveness and benefits of disseminating weather information.

IV. What factors, internal or external to the programmes, may have limited or accelerated the application of improved climate services supported evidence informed decision-making across levels?

V. What lessons can be drawn on the role of FCDO in supporting similar programmes in future to maximise uptake, sustainability and impact – as well as maintaining institutional knowledge of work funded – particularly in FCAS?

VI. Following the closure of the WISER and ARRCC programmes, what programme results have been sustained, for whom? And why?

VII. What were the more successful monitoring, evaluation, and learning (MEL) systems and tools used across the previous programmes? What challenges and lessons around MEL can be learnt for the most successful use of MEL resources in later programming?

The evaluation questions will be subject to further refinement and sequencing at inception stage (see paragraph 9 below).

7. The Recipient

The recipient of these services is the FCDO. The primary target audience for the thematic evaluation products are the Climate Team in MENA Regional Department, the Pan-Africa Regional Department, the Indo-Pacific Regional Department, and FCDO climate cadre.

Secondary target audiences include:

- FCDO Posts, particularly climate teams and attaché.
- FCDO Energy, Climate and Environment Directorate.
- FCDO Research Department
- FCDO Evaluation unit
- Other donors and potential donors funding WISER.
- For published outputs, audiences will include partners on the climate agenda, academic institutions and international community operating in this field and the UK public. COP 28 will be a key forum to socialise some of the findings from this thematic evaluation.

8. WISER MEL architecture and evaluative products

WISER thematic evaluation should be integral part of a wider, interrelated data and evidence network. As the three new programmes are at very early stage of implementation there is an opportunity to enhance coherence of WISER MEL framework. The partner for this thematic evaluation is expected to work in close collaboration with WISER embedded MEL team as well as with programme-specific MEL partners to identify areas where a cross-regional lens can add the highest value (rather than duplicate effort) and where complementarities with WISER and programmes-specific MEL activities can be exploited (for example using a collaborative approach to collection of data points across space and time).

Table 1 below shows an overview of existing MEL architecture associated with WISER. At inception stage, the mapping should be further refined and roles and responsibilities clarified to ensure complementarity of efforts across different levels of MEL.

Table 1: Overview of WISER MEL architecture.

Level	Function
Thematic, cross-programmes and cross-geographies evaluation (provided through this evaluation)	• Development of evaluative products synthetising thematic evidence and learning across regional programmes • Should draw on data / evidence from every layer and synthesis as part of the evaluation. • Recommendations for alignment of MEL across programmes, including potentially development of ToC / change areas / progress markers or indicators.
External programme-level MEL (currently an independent MEL partner has been identified for ARCAN)	• To help support evidenced based decision making and learning across the various components within programme portfolio, and to deliver a robust independent monitoring and evaluation function. • Complementing and strengthening Met WISER own monitoring and learning, through the provision of robust monitoring, evaluation, learning and VfM assessment at programme level • Should synthesise learning from within regional programme and support uptake of learning across programmes (working in partnership with the programme delivery teams).
Delivery partner-led, programme-level MEL	Programme delivery team supported MEL • Report against logframe to FCDO, used for risk analysis etc • Aggregation of project level MEL to report to FCDO • Annual Reviews / Reports • Data when analysed should also be used for programme management • Support MEL capacity building of project delivery partners and their use of project level MEL data for programme management

Delivery partner-led, project-level MEL	Project by project level M&E activities
	
	• Participate in MEL activities as directed by their Programme MEL delivery teams, including
	  ➢ Routine reporting of MEL data and KPI data (including context specific data)
	  ➢ Project level narrative reports
	  ➢ MEL capacity building as required
	• Project / Intervention-specific results chains to be developed, reported, and mapped to programme ToC / specific causal changes identified to be gathered data on.
	• Data / evidence for any higher-level change areas agreed at the programme / global level.

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9. Scope, methodology and approach

FCDO programmes in the scope of this review are 2 closed FCDO programmes (WISER and ARRCC) and the 3 new regional climate programmes: PHENOMENAL, ARCAN, and CARA. The thematic evaluation should cover three geographic areas: MENA, Africa and Indo-Pacific.

The thematic evaluation is built around three key blocks:

i. Evidence and learning summary from the two completed programmes and recommendations on how to better tailor implementation and MEL of the three new programmes based on findings. FCDO is particularly interested in lessons learned from implementing WISER in FCAS and, where relevant, using a gender lens. This should constitute roughly 25% of the evaluation budget[2].
ii. Testing sustainability of results from two historical programmes through targeted follow-up primary level data collection. Appendix C contains a preliminary list of existing datasets (collected under concluded WISER programmes) offering the opportunity for a follow-up data collection exercise. The list will be refined and further tested at inception stage. Which data point(s) offer the best opportunity(-ies) for a follow up will be discussed and agreed with thematic evaluation partner, FCDO teams, Met Office and MEL providers at inception stage, but we envisage it should be focused on results for final beneficiaries (e.g. farmers) and should allow gender disaggregation of data. Note that, If feasible, it is anticipated that for some areas where evidence is gathered for the historic programmes, following rounds of data collection might take place while the results chain mature under the new programmes (see phase 3). This should absorb roughly 36% of the evaluation budget.
iii. Additional data collection exercise(s) to continue longitudinal series from historical programmes and/or test specific hypothesis or casual chains. Also in this case, it is anticipated that primary level data collection will be user-focused, with particular attention to final beneficiaries (such as farmers) and should be designed using a gender lens. Exact shape and scope should be determined at inception stage but we envisage 2 options: i) baseline for one or multiple Met projects, with responsibility for endline falling under Met Office and/or programmes' MEL partners' remit, and/or ii) nimble testing on selected project(s) to identify delivery option(s) that ensure best VfM. Options should be assessed based on need, data collection feasibility and possibility to test innovative data collection mechanisms, opportunity to produce gender-disaggregated evidence, policy relevance of results, Met office project timelines, and synergy to the rest of the MEL architecture. This should constitute roughly 37% of the evaluation budget.

In order to ensure the thematic evaluation produces outputs in a timely way to inform decision making and shape the 3 new programmes, we envisage activities will happen in three phases as outlined in Table 2. Exact shape and timelines will be defined at inception stage but as far as possible, the evaluation partner should ensure each phase build on earlier phases.

10. Methods

The thematic evaluation will cover a range of diverse projects, partners, and country conditions, and it is likely that from country to country there is significant heterogeneity of project design and delivery. Single projects' impact will be affected by programme and project design and implementation and is likely to be different across contexts and

[2] Note that budget allocation is indicative and it will vary depending on the proposal and the concrete options the thematic evaluation will pursue.

stakeholder groups. As such we envisage a theory-based approach to evaluation, gathering and analysing evidence against programme theories of change, together with situational analysis to evidence results and change in differing contexts. Specific themes for the case studies should be identified and agreed with by FCDO, Met Office and evaluation partner at inception stage, but could include institutional change and/or building, evidence-based decision through uptake of climate information and impact on final beneficiaries as result of these changes/decisions. These should have a particular focus on informing operationalisation of WISER in fragile and conflict afflicted settings.

A preliminary Evaluability Assessment commissioned by FCDO suggests primary data collection is feasible in the context of this thematic evaluation, building on existing investment in data from the Met Office and previous evaluation contracts. As such, we envisage the evaluation would be a theory based mixed method evaluation. Suggested methods include political economy analysis, outcome harvesting and contribution tracing; and multiple methods may be used to answer different questions. Possible data collection methods for case-based analysis include Key Informant Interviews (KII) as well as household- level surveys with farmers and other end users. Primary data collection should be undertaken for each programme (closed and active), however, there may need to be some difficult decisions on where to collect data, given budget constraints. Hence why a collaborative approach to the WISER MEL framework, developed in concert with other MEL partners will be crucial to deliver maximum value.

An outline of the proposed methods and data collection strategies, with related budget considerations, should be included in the bidding proposal. At inception stage, the thematic evaluation partner is expected to develop and refine approach, guided by the nature of the evaluation questions included above under paragraph 6. The evaluation partner will also be asked at inception stage to identify specific WISER projects -among the 5 FCDO programmes- that offer the best opportunities (or lower risks) for data collection in Phase 2 and 3; this should be based on expected results relevance and rigour vis a vis data collection feasibility. FCDO would encourage use of any innovative approaches to data collection (or data sources) that may reduce costs.

Table 2: Three phases for WISER thematic evaluation[3]

	Timelines	Key activities	Output
Inception	May 2023 One month	**a. Evaluation Design** • Rapid Literature & Evidence Review (Global & Regional / Country Level). • Methods/Approaches to answer the evaluation questions and corresponding data collection strategies • Stakeholder Engagement as needed and early outcome mapping of historic programmes with key stakeholders. • Scope need and opportunity for primary data collection for Phase 2 and 3. • Evaluation Protocols Developed, outlining processes to ensure evidence strength and build confidence in final results. **b. MEL** • Mapping of current MEL architecture for the three programmes and WISER. • ToC review – including development of key causal change chains across concluded and active programmes. This will enable identification of opportunities to test casual pathways in the continuum between historical and current programmes. • Development of roles and responsibilities for MEL based on complementarities and identify synergies.	A. Inception report
Phase 1: Rapid evidence synthesis	May 2023 One month	**a. Rapid evidence mapping** • Mapping evidence and learning from the historic programmes around evaluation questions I. to IV. drawing lessons from across programmes and geographies. A preliminary list of evaluative documents from the two concluded programmes is in Annex B. • Stakeholder Engagement as needed, including some KIIs. • Test whether the current programmes have reflected these learning and recommendations in their ToCs and designs and whether any adaptation is needed. **b. MEL** • Identify and pre-test opportunities to strengthen and enhance coherence of the MEL framework associated with WISER and formulate recommendations (evaluation question VII).	B. Short learning and reflection report (20 pages, with supporting slide-deck)

[3] Timelines are indicative and subject to change and refinement during inception. Particularly to accommodate sufficient time for iteration between FCDO and Evaluation partner.

Timelines		Key activities	Output
Phase 2: Sustainability of results	May – November 2023 Subject to seasonality (6 months)	**Sustainability of results from closed programmes** • Primary level data collection at country level, including household-level surveys, KIIs / FGDs with key stakeholders. • Data analysis and validation with Met Office and FCDO stakeholders. • Report development summarising evidence around evaluation questions V and VI	**C.** Results sustainability report
Phase 3: additional primary data collection and/or nimble testing (tbc)	Nov 23 – May 24 (Seven months)	**Additional data collection points and/or nimble testing of delivery options** (subject to inception and Phase 1 report findings) • Primary level data collection at country level from end-users, including household-level surveys, KIIs / FGDs with key stakeholders. • Data analysis and validation with Met Office and FCDO stakeholders in validation exercises. • Report development	D. Phase 3 Report (tbc) E. Evaluation digest

11. The Requirements

A. Inception report: outlining final evaluation framework, approach and methods and protocol. The report should also identify where follow-up data collection to assess sustainability of results (Phase 2) will take place and rationale behind selection based on feasibility of data collection, relevance and rigour of results. Similarly, inception report should provide option and recommendations to seize opportunities to support evidence building for the three new programmes under phase 3, which may include continuance or data collection from the historic programmes. Options for data collection in Phase 2 and 3 and their assessment should be discussed with FCDO, Met Office and programmes' MEL partners.

   The Inception report should also offer a refined mapping of the MEL environment associated with the three new programmes and outline proposed roles and responsibilities for MEL. Results of the report should be shared and discussed and agreed with FCDO and Met Office reference group.

B. Short learning and reflections report: this rapid review should be in Word format and achieve the following objectives:
   i. Provide an evidence summary around evaluation questions I. to V. from the two closed programmes.
   ii. identify where there is room to better align the ToC of the three new programmes with emerging evidence and offer clear recommendations to be discussed with FCDO and Met Office.
   iii. Refine Phase 2 and 3 plans to consider findings from Phase 1.
   iv. Identify gaps and offer recommendations on how to strengthen the MEL framework and architecture, particularly whether there are opportunities to capture results across FCDO programmes through standardized/harmonized elements of MEL (evaluation question VII.). Insights should be specific to the WISER framework and not generic principles.
   An accompanying slide-deck should also be produced for internal communication purposes. Results of the report should be shared and discussed with the thematic evaluation reference group.

C. Results sustainability report: this report should be in Word format and provide FCDO and Met partners insights around evaluation question VI. and clear recommendations on how to increase sustainability of findings across the three new programmes and role of FCDO (question V.). Results of the report should be shared and discussed with FCDO reference group. A pptx presentation should also be developed to feed into a session with FCDO advisers led by evaluation partners.

D. Final shape of output D. will depend on which option is progressed for phase 3 after inception stage. At the very minimum we expect a report in Word format summarising findings and recommendations and a pptx presentation to be delivered to a broader audience in FCDO.

E. Evaluation digest: this is a 2-page summary of the finalised evaluation reports using FCDO's template for publication on FCDO's website.

12. Submitting a proposal

Proposals should clearly set out the supplier's suggested approach to conducting the thematic evaluation, in line with the requirements set out in this terms of reference, team skills and experience and proposed team composition. The final evaluation questions, scope, sample countries and methodology for project delivery will be agreed between FCDO and the selected supplier at the end of the inception stage.

By way of indication, and in addition to other items as appropriate, the bidding proposals should include:

1. A cover letter introducing the evaluator/s/organisation and how the skills and competencies described in paragraph 13 are met, with concrete examples.
2. A clear outline of the proposed evaluation approach, including:
   - Proposed outline methodology and data collection strategies.
   - Management arrangements, including individual leads.
   - Roles and responsibilities within the evaluation team, including management arrangement and day rates.
3. Indicative distribution of costs of activities and outputs expected by FCDO.
4. An initial communication and stakeholder engagement plan, conducive to uptake of evaluation findings.
5. Ethical considerations and envisaged risks associated with the evaluation and envisaged mitigation strategy.
6. A CV of each member of the evaluation team.
7. Total budget inclusive all taxes.

Criteria for review of the bids include:

- Adherence to the parameters set by this ToR in terms of evidence need.
- Methodological rigour.
- Adherence to budget (see paragraph 14).
- Alignment of skills and experience with those outlined in paragraph 13.
- Value for money considerations.
- Inclusion of gender considerations in the design of the proposed evaluation design.
- All regions under the scope of this thematic evaluation are considered and covered by the proposal.
- Consideration of non-traditional data collection methodologies to improve value for money and ability to collect data in difficult to access areas.
- Due considerations of ethics requirements as set by this ToR.
- Ability to deliver in a timely way to inform three new programmes without compromising integrity of the evaluation rigour and design.
- Due consideration of overall MEL architecture for WISER as set out in Table 1.

13. Skills and experience required

The expertise required within the evaluation team should ideally include:

- Theory based evaluation expertise (ideally FCDO in African / Asian / MENA context)
- Senior expertise in: Weather services, organisational capacity development, climate resilience, WISER geographies, evidence uptake and evidence-based decision making.
- Junior Evaluator / Researchers to work with wider senior team.
- Regionally based team members (with any of the skills above).
- Demonstrable understanding of the key issues related to use of evidence for programme design, implementation and policy influencing.
- Significant experience in portfolio-level evaluation, quantitative and qualitative research, synthesis and analysis skills, with understanding and experience managing nimble experimental evaluation to test delivery options.
  - Excellent communications skills, including writing for policy audiences and ability to distil succinct conclusions presented in non-technical language.

14. Budget

Maximum budget £300,000, excluding VAT but inclusive of all other taxes.

Constraints and dependencies

Stakeholder availability – FCDO staff will be able to facilitate connections with relevant partners but schedules should allow flexibility to accommodate likely constraints on availability due to heavy workloads and competing urgent priorities.

FCDO wishes to commission an independent objective evidence review and evaluation. It is recognised that some team members proposed by the Supplier may have prior experience with one or more of the interventions to be examined by the study. Prior involvement with programmes likely to be included within the sample should be declared in the proposal for all team members and the Supplier should demonstrate in the proposal the mechanisms that will be put in place to ensure the integrity and independence of the evidence review and evaluation.

15. Performance Requirements

FCDO will set key performance indicators (KPIs) to ensure that the evaluation is delivered in a timely manner and meets expected quality standards. KPIs will relate to:

- Timeliness and quality of outputs delivered.
- Provision of relevant recommendations for FCDO to address challenges identified, share learning and best practice, and support scale up and implementation of solutions proposed.
- Evaluation outputs are presented in formats that are accessible to a range of FCDO audiences (especially those without specialist knowledge) and contain summaries, with appropriate summaries and infographics to aid use and communication
- Clear communication and timely, accurate financial reporting throughout contract (forecasts provided on time)

Payments may be withheld if outputs do not meet expected quality standards and/or if are delivered late. The supplier should arrange regular check in meetings with FCDO at key stages to provide progress updates.

16. Reporting and timeframe

Assuming procurement of evaluation partner is concluded by end of February, reports are expected as per Table 3.

Table 3: Thematic evaluation timeline

	Date expected (after contract signing)	**Disbursement**
Kick off meeting	1 week	
Inception report	1 month	15%
Phase 1 Final Report and Q&A session for FCDO reference group	2 months	40%
Phase 2 Results sustainability report (and potential baseline report) and Q&A session with FCDO advisors	6 months	30%
Phase 3 (tbc) Final report and presentation	1 year	15%

17. Use and Influence

The thematic evaluation will primarily influence shape of the three new regional climate programmes (PHENOMENAL, ARCAN and CARA) ensuring they are on their effectiveness and efficiency frontier.
Encompassing the three regions, findings from the thematic evaluation will not only contribute to build the narrative of how FCDO is delivering against the International Development Strategy and IR sub-strategies' climate pillars; by taking an adaptive approach and learning lessons from a variety of geographies. |Findings would also be used to course-correct, inform and shape programmes' delivery in order to optimise and improve effectiveness. Results could also be used for any future programme or policy (within and beyond HMG) aiming to boost climate and whether information systems or to scale up WISER.
Findings can also be used for COP28 given the specific focus on FCAS in order to engage partners, stimulate demand for this type of evidence and help meet the need at the same time.

18. Break points

The contract will be subject to a break point after completion of the inception report and after completion of Phase 1 and Phase 2a. Continuation of the services after these periods will be based on renewed agreement of deliverables and on satisfactory performance and the progress of the supplier against the specified outputs.

19. FCDO coordination and governance

The supplier will report to the FCDO MENA Regional Monitoring and Evaluation Adviser. A reference group will be established by FCDO to provide technical advice to the evaluation, and it will be composed by:

- FCDO MENA Regional Monitoring and Evaluation Adviser
- FCDO MENA Regional climate team
- FCDO Pan-Africa Regional Department Monitoring and Evaluation Adviser
- FCDO Indo-Pacific Regional Department Monitoring and Evaluation Adviser
- Met Office MEL adviser
- Evaluation Unit Thematic Lead

To ensure effective governance of the evaluation, the scoping report and reports will be signed off by the FCDO Evaluation Advisor and the Reference Group convened by FCDO. The inception report and the final reports will also be quality assured by the FCDO Evaluation Quality Assurance Service (EQUALS).

20. Other requirements

- Compliance with FCDO's Environmental and Social Safeguards and the Ethical Guidance for Research, Evaluation and Monitoring Activities.
- The supplier should consider whether external ethics approval is needed. If is decided that submission to Institutional Review Board (IRB)/Research Ethics Committee (REC) (and the relevant regulatory authority in the country) is not required, FCDO expects the planning of data collection and analysis to reflect active consideration of FCDO's ethics principles and standards and that the process should be documented.
- FCDO will have unlimited access to the material produced by the supplier in accordance with FCDO's policy on open access to data as expressed in FCDO's general conditions of contract

- The supplier will be expected to comply with General Data Protection Regulation (GDPR) governing the processing of personal data.
- Please refer to the details of the GDPR relationship status and personal data (where applicable) for this project as detailed in App A and the standard clause 30 in section 2 of the contract.
- The supplier must use the UK aid logo on all outputs to be transparent and acknowledge that they are funded by UK taxpayers. The supplier should also acknowledge funding from the UK government in broader communications, but no publicity should be given without the prior written consent of FCDO.
- Coherence with the principles of the Inclusive Data Charter of which the UK is a founding member.

21. Duty of care

The supplier is responsible for the safety and well-being of their personnel and third parties affected by their activities under this contract, including appropriate security arrangements. They will also be responsible for the provision of suitable security arrangements for their domestic and business property.

Appendix A: of Contract Section 3 (Terms of Reference) - Schedule of Processing, Personal Data and Data Subjects

This schedule must be completed by the Parties in collaboration with each-other before the processing of Personal Data under the Contract.

The completed schedule must be agreed formally as part of the contract with FCDO and any changes to the content of this schedule must be agreed formally with FCDO under a Contract Variation.

Description	Details
Identity of the Controller **and Processor for each Category of Data Subject**	The Parties acknowledge that for the purposes of the Data Protection Legislation, the following status will apply to personal data under this contract 1) The Parties acknowledge that Clause 30.2 Protection of Personal Data and 30.4 (Section 2 of the contract) shall not apply for the purposes of the Data Protection Legislation as the **Parties are independent Controllers** in accordance with Clause 30.3 in respect of Personal Data necessary for the administration and/or fulfilment of this contract.

Appendix B: WISER and ARRCC programmes' evaluative documents

Note that this is an initial list complied at evaluability assessment stage that will need refinement at inception stage.

Asia Regional Resilience to a Changing Climate (ARRCC) Met Office Partnership

1. ARRCC (2020?), *ARRCC Met Office Annual Report Year 2*
2. ARRCC (2021?), *ARRCC Met Office Annual Report Year 3*
3. ARRCC, (2022), *ARRCC Programme Completion Report*
4. ARRCC / OPM (?) (2022) *Strengthening climate services in South Asia: Learning from the ARRCC programme* September 2022
5. CIMMYT (2021), *Climate services to avoid food security threatening crop disease epidemics in South Asia*
6. ICIMOD (2022), *Baseline Survey Report Weather and Seasonal Climate Services for Agriculture in Pakistan*
7. ICIMOD (2022), *Weather and climate information services in Pakistan Assessing benefits and impacts on key farm outcomes from a user perspective*
8. ICIMOD (2022), *Socioeconomic benefits of weather and climate services in Pakistan*
9. OPM (2020), *Asia Regional Resilience to a Changing Climate (ARRCC) Case Study: Understanding capacity gaps in National Meteorological and Hydrological Services - seasonal and climate forecasting* August 2020
10. OPM (2020), *Asia Regional Resilience to a Changing Climate (ARRCC) Case Study: Role of regional forums in facilitating cooperation on climate services in South Asia August 2020*
11. OPM (2021), *Asia Regional Resilience to a Changing Climate (ARRCC) Case Study: Innovation in climate services* September 2021
12. OPM (2021), *Asia Regional Resilience to a Changing Climate (ARRCC) Mid-Term Review*
13. ARRCC Milestone and Results – 2018- 2022.

14. OPM (2022), *Asia Regional Resilience to a Changing Climate (ARRCC) Case Study: Political economy of strengthening climate services May 2022*
15. OPM (undated), ARRCC Impact Stories: Early systems warning for wheat diseases
16. OPM (undated), ARRCC Impact Stories: Responding to Covid-19
17. OPM (undated), ARRCC Impact Stories: The climate innovation challenge
18. Met Office and RIMES (2022) *Final report on SASCOF enhancements under the ARRCC Programme*
19. WFP (2022), *Food security assessment for Afghanistan and Nepal*

Weather and Climate Information Services for Africa (WISER)

20. A list of WISER 2 online resources
21. NIRAS (2021), *WISER Resilience Indicator Project Impact Report*
22. WISER Annual Review 2016
23. WISER Annual Review 2017
24. WISER Annual Review 2018
25. WISER Annual Review 2019
26. WISER Annual Review 2020
27. WISER Annual Review 2021
28. WISER Scoping Report (2022)
29. WISER 1 & 2 PCR (March 2022)
30. Final SEB report for WISER 1 & 2 (2020)
31. HIGHWAY Transformation Report (2020)
32. Tetra Tech DSR (Data System Review) (2021)
33. Tetra Tech AVV-BF (Activity Verification Visit – Beneficiary Feedback) (2021)
34. WISER Learning Event Briefs (x 4) (2021)
    a. Co-production
    b. Gender
    c. Funders
    d. NMHSs
35. WISER (2022), *East Africa, Extension Closure Report* (July – December 2021 & Further extension to end Feb 2022)

Pioneering a Holistic approach to Energy and Nature-based Options in MENA for Long-term stability (PHENOMENAL)

36. FCDO (2021), Phenomenal Business Case
37. FCDO (2022), FCDO-MO MoU
38. MENA Scoping Study, Appendices
39. MET Office (2022), WISER MENA unnamed
40. WISER MENA (2022), WISER MENA Scoping Report
41. WISER MENA (2022), Building resilience to hazards in the MENA region through enhancing use of weather and climate information A summary of the WISER MENA Scoping Report August 2022

Appendix C: primary data collection opportunities

Table 4 and Table 5 are based on where primary data had been collected from end users within monitoring and evaluation activities from both ARRCC and WISER.

Please note though that this list will need to be reviewed again and prioritised by the evaluation team when they are commissioned. When, whether and how to collect data again will need to be re-evaluated based on the time of the year and making best use of the opportunity.

No final decision on whether, whom and what data collected should be undertaken without further FCDO and Met Office feedback and engagement.

Table 4: WISER Africa Primary Level Data Collection Opportunities

Project	M&E
DARAJA (Kenya and Tanzania)	Scoping report, Mid-line report, Endline report WISER Resilience Impact (WRIP[4]) data collection undertaken • HH survey (50% women's, FGDs (50% Women) house-hold surveys and media coverage BL / EL. • KIIS with city decision makers, disaster risk managers, NMHS, media groups, community leaders and teachers • Reduced endline based on baseline experience • Information ecosystem mapping • Data on avoided losses due to use of WCIS
CRISPP **(Kenya)**	Project M&E framework, Baseline report, endline report WRIP data collection undertaken HH survey conducted in Kilifi, including baseline and endline survey. Socio-Economic Benefit study
Iteganyagihe Ryacu (Rwanda)	Baseline, endline survey of farmers, 5Q test results, case studies WRIP Used the 5Q approach across 30 districts. 7000 taught how to respond to survey using IRV. Respondents were selected randomly from a database of 10,000 farmers distributed across Rwanda 5Qs also employed to collect endline feedback from 57 DRR actors.
Strengthening weather and climate information services in Uganda	End of project report, end evaluation No WRIP, No baseline and endline reports. Conducted an evaluation which provided information on resilience impact

[4] The WRIP methodology holds five indicators, four of which were designed to measure changes amongst direct beneficiaries, such as farmers, fishers, and residents of informal settlements, in terms of their use and satisfaction with new and improved WCIS as well as resulting ability to anticipate and prepare for high impact weather or climate events and disasters. A fifth indicator measured improvements in anticipation and preparedness amongst indirect beneficiaries reached through intermediary organisations, such as national and local government ministries, agencies and extension services, private sector, and media bodies. It is important to note that baseline data as used in WRIP was not collected before programme activities had taken place.

Project	M&E
HIGHWAY (multiple countries)	Baseline report Kenya, Monitoring Evaluation, Reporting and Learning (MERL) plan. Results of the survey on deaths from drowning and other accidental causes in the Kenyan sector of Lake Victoria 2017-2020. Transformational Change Impacts of the HIGHWAY project, Resilience study in Kenya, Uganda, Tanzania, • WRIP • Socio-economic benefit study and in Kilifi, as part of the coastal component of CRISPP. • Highway Transformational change impacts study. • AVV-BFF very limited sample – 11 KII and 4FGDs
W2SIP (multiple countries)	W2-SIP Implementation evaluation survey. Evaluation in this project would focus on the transfer of technical knowledge /capacities to NMHSs through foundational training. It may also focus on acceptance and use of the objective forecast method piloted through the project and the use of the coproduction manual also developed through the project and participation in the Community of practice
Tanzania National Project	No surveys carried out
Weather Wise **(Greater Horn of Africa)**	Evaluative report
WISER Western **(Kenya)**	Case studies. Baseline assessments (qualitative), CCOFs participatory monitoring and evaluation approaches principally through questionnaires

Table 5: ARRCC primary data collection opportunities

Project / Prog	Opportunities
CIMMYT ***Climate services to avoid food security threatening crop disease*** ***epidemics in South Asia***	Covering the period November 2021 – March 2022 (so near end of programme), it was reported in: • Bangladesh Data was collected from 678 Sub Assistant Agriculture Officer (SAAO), randomly selected from 1500 listed SAAOs, and from 388 wheat farmers randomly selected out of a total of 2,098. On average, each SAAO shared the information with 385 farmers, and it was estimated that 207,130 wheat farmers were reached directly by the SAAO's surveyed. With an estimated 504,000 farmers being reached with messages

Project / Prog	Opportunities
	• Nepal 43 government extension officials and 1,157 farmers randomly selected from a total of 5000 were surveyed. Key results: 49% of the government officials surveyed received 10 the advisory information (mainly from the Krishi bulletin, but also from SMS), of these 67% then shared the message with farmers.
Regional Enhancements under ARRCC: The South Asia Climate Outlook Forum (SASCOF) & Climate Services User Forum (CSUF) **Final Project Report – June 2022**	Opportunities to collect evidence around the Enhanced Seasonal Climate Outlook Statement. Because this went operational quite close to the end of the programme, we didn't have a chance to observe how this is routinely produced or gather evidence on how it's been applied to decision-making.
ARRCC Impact Based Forecasting Pilots. **(Nepal, Bangladesh, Pakistan)**	Generally, it would be helpful to know how these pilots are being continued, implemented etc post programme. Is there evidence which can be learnt, or best practice suggested in how relationships are developed among collaborating institutions in any one of the countries. E.g., do mechanisms exist to ensure it is/can be sustained after the intervention of any one programme.
University of Leeds (2022), Assessing the use and benefits of weather and climate information services in Pakistan: Final report for the Asia resilience to a changing climate programme, August 2022	Pakistan project Mixed methods – 2 x hh (1st for hh and cotton crop in April / May and then cotton in September) and FGD Multistage stratified random sampling to develop study representative to the cotton-wheat cropping areas in Pakistan. FGD tool available within study but not hh survey. • 612 hh survey ➢ 413 were based in Punjab and 199 were based in Sindh ➢ 311 were male respondents whilst 301 were female ➢ 340 were users /272 nonusers (mostly in Sindh) of weather and climate information Women interviewed within hh for every second survey • Two key PMD sources of information - weather news on national TV and PMD SMS service - are consistently used by approximately 40-50% of current users of WCIS to inform their key farming activities e.g., planting times, harvesting times, threshing times, irrigation, choice of planting varieties, use of pesticides and chemicals, and drying
Work Package 2: SCIPSA agromet-decision support pilots **(Nepal, Bangladesh)**	Similar to follow-up for the IBF pilots, there may be potential to follow-up on use, effectiveness and learning

Project / Prog	Opportunities
Work Package 3 – CARISSA **(Nepal)**	Some of the activities (e.g., sea level work, hydropower work - Nepal, WFP climate food security analysis for Nepal) produced a range of outputs. It would be useful to assess how well these outputs met the needs and expectations of FCDO and project stakeholders, and what (if any) their long-term benefits have been.

Appendix 1 of Call-down Contract (Terms of Reference)

Schedule of Processing, Personal Data and Data Subjects

This schedule must be completed by the Parties in collaboration with each-other before the processing of Personal Data under the Contract.

The completed schedule must be agreed formally as part of the contract with FCDO and any changes to the content of this schedule must be agreed formally with FCDO under a Contract Variation.

Description	Details
Identity of the Controller and Processor for each Category of Data Subject	1) The Parties acknowledge that Clause 33.2 and 33.4 (Section 2 of the contract) shall not apply for the purposes of the Data Protection Legislation as the Parties are independent Controllers in accordance with Clause 33.3 in respect of the following Personal Data: • [to be determined] 2) The Parties acknowledge that Clause 33.2 and 33.4 (Section 2 of the contract) shall not apply for the purposes of the Data Protection Legislation as the **Parties are independent Controllers** in accordance with Clause 33.3 in respect of the following Personal Data: • [to be determined] 3) **The Supplier is the Controller and FCDO is the Processor** in accordance with Clause 33 (Section 2 of the contract) of the following Personal Data: • [to be determined] 4) **The Supplier is the Processor and FCDO is the sub-processor** in accordance with Clause 33 (Section 2 of the contract) of the following Personal Data: • [to be determined] 5) **FCDO is the Controller, and the Supplier is the Processor** in accordance with Clause 33 (Section 2 of the contract) of the following Personal Data: • [to be determined] 6) The Parties acknowledge that Clause 33 (Section 2 of the contract) shall not apply and **Appendix 2 – Data Sharing Agreement** shall apply for the purposes of the Data Protection Legislation for the following Personal Data for which both **FCDO and the Supplier are Joint Controller** of the following Personal Data: • [to be determined]

	7) For the avoidance of doubt the Supplier shall provide **anonymised data** sets for the purposes of reporting on this project and so FCDO shall not be a Processor in respect of [to be determined] as it does not constitute Personal Data. [FCDO SRO to adjust as appropriate]
Subject matter of the processing	
Duration of the processing	
Nature and purposes of the processing	
Type of Personal Data [and Special Categories of Personal Data]	
Plan for return and destruction of the data once processing complete	(UNLESS requirement under EU or European member state law to preserve that type of data)

Annex 2: Evaluation Context

This section provides a brief overview of WISER Weather and Climate Information Services (WISER) programmes, evidence, and British Foreign, Commonwealth and Development Office (FCDO) context. For additional information on context, please refer to the thematic evaluation Inception Report Section 3 and Inception Report Annex 3: WISER programmes overview.

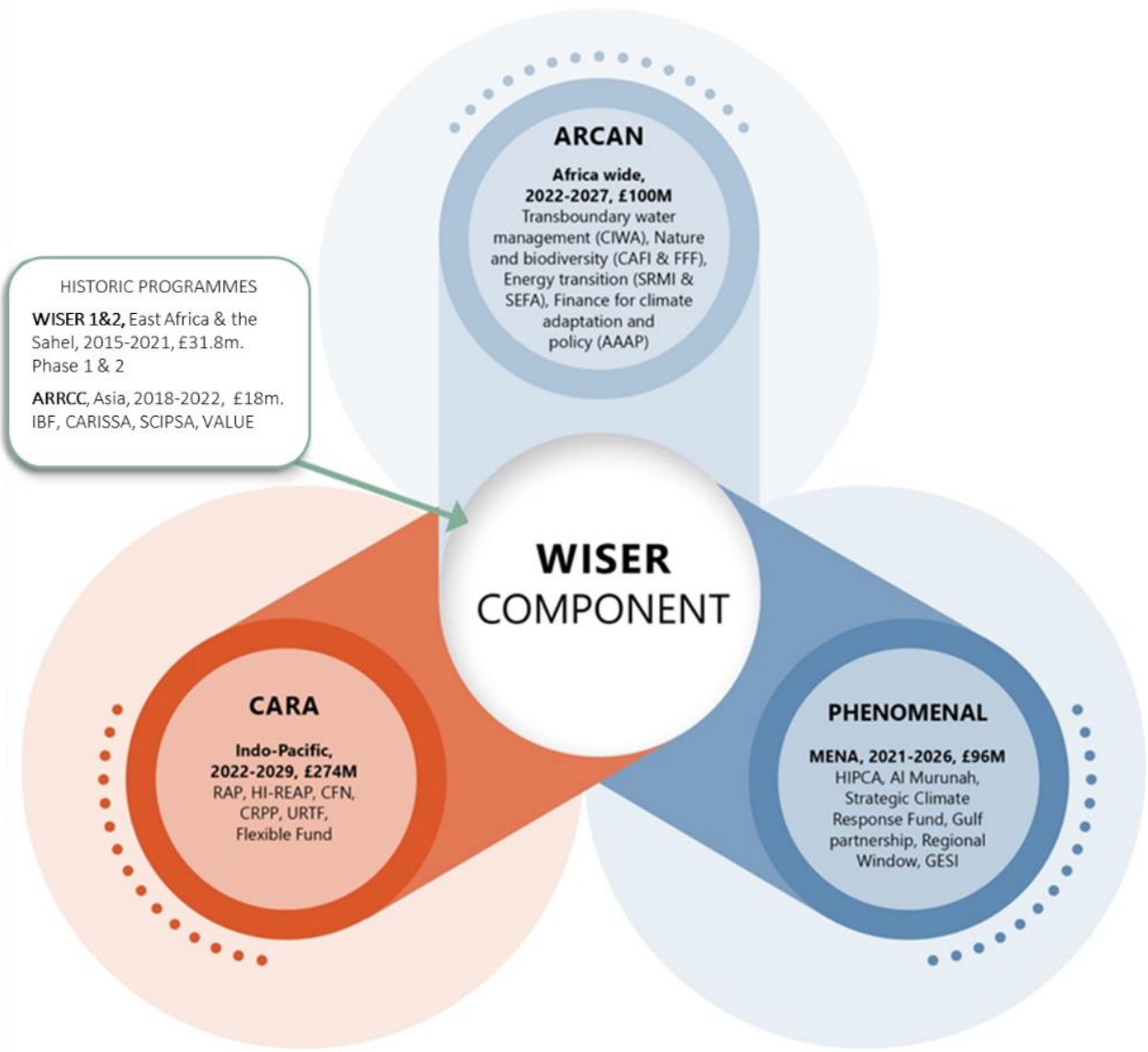
WISER Programmes Context

Funded in various iterations since 2015 by FCDO, the United Kingdom Meteorological Office (UKMO) implemented WISER programmes seeks to enhance the quality, accessibility, uptake, and use of Weather and Climate Information Services (WCIS) for better user decision making, through various National Meteorological and Hydrological Services (NMHS) and regional interventions, with the goal of enhancing the resilience of respective target populations. WISER works across various stages of the WCIS/HydroMet value chain (under WISER programmes this is called WCIS value chain).[5] Comprising six programmes (three historic, and three live), WISER was first implemented in East Africa via the WISER 1&2 programme (2015-2021), which also included a regional level project in the Sahel (Adaptive Social Protection Information for Enhanced Resilience - ASPIRE) project)[6]. WISER then expanded to Asia, as part of the now closed Asia Regional Resilience to a Changing Climate Programme -ARRCC (2018-2022), which worked with the World Bank to strengthen weather forecasting across South Asia.[7] WISER is now part of three larger, growing regional programmes: PHENOMENAL (2021-2029), Africa Region Climate and Nature programme - ARCAN (2022-2027), and Climate Action for Resilient Asia programme - CARA (2022-2029).

[5] This involves the collection, processing, and dissemination of weather, water, early warning, and climate information products to end-users.
[6] The ASPIRE project integrated climate information with a focus on social protection decision making in the Sahel (Senegal, Niger, Burkina Faso and Mali), continuing in the live WISER Africa programme through the Red Cross Climate Centre project.
[7] The ARRCC programme was delivered via two partnership components / programmes. The UK MO partnership delivered ARRCC, and the World Bank delivered PARRCC. This evaluation will only focus on the UK MO ARRCC component.

Figure 1 provides an overview of the six programmes and the other components that were implemented in parallel to the WISER component. It is worth noting that, while WISER forms a component or part of each programme delivered by a main supplier, it is not currently managed as a portfolio. There are on-going efforts to improve co-ordination across programmes with the creation of a cross-cutting team coordinating efforts on Monitoring, Evaluation & Learning (MEL), operations, communication, and programme management at a "global" level. This has been supported by the development of a global level Theory of Change (ToC) led by this thematic evaluation team in consultation with the FCDO and Meteorological Office (MO), which sets out a vision for a global WISER approach: *'to support equitable access to accurate, actionable and trusted weather and climate services that make a difference to peoples' lives'*. WISER "global" ToC was drafted during inception and has since been revised following documentation review, Key Informant Interviews (KIIs) and in-country deep dives (see Annex 11b for the revised ToC).

Figure 1: On-going WISER programmes



WISER interventions are designed as a response to increasingly variable weather, rising temperatures and extreme climate events that can impact food, energy and water security, public health and infrastructure, eroding progress in poverty reduction and economic development[8]. Although all WISER interventions share the common aim of '*transformation in the generation and use of co-produced weather and climate services to support decision making at local, national, and regional levels, building resilience to the impacts of climate change'*[9], this vision is implemented differently in each region. In Africa, WISER works with large, medium and small established as well as new delivery partnerships (i.e. Technical Assistance Projects and core grant projects). In Asia there has been a focus on regional partnerships. In Middle East and North Africa (MENA) it builds on existing initiatives and contributes to the establishment of new partnerships whilst promoting the dialogue and awareness of the value of WCIS in the region. Box 1 provides an overview of the context in which WISER programmes operate.

Box 1: Context in which WISER programmes operate

[8] UNECA. The Weather and Climate Information Services for Africa (WISER). Available at: https://www.uneca.org/WISER. Consulted November 2023
[9] Met Office. Weather and Climate Information Services (WISER). Available at: https://www.metoffice.gov.uk/about-us/what/working-with-other-organisations/international/projects/wiser. Consulted November 2023

MENA region: characterised by extreme hot and dry conditions, with a high confidence of further warming in the future. Food and water insecurity are critical issues exacerbated by the region's existing vulnerabilities, particularly in Fragile and Conflict-Affected States (FCAS) like Syria, Libya, and the Occupied Palestinian Territories (OPTs). These areas are marked by significant levels of displaced populations, both internally and externally, making climate resilience particularly challenging.

Africa: home to the world's highest concentration of poverty, and while the ecosystems across the continent vary, the region is uniformly impacted by climate change. Specific regional impacts include drier and hotter conditions in the Sahel, East Africa, and the Horn of Africa; varying rainfall patterns in Southern Africa; and rising sea levels and coastal erosion in West Africa. These factors contribute to the continent's vulnerability to climate change, impacting food security, livelihoods, and overall development.

Indo-Pacific region: faces significant challenges due to a lack of resilience to climate change impacts and widespread environmental degradation. These issues threaten health and development progress across the region. Notably, four of the top five most polluted countries in the world—Bangladesh, Pakistan, India, and Afghanistan—are located in South Asia, indicating severe environmental stress and vulnerability to climate change.

Cross-cutting issues across regions: Across all regions, the impacts of climate change disproportionately affect marginalized and vulnerable groups, including women, girls, people with disabilities, and the poor. These groups are often the least equipped to adapt to changing environmental conditions, highlighting the need for inclusive climate resilience strategies.

Source: extracted from programme level business cases and scoping reports

Box 2 provides an overview of headline results from the closed programmes.

Box 2: Example high level results of the closed WISER programmes

The closed programmes have reported notable successes. WISER 1&2 report expanding access to enhanced WCIS to over 3.3m households (HHs), with reportedly 482+k HHs actively using new or improved WCIS for decision-making. It also reported to contributing toward over £207m of avoided losses in East Africa. The programme attracted £28.8 million of additional funding for the improved generation, uptake, and use of WCIS. It supported 24 NMHSs and Regional Climate Centres to have new and/or upgraded datasets. It strengthened networks and partnerships, facilitated 53 WCIS co-produced processes, resulting in 146 climate service products, and trained over 6,000 people in the production, access, and use of more effective WCIS.

ARRCC reported supporting 2.2m people to adapt to the effects of climate change and leveraged over £169.5m investment and enhanced four regional partnerships and established two national partnerships. The programme produced 14 system enhancements and tools and strengthened institutional capacity of 11 organisations in the production, use and communication of WCI, and trained hundreds of participants.

Source: Extracted from WISER 1&2 Programme Completion Review and ARRCC

Further details on the various WISER programmes are in Table 1 (programme overview), Table 2 their outcome statements and indicators, and Table 3 the broader regional programmes under which WISER currently operates.

Table 6: WISER focused general information

Programme	Dates	Purpose	Delivery model & Projects	Geographic focus	Target groups	Budget
WISER 1&2	Finalised: 2015-2022	Deliver transformational change in WCIS quality, accessibility, and use for sustainable development in Africa[10].	Call for proposals. **17 projects delivered across two phases**: Phase 1 (5 quick-start projects), Phase 2 (12 projects on WCIS generation, uptake, and use).	Africa region including country interventions in Kenya, Tanzania, Uganda, Randa, Somalia, South Sudan and one project in the Sahel	All WISER programmes target regional and national producers of WCIS, as well as intermediaries, including those responsible for disseminating WCIS. Additionally, to a lesser extent, some projects also engage with end users.	£31.8m
ARRCC[11]	Finalised: 2018-2022	Strengthen weather forecasting in South Asia, working with the World Bank and FCDO.	**30 projects across four work-packages**: Impact-Based Forecasting, Climate Information Partnerships, Climate Risk Analysis, and Valuing Socio-economic Benefits of WCIS.	South Asia region including country interventions in Bangladesh, Nepal, Pakistan and Afghanistan		£18m
WISER MENA (under PHENOMENAL)	On-going: 2022-2026	Build on WISER's success by scaling and innovating WCIS in MENA region.	Call for proposals including Anticipatory Action Call (since April 2023), Small Grants (since July 2023), TAP led activities. **To date**: Under core grant: Istibak Project. Under TAP-led activities: 'Continued provision of weekly operational forecasts to UNCHR in Yemen', the 'Enhancing Seasonal Forecasting', Jahez, and Iraq Sand and Dust Storms. Additional interventions are being explored[12].	MENA region		£5m
WISER Africa (under ARCAN)	On-going: 2022-2027	Continue WISER's impact, expand into new areas, and mainstream WCIS into policy and planning.	Call for proposals and TAP activities. Small grants in the pipeline. **To date**: Six ongoing projects (East Africa: 3, West Africa: 2, Southern Africa: 1) and three awarded projects (West Africa). Technical Assistance Projects supports key regional WCIS activities and FCDO priority countries where WISER's core grants aren't implemented.	Africa wide		£15.7m
WISER Asia Pacific (under CARA)	On-going: 2023-2029	Enhance national and regional NMHSs' capacity for weather forecasting and regional cooperation in data sharing.	Regional partnerships development, community-focused projects, and an 'Opportunities Fund'. **To date:** Six regional projects promoting partnerships: 3 in ASEAN, 1 in South Asia, and 2 in Asia Pacific.	Indo-pacific region		£18m

Source: Extracted from WISER 1&2 and ARRCC Project Completion Reviews, ARCAN MEL inception report, UK MO website, WISER MENA Business Case Addendum, and WISER 6-month progress report

[10] Met Office. WISER for Africa projects infographic. https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/business/international/wiser/wiser-project-infographic-final.pdf Consulted November 2023

[11] ARRCC was delivered via two partnership components / programmes. The UK MO partnership delivered ARRCC and the World Bank delivered PARRCC. The information of the table only relates to the UK MO ARRCC component.

[12] Including potential collaboration with: Community Jameel, IMWI, National Centre for Meteorology in Saudi Arabia, Iraq sandstorms, and International Water Management Institute.

Table 7: Ongoing WISER programmes outcome statements and indicators

Programme	Outcome statements & Indicators	Reporting & MEL
WISER Africa (under ARCAN)	**Increase in protection of natural resources:** International Climate Fund (ICF) Key Progress Indicator (KPI) 17 (Area under sustainable management practices) **Greater access to clean energy:** ICF KPI 2 (People & social institutions with improved access to clean energy); and ICF KPI 7 (Installed capacity of clean energy) **Improved water security:** To be agreed in the validation phase **Strengthened resilience of population:** ICF KPI 1 (People supported to adapt to climate change (CC) effects); ICF KPI 4 (People with improved climate resilience); and New jobs created and livelihoods improved **Contribution to transformative change[13]:** ICF KPI 15 (Likelihood of transformational change)	**Reporting to FCDO:** Progress reports every six-months; and Annual Review (May) **Planned MEL activities:** Baseline report (Dec. 2023); Annual report (May / June); Programme Midterm and final evaluation (TBC); and Suggested VfM & GESI case studies (on Y3) **Ongoing project level MEL activities**
WISER Asia Pacific (under CARA)	**CC is integrated into national / subnational plans, policies:** # govt. policies, plans, and programmes (sectoral and general development) implemented at national / subnational levels, mainstreaming adaptation, and resilience into policy / planning **Vulnerable communities have information, capacity, and resources enabling better adaptation and resilience to CC:** ICF KPI 1 (People supported to adapt to CC effects); ICF KPI 4 (People with improved climate resilience) **Climate action investment mobilised:** ICF KPI 11 (Public climate finance mobilised); and ICF KPI 12 (Private climate finance mobilised) **Regional cooperation on CC is strengthened:** # regional cooperation frameworks, agreements and mechanisms on transboundary CC resilience & adaptation are developed/implemented into action. **Nature/natural biodiversity is protected:** To be agreed in the validation phase	**Reporting to FCDO:** Progress reports every six months; and Annual Review (end of January) **Additional programme level MEL activities TBC**
WISER MENA (under PHENOMENAL)	**MENA security increase:** IFC KPI 6 (tonnes of Green House Emissions reduced / avoided; ICF KPI 1 (People supported to adapt to CC effects (50% M/50% F)); and PHENOMENAL impact on energy transition and climate resilience actions **Innovation & Resilience:** Volume of investment indirectly mobilised by PHENOMENAL **Water security:** ICF KPI 17 (Area under sustainable management practices); ICF KPI 11 (Public climate finance mobilised (GBP)); and Degree of integrated water management (0-100) **Use of WCIS to inform policy, planning and decision-making in MENA:** # of plans, policies & systems where WIC is better used; # of organisations and institutions using new or improved WCI to inform their decision making; and # of people with improved/greater access to WCIS through a range of channels that take into account equitable inclusion and innovation **UK profile:** # Regional/national or sub-national policy frameworks/plans, strategies and programmes that have been influenced by the UK to include green finance, clean energy, water security and/or weather & information services as a result of PHENOMENAL.	**Reporting to FCDO:** Progress reports every six months; and Annual Review (end of January) **Additional programme level MEL activities TBC**

Source: Programmes Logframes

[13] ARCAN tracks Public (ICF KPI 11) and Private (ICF KPI 12) climate finance mobilized. However, WISER ARCAN won't contribute to this outcome, as clarified in the ARCAN MEL Validation Outputs (May 31, 2023).

Table 8: Wider regional programmes general information

Programme	Impact statement	Components including stakeholders and budget	Budget
ARCAN (2022-2027)	By 2030, African economies increasingly climate resilient, low carbon and environmentally sustainable, with a stronger political commitment to tackling CC.	**(i) Transboundary water management (£8m)**: WB led Cooperation in International Waters Africa to improve water security for 1.5m people. **(ii) Nature and biodiversity (£37.75m):** UNPD's Central African Forest Initiative (CAFI) and FAO's Forest and Farm Facility to protect 10m Ha of Congo Basin forest and to improve incomes for 300,000 producers. **(iii) Weather and Climate Information (£15.75m):** UKMO led WISER 1&2 / WISER Africa to improve EW for 4m people. **(iv) Energy transition (£22m):** WB's Sustainable Renewables Risk Mitigation Initiative (SRMI) programme and AfDB's Sustainable Energy Fund for Africa (SEFA) programme to support 25+ countries prioritise variable renewable energy into national grid. **(v) Climate nature and finance policy (£20m):** TA to partner Governments / institutions to mobilise public and private finance.	£103.5m (£250m ambition)
CARA (2022-2029)	The Indo Pacific Region is more resilient to the impacts of climate change, its natural ecosystems are better protected and conserved, and low carbon growth pathways are implemented resulting in significant reduction in the region's Greenhouse Gas (GHG) emissions.	**(i) Resilience Asia Programme (up to £50m):** WB led, to accelerate transformational climate action by: (i) building climate policy capacity; (ii) providing a knowledge platform; (iii) investing on innovation; and (iv) supporting regional cooperation. **(ii) Himalayan Resilience Enabling Action Programme (up to £20m):** ICIMOD led, to deliver a shift in climate resilience across the Hindu Kush Himalaya region of Asia by moving from incremental and isolated investments to building climate change systems resilience. **(iii) Climate Finance Network (up to £20m),** UNDP led, expanding climate finance and policy support at national / subnational levels. **(iv) WISER Asia Pacific (up to £18m):** UKMO led, to improve decision making, and reduce exposure to climate risk, through regional cooperation and expanding access to more accurate climate and weather information services, including early warning systems. **(v) Community Resilience Partnership Program (up to £45m):** ADB led, to support countries and communities in Asia and the Pacific scale up investments in resilience that explicitly tackle the nexus between poverty, gender, and climate change. **(vi) Urban Resilience Trust Fund (up to £70m):** ADB led, to build cities, communities and private sector's capacity to integrate climate resilience into their policies; and to support a resilience projects' pipeline development and implementation through public / private investments. **(vi) Flexible Fund (£51m), FCDO led**	£274m
PHENOMENAL (2022-2029)	Increasing MENA security by increasing national resilience and nature-based responses to climate change impacts and driving sustainable growth through a low carbon transition in the region.	**(i) High Impact Partnership for Climate Action (£25m):** European Bank for Reconstruction and Development led. Investment & Policy support to reducing GHG emission, enhance climate resilience, and improve environmental outcomes. Projects in Egypt, Jordan, Morocco, and Tunisia **(ii) WISER MENA (£5m):** UK MO led, to aid climate decision making at local, national, and regional levels. Strengthening capacity of regional climate centres and working with humanitarian partners to ensure that WCIS support their anticipatory action. **(iii) Al Murunah (£ TBC):** addressing water scarcity via nature-based solutions & agricultural water management in Egypt, Jordan, Lebanon, OPTs)[14] **(iv) Strategic Climate Response Fund (£ TBC):** demand-responsive fund addressing energy, food, climate security opportunities. **(v) Gulf partnership (£10m):** to collaborate on energy, climate, and environmental projects with Gulf partners. To deliver $500m of joint energy, climate smart infrastructure and climate resilience projects in developing countries over the next five years. **(vi) Regional window (£10.5m):** Supporting regional policy & investment on energy transition, green growth, climate security. **(vi) Gender Equality and Social Inclusion (£9.5m)** Promoting women's economic empowerment & equal participation across components.	£96m

Source: ARCAN details from Ecorys (2023) Draft Inception Report. CARA from programme ToC, Infographic & Organogram (August 2023). PHENOMENAL from ToC, UK Gov website, and Business Case Addendum

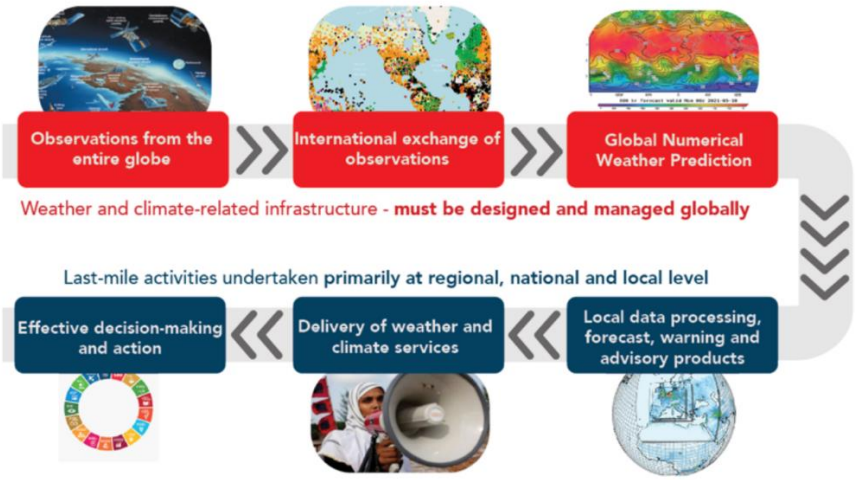
[14] A £6m cost extension has been granted for WISER MENA and Al Murunah, with specific allocations for each pillar yet to be confirmed (PHENOMENAL Addendum to the Business Case for Scale-up)

Evidence Context

Evidence Gaps

Error! Reference source not found. provides an overview of the WCIS / HydroMet value chain[15], with WISER supported interventions covering the last mile activities seen in the diagram. While significant resources have been put into WISER and similar programmes, there is limited evidence for some aspect of the WCIS / HydroMet value chain. Focusing on systematic reviews of evidence, we highlight some of these gaps below.

Figure 2: The WCIS / HydroMet value chain



Source: WMO internal document from Water at the Heart Government of the Netherlands Proposal

The ARCAN MEL contract undertook an evidence gap map (EGM) analysis[16], reviewing WCIS related studies. Results from the EGM shows more evidence on resilience of population (105/402) and climate information (86/402); moderate evidence on innovation (64/402) and plans and policies (53/402); and less evidence in collaboration (14/402). Within crosscutting issues, the EGM shows more evidence in Gender, Equality and Social Inclusion (GESI) (47/402) than in political economy (13/402) or conflict and fragility (20/402). From this, they note that there is *'little evidence on the outcome of resilience and climate information across all geographies'*.

Frontiers conducted a systematic review[17] to synthesise the existing evidence on WCIS for the agriculture, water, and energy sectors of East and West Africa, reviewing evidence from 25 original research articles published between 2000-2022. The review found that the focus of WCIS in the region has been mainly on agriculture[18], rather than energy production or water resource management. It also highlights that end users mainly accessed information relating to rainfall and temperature, usually through the radio, television and mobile phones, and that in general, the information provided was generic meteorological forecasts, rather than specific impact-based forecasting (IBF). This information was accessed and used only by a very small minority of end users, due to barriers in communications and understanding of WCIS, exacerbated by a lack of downscale information, trust and logistics. This inability to interpret WCI and convert it into actions affected the ability of end users to apply the information in decision-making. The report concludes that if this is not addressed, the barriers to comprehension and use may challenge the sustainability and achievements made in the provision of WCIS. To address this, the report suggests that capacity building in end users, with reference to both

[15] WHO. WHO and the Early Warnings for All Initiative. Available at: https://wmo.int/site/wmo-and-early-warnings-all-initiative#:~:text=The%20Early%20Warnings%20for%20All%20initiative%20is%20a,early%20warning%20systems%20by%20the%20end%20of%202027. Consulted November 2023

[16] ARCAN MEL (June 2023), Evidence Gap Map.

[17] Agyekum *et al* (2022), The contribution of weather forecast information to agriculture, water, and energy sectors in East and West Africa: A systematic review, Front. Environ. Sci., 29 August 2022, Sec. Interdisciplinary Climate Studies, Volume 10 - 2022 | https://doi.org/10.3389/fenvs.2022.935696

[18] Frontiers systematic review describes this as the 'backbone' of many countries in the region's economies with 90% of household (HHs) livelihoods supported by it.

scientific and indigenous knowledge, is key to the effective use and sustainability of WCIS across East and West Africa, and that weather and climate information delivery should be a key factor in policy discussions at all levels to improve climate risk management. Additionally, part of a wider 3ie systematic review of 62 quantitative impact evaluations and 19 systematic reviews of impact evaluations on resilience programming, they report that there is *'no primary evidence for….data collection and analysis for early warning systems.*[19]

These gaps suggest that undertaking even small evaluations such as this will be useful for enhancing the evidence base across the WCIS/HydroMet value chain.

Other relevant evidence

The newly launched Early Warnings for All Initiative is currently collating data on selected country capacity for monitoring and forecasting WCIS. The Systematic Observations Financing Facility (hosted by WMO) also curates data on national gap analysis (infrastructure focus) and Country HydroMet diagnostics (reach/capacity).

With a growing interest in FCAS (including humanitarian and refugee settings) in relation to WISER from FCDO, the ET undertook KIIs with relevant stakeholders to start gathering further evidence on this (see Box 2). Specific FCAS related annexes (7-9) are provided.

Box 2: Evidence gaps in reaching the most vulnerable with WCIS

The evidence base for delivering WCIS in refugee settlements is thin.[20] Early KIIs uncovered some grey literature, which was reviewed during implementation. Clear Global and partners[21] have been researching community perspectives on WCIS communications in the Rohingya community. More established and recently arrived Rohingya refugees, as well as local Chittagonian populations, are familiar with the region's weather patterns, but the ways they describe weather events differ, and in order to communicate with them effectively about the risks and consequences associated with these weather patterns, humanitarian partners need to know about key differences amongst the languages. They concluded that communication and information exchange should be tailored to their respective communities and that registered refugees need verbal, audio or signed communication[22] in both Rohingya and Chittagonian.

WISER is supporting work led by Practical Action[23] in communities in Thiès, Senegal, and Niamey, Niger. They will be using the Missing Voices[24] approach to inform the design of an Early Warning System (EWS) for flood prone communities. A grant from WISER will support Practical Action in partnership with Jokalanté, a specialised organisation in disseminating climate information services using local languages and local media. They will be working with the NMHS in Senegal and Niger to ensure an effective co-production process between climate information providers, intermediaries, and end users.

There appears to be very little evidence on WCIS and FCAS. The Risk-informed Early Action Partnership (REAP) Working Group on displaced communities and EWS is attempting to gather evidence.

FCDO Context

In its current form, WISER covers several FCDO teams, including:

- Africa Programmes and Expertise Department (APEX), Africa Directorate.
- Pan Africa Dept, Humanitarian & Climate Team, which covers ARCAN.

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[19] 3ie (2023) Strengthening resilience against shocks, stressors and recurring crises in low- and middle- income countries: an evidence gap map. 3ieimpact.org/sites/default/files/2023-05/Resilience-REAPER-EGM-brief.pdf. Accessed November 2023

[20] Some core references include: Refugee settlements are highly exposed to extreme weather conditions | PNAS; Humanitarian disaster for Rohingya refugees: impending natural hazards and worsening public health crises - The Lancet Global Health; Application of geospatial technologies in developing a dynamic landslide early warning system in a humanitarian context: the Rohingya refugee crisis in Cox's Bazar, Bangladesh
The impacts of climate change on displaced populations: A call for action.

[21] Translators without borders (2018) What Matters? Humanitarian Feedback bulletin. https://translatorswithoutborders.org/wp-content/uploads/2018/04/What-Matters-Humanitarian-Feedback-Bulletin-Issue_01-28-February-2018_English-language-.pdf Accessed November 2023

[22] The ET interviewed Clear Global December 1st, 2023. Translators without borders (2021) Language characteristics and perspectives of long-term Rohingya refugees. https://translatorswithoutborders.org/wp-content/uploads/2021/05/Language-Characteristics-and-Perspectives-of-Long-term-Rohingya-Refugees_EN.pdf Accessed November 2023

[23] Practical Action (2023) Boosting flood preparedness in West Africa through enhanced early warning systems. https://practicalaction.org/news-media/2023/11/15/boosting-flood-preparedness-in-west-africa-through-enhanced-early-warning-systems/ Accessed November 2023

[24] Practical Action (2023) The missing voices approach manual. https://practicalaction.org/knowledge-centre/resources/the-missing-voices-approach-manual/#:~:text=The%20Missing%20Voices%20Approach%20developed%20by%20Practical%20Action,a%20way%20that%20prioritizes%20anonymity%2C%20privacy%2C%20and%20confidentiality. Consulted November 2023

- Indo-Pacific Regional Department, which covers CARA.
- Middle East & North Africa Climate & Environment Team, which covers PHENOMENAL.

In addition, FCDO country offices currently have ongoing WISER projects seen as part of their portfolios.[25] In the context of varying budgets for FCDO country offices, the importance of centrally funded programmes has grown over the last few years for country level teams. This means that, for WISER, there is both a complex delivery and key stakeholder environment in which the programme operates and potentially influences.[26]

[25] Examples of this include WISER being cited in country level BIP strategies as seen by the ET.
[26] For example, a member of the ET for another project in Africa saw WISER referenced as a supporting key pillar of its country office level strategy, despite being managed centrally.

Annex 3: Evaluation Approach, Methods, Data Collection, Analysis

This annex provides a more detailed overview of our methodological approach to approach, methods, data collection and analysis

1. Evaluation Approach

Learning focused and theory-based evaluation

We undertook a sequential thematic, theory-based evaluation, based on several interlinking core elements, with strong participation from all groups of stakeholders. The evaluation, in line with the original scope and ToR, is learning focused, seeking to:

- Generate evidence on what has worked, where, for whom and why (for deep dive studies).
- Provide practical recommendations on increasing the likelihood of sustained results in live Weather and Climate Information Services (WISER) programming.
- Identify operational and delivery lessons to improve future delivery.

Evaluation Questions

During the inception phase, core evaluation themes were discussed with key stakeholders, and these include sustainability of results, co-production, and end user results. An interest in Fragile and Conflict Affected States (FCAS) was also raised, particularly in relation to lessons learnt for the new PHENOMENAL programme. Based on those included in the original evaluation terms of reference (ToRs), the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) focused Evaluation Questions (EQs) presented in Box 1 were discussed and agreed with British Foreign, Commonwealth and Development Office (FCDO)/ Meteorological Office (MO) during the inception phase.

Box 3: Evaluation questions

EQ1: Which approaches have been more effective in co-producing useful, relevant, and accessible weather and climate information services across contexts? What lessons can be learnt for differing contexts (including FCAS) and end-user inclusion?

EQ2: What were the key operational and delivery lessons learnt from implementing the WISER model across differing contexts for future programming?

EQ3: To what extent, and in what ways, were improved climate information services effective in informing decision making at the producer, intermediary and user levels?

EQ4: What factors, internal or external to the programmes, may have limited or accelerated the application of improved Weather and Climate Information Services (WCIS) in decision-making for producers, intermediaries and users? What lessons can be learnt for delivery, in general and specifically in an FCAS context?

EQ5: Following the closure of the WISER 1&2 and ARRCC programmes, what programme results have been sustained, in what ways, for whom? And why?

It should be noted that while there are three live WISER programmes, these were not within the scope of this evaluation, however, as FCDO requested, there was appetite to surface lessons for FCAS contexts therefore some key informant interviews (KIIs) were undertaken with key stakeholders who are working under live programmes in FCAS contexts.

a. Evaluation Framework

Table 91 comprises the evaluation framework, based on the EQs and includes broad data collection, and analysis and synthesis approaches. These are used to varying depths for each question and detailed in subsequent sections.

Table 9: Evaluation Framework

Evaluation Questions	Data Collection | Analysis and Synthesis
EQ1: Which approaches have been more effective in co-producing useful, relevant, and accessible weather and climate information services across contexts? What lessons can be learnt for differing contexts (including FCAS) and end-user inclusion?	**Primary data** was gathered through remote KIIs, and in-country qualitative and quantitative data collection in Bangladesh, Kenya, Nepal. It covered **projects across the WISER closed regional programmes.** This included: ▪ **112 KIIs** across a wide range of stakeholders across contexts including producers, intermediaries and end users of WCIS (see Table 3 and Annex 5 for additional information). Themes covered included results, delivery model, lessons learned, sustainability, and co-production. ▪ **4 quantitative surveys** including Weather Mtaani contacts and farmers, pastoralists, fisherfolk, and fisher sellers in Kenya, and Farmers, Sub-Assistant Agriculture Officers (SAAOs), and Rohingya in Bangladesh. See Annex 5 for additional information. ▪ **20 Focus Group Discussion (FGD)** with farmers, pastoralists, fisherfolk and fisher sellers in Kenya. See Annex 5 for additional information. **Secondary data** was a significant part of the evaluation in the form of programme, project and Monitoring, Evaluation & Learning (MEL) partner data and documents, as well as wider literature on WCIS, organisational strengthening and end user uptake or other lines of enquiry that may emerge. From a library of 160 documents (including 148 programme documents and 12 wider literature documents), the Evaluation Team (ET) coded and analysed 62 documents as part of the literature review Thematic qualitative analysis, descriptive statistical analysis, Weather and Climate Information (WCI) political economy analysis (PEA) and triangulation for the three deep dive countries, and various participatory validation processes (regional workshops, one to one interviews, stakeholder focused workshops) Analysis on strength of evidence provided for evaluation findings Light-touch contribution analysis for relevant EQs Thematic Stories of Change based on primary data gathered during the evaluation as well as secondary data. Rapid literature review of WCIS in FCAS.
EQ2: What were the key operational and delivery lessons learnt from implementing the WISER model across differing contexts for future programming?	
EQ3: To what extent, and in what ways, were improved climate information services effective in informing decision making at the producer, intermediary and user levels?	
EQ4: What factors, internal or external to the programmes, may have limited or accelerated the application of improved WCIS in decision-making for producers, intermediaries and users? What lessons can be learnt for delivery, in general and specifically in an FCAS context?	
EQ5: Following the closure of the WISER and ARRCC programmes, what programme results have been sustained, in what ways, for whom? And why?	

Divergence from what was planned in the Inception Report

Data collection: our original data collection approach was to undertake quantitative and qualitative data collection in all three deep-dive countries (Kenya, Bangladesh and Nepal). In Nepal and Bangladesh this could have focused on returning to farmers in wheat rust areas who had previously had WCI data gathered from them during ARRCC. Initially the implementing partner showed support to this process and was going to share with us information to allow us to recontact the farmers and extension officers in both countries. Ultimately, this information was not shared, nor even basic information on the districts that were covered in the initial study. This meant that we only collected end user level data in Bangladesh, where the team used other sources of information to identify where the study may have occurred based on wheat rust occurrences in the

country. We also utilised a pre-existing opportunity from our local data collection contractor to gather data from within the Rohingya community in Bangladesh on WCI. No end user data was collected in Nepal.

We were able to enhance our data collection in Kenya with two end user quantitative focused surveys covering the DARAJA and BBC WeatherWise projects.

Stakeholders interviewed: we originally proposed up to 60 KIIs from across projects, implementing partners, MO and FCDO, we also successfully achieved many more KIIs than targeted.

Limitations (and risk mitigation strategies)

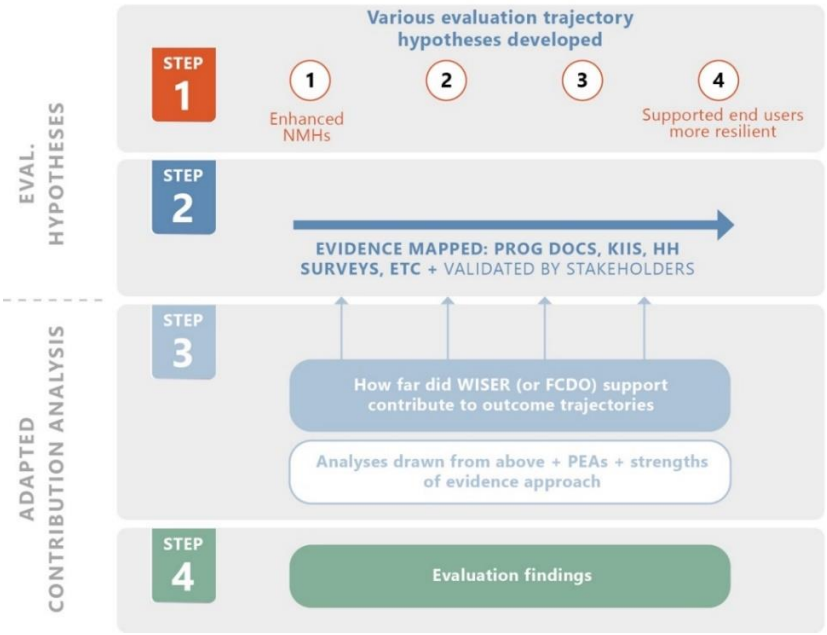
Key limitations to our approach include:

- Generalisability: the scale and differing contexts of WISER, make the generalisability of findings out of the reach of scale of this thematic evaluation. Findings should be seen as indicative rather than generalisable. Nonetheless we attempted to interview across context and stakeholder groupings to make the findings as rich (and triangulated) as possible.
- Documentation bias: most of the WISER documentation provided to the ET was produced internally (i.e. from within the programmes). The ET ensured that any externally produced documents were prioritised and sampled for thematic coding, with triangulation undertaken across KIIs to increase findings robustness.
- Social desirability bias: Potential bias in end responses – respondents can have a positive bias in reporting, particularly where self-reporting or perception reporting. While this is difficult to mitigate, we sought to ask differing questions around the same theme to triangulate across during evidence synthesis.
- Kenya primary data collection: the ET was fortunate to be able to gather primary level evidence from former WISER end users and intermediaries in Kenya (see Section 2 of the Final Evaluation Report for an overview of this). The FCDO were keen to gather as much evidence from these users as possible as part of this evaluation, given the limited data generated at these levels during the programmes. This means that by default, our analysis is heavily weighted to Kenya stakeholders and evidence. The ET acknowledges this, and that Kenya was a WISER special case country in that as well as being a recipient of regionally focused WISER projects, it also, unusually for WISER had Kenya alone focused projects. While this means there is a richer evidence base regarding the whole WCIS / HydroMet value chain given the level of support provided in Kenya, this also means at a country or National Meteorological and Hydrological Services (NMHS) level the Kenyan experience may not be indicative of the wider experiences of WISER supported countries of NMHSs.
- Lack of access to basic data in Bangladesh and Nepal meant we were not able to interview direct recipients of WISER support in these focus countries.
- Gender and social inclusion (GESI): GESI was an acknowledged weakness in the closed WISER programmes, this has had a knock-on effect on developing GESI specific findings or evidence as part of the evaluation. We did though seek, where primary data was collected from stakeholders, to ensure women were purposefully selected for inclusion in this.
- Stakeholder engagement: despite repeated attempts with several NMHS or specific country stakeholders, we were unable to get interviews with them. This has limited our ability to confirm WISER project reporting or gather further evidence from a wider contextual base.

b. Detailed wider evaluation approach

The evaluation approach was informed by primary level data collection in two countries, qualitative secondary document analysis, and WISER level PEA at a deep-dive country level. Figure 1 provides an overview of our evaluation approach.

Figure 3: Evaluation Approach



Step 1: Development of portfolio ToC and high-level evaluation hypotheses

Over the inception phase, to begin the evidence gathering process, we reviewed programme documents from all programmes to build up a draft high level portfolio theory of change (ToC), which in turn supported the development of high-level evaluation hypotheses given below. To do this, we completed the following:

Existing theories of change review

To undertake a theory-based evaluation, we developed (in collaboration with both FCDO and UKMO) a WISER global ToC[27] (See Annex 11 Section A) through our inception, which was finalised in implementation through a series of workshops and one to ones with key stakeholders. This built on all WISER ToCs that existed and relevant related data. While ToCs had existed for all historic and current WISER programmes, covering their different approaches and their broad range of expected outcomes, there was not one unifying ToC at the portfolio or global level. We developed overall evaluation hypotheses[28] to guide our data collection tools and evidence mapping process.

We reviewed all available theories of change (and one theory of delivery), available programme documents, ToCs, and then mapped impact, outcome and output level statements and results against indicators. We mapped actors and interventions typologies. We also reviewed all the assumptions from the existing logframes (see Inception Report for further details on this mapping).

We built a draft portfolio ToC specifically highlighting changes we expect to see across the full spectrum of change areas and actors (Figure 2 below). Extracting text directly from existing programme documents to increase the likelihood that live programmes can 'recognise' their work in this ToC. The ToC indicates outputs,

[27] An overall vision was also agreed: To support equitable access to accurate, actionable and trusted weather and climate services that make a difference to peoples' lives.

[28] We broke the overall evaluation hypotheses into three to make them practical and manageable: 1 - WISER interventions have improved the capacity, systems, and policies of 'producers and intermediaries' to use generate, communicate, access, and use WCIS data (at national/regional levels). 2- Co-production processes in the development and dissemination of WCIS lead to improved confidence in the delivery of services and decision making (by producers and intermediaries); and 3 - Household level end users of WISER interventions trust, access and use climate information which contributes to improving their resilience.

intermediate outcomes, and final outcomes or the pathways from inputs to impacts, which were discussed and agreed upon during the ToC workshops in January/February 2024.

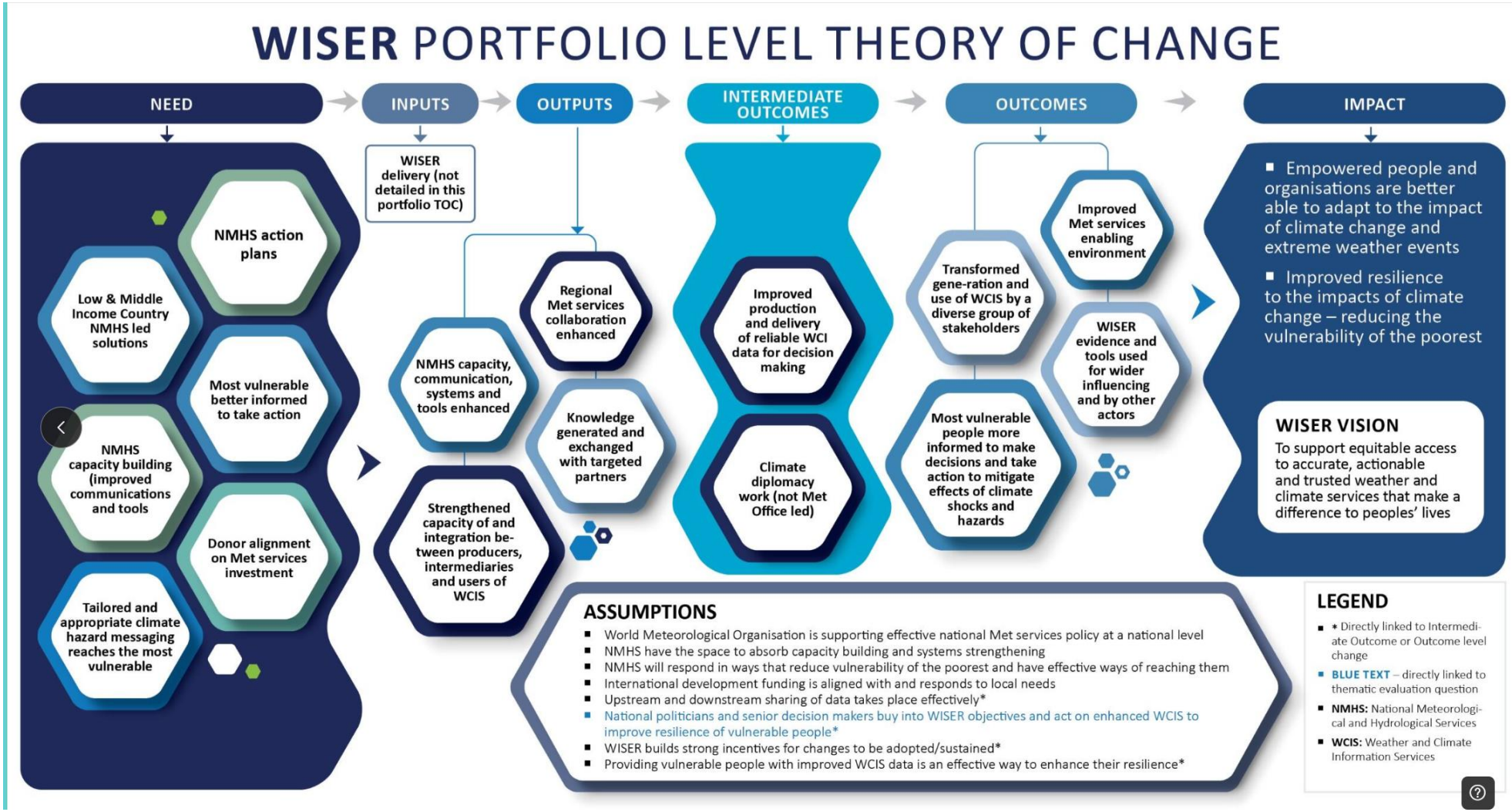
Evaluation hypotheses

During the inception phase we reviewed programme hypotheses (where these existed) and created a new set of thematic hypotheses (Box 2) – reflecting the evaluation questions and the themes noted in the TORs. Covering key aspects of the WCIS/HydroMet value chain, these were used to structure evidence collection tools and test the contribution of WISER to outcomes evidenced in closed programmes. These three hypotheses taken together in one long chain broadly reflect the WCIS Hydromet chain.

Box 4: Draft evaluation hypotheses

1. WISER interventions have improved the capacity, systems and policies of 'producers and intermediaries' to use, generate, communicate, access and use weather and climate information services (WCIS) data (at national/regional levels).
2. Co-production processes in the development and dissemination of WCIS lead to improved confidence in the delivery of services and decision making (by producers and intermediaries).
3. Household level end users of WISER interventions trust, access and use WCIS information which contributes to improving their resilience.

Figure 4: WISER Portfolio Level ToC.



Step 2: Evaluation Methods and Evidence Mapping Approach

A mixed methodological approach was undertaken gathering evidence on what has been achieved by the programme across contexts, where it was sustained and the reasons why. Qualitative and quantitative data collection allowed us to explore in more detail why and how things happened. Box 3 provides an overview of the activities conducted in this theory based evaluation.

Box 5: Overview of thematic evaluation data collection activities

- Document review and narrative analysis: 62 documents across the portfolio analysed and coded.
- 112 KIIs covering a range of stakeholders and themes: stakeholders consulted include representatives from: Regional organisations (7), Government agencies at national level (3) and sub-national level (13), NMHS (22), County level Met (5), WCI disseminators including radio professionals (12) and Weather Mtaani Leaders (12), WISER Implementing Partners (IPs) (16), WISER MEL partners (2), UKMO (11), and FCDO (9). Themes discussed included: results, delivery model, lessons learned, sustainability, and co-production.
- Deep-dive data collection: covering Bangladesh, Nepal and Kenya (four end user surveys in Bangladesh and Kenya, 20 FGD in Kenya, WISER PEA at country level for all three countries). These countries were selected based on the sampling as described in our Inception Report.
- FCAS & humanitarian focused data collection: covering WCI producers and intermediaries in Somalia and Yemen, as well as Rohingya in Bangladesh.
- Observation: members of the evaluation team also observed both the GHACOF and SASCOF forums (Greater Horn of Africa Climate Outlook Forum and South Asia Climate Outlook Forum).

Gender Equality & Social Exclusion

As with every FCDO supported piece of work, GESI was a required aspect to be reviewed within the evaluation. We understood prior to undertaking the evaluation that various studies carried out across WISER geographies may have collected data that can be disaggregated. Unfortunately, there was very limited access to these historic datasets, and when undertaking the document narrative analysis very little emerged regarding GESI apart from the need to do more. There were notable exceptions. However, this lack of evidence has seriously limited what we have been able to summarise regarding GESI. That being said, from an evaluation process perspective, GESI considerations were embedded throughout the evaluation in the design/delivery and analysis stages as outlined in Table 2.

Table 10: GESI considerations per evaluation stage

Evaluation stage	GESI consideration
Design / Delivery	▪ Embedding GESI into EQs and ensuring all evaluation data collection tools include GESI focused questions. ▪ Purposefully including female voices in all data collection activities with mixed sex data collection teams. ▪ Ensuring a range of voices at all levels across producers, intermediaries and end user are gathered, particularly in areas regarding co-production, and end user accessibility and uptake. ▪ Ensuring that all ethical protocols are adhered with to ensure a safe and inclusive environment for all stakeholders.
Analysis	▪ Purposefully code GESI (and related themes) within our analysis frame, to ensure maximum GESI findings are clear ▪ Analysing all data for respective disaggregation, and reporting findings as far as possible in this way. ▪ Identifying how GESI can be considered further / enhanced in existing programmes including in their MEL approaches where possible.

Value for Money

Value for money (VFM) analysis was beyond the scope of this evaluation and although used as a code within the narrative review and embedded in questioning, little emerged on this. The ET also noted that UKMO was not obliged to report on VFM in Annual Reviews.

c. Document Review

As a thematic evaluation heavily dependent on both pre-existing data and new data captured as part of the evaluation process, a clear and systematic approach to data coding with Dedoose (a cross-platform application for analysing qualitative and mixed methods research), and later analysis and synthesis was needed. The information below provides an overview of mapping and coding approaches that fed into this.

Programme and Project Mapping

Beginning in the Inception Phase, as part of evaluation implementation, we gathered basic WISER programme and project data into one dataset (see Figure 3). This included descriptive analysis of each programme and the underpinning projects. This was shown and agreed as accurate with UKMO in the early implementation phase.

This mapping was required to allow for later tagging of evidence gathered in the evaluation against projects of the two historic programmes, together with basic contextual data, meaning these codes would not be required in the later Dedoose coding undertaken by the Evaluation Team.

Figure 5: Snapshot of WISER programmes projects database developed by the Evaluation Team

WISER component	Intervention (name)	Intervention (full name)	Project type	Location	Start date	End date	Budget currency	Budget (final)	Status	Grant Holder / Lead Implementing	Project partners	BRIEF DESCRIPTION
WISER 1	IMTR	Modernisation of the Institute of Meteorological Training and Research (IMTR) Kenya	National	Kenya	01/01/2016	28/02/2017	GBP	495,484.00	Finalised	UK MO	UK MO, IMTR Kenya, Nairobi University	The purpose of this project was to build capability within the Institute of Meteorological Training and Research (IMTR) in Kenya to deliver a modernised training programme. In time, it is envisaged that this will help support improved regional delivery of weather and climate services in key sectors (including early warning, aviation and other transport forecasting) through the development of a competent cadre of meteorologists.
WISER 1 & 2	NHEWS	Multi-hazard early warning service for Tanzania	National	Tanzania	01/01/2016	31/03/2017	GBP	Not include in PCR	Finalised	UK MO	TMA	Enhance capacity of Tanzania Meteorological Agency to reduce impacts of extreme weather on coastal regions. Partnership between the TMA and the Met Office with services being developed around the four main elements of effective EWS set out by the UN-International Strategy for Disaster Relief (UN ISDR) and including user engagement, product development, capacity building and dissemination and communication.
WISER 1 bridge	NHEWS Bridge	Multi-hazard early warning service for Tanzania	National	Tanzania	01/07/2017	28/02/2018	GBP	144,555.00	Finalised	UK MO	TMA	Enhance capacity of Tanzania Meteorological Agency to reduce impacts of extreme weather on coastal regions. Partnership between the TMA and the Met Office with services being developed around the four main elements of effective EWS set out by the UN-International Strategy for Disaster Relief (UN ISDR) and including user engagement, product development, capacity building and dissemination and communication.
WISER 1	WISER Western Kenya	Decentralised Climate Information Services for Decision Making in Western Kenya	National	Kenya	01/01/2016	28/02/2017	GBP	673,212.00	Finalised	UK MO	KMD, CARE Kenya	Deliver demand-led services of Kenya Meteorological Department in Kakamega, Siayam, Kimusu and Trans Nzoia to reduce vulnerability, grow economy and decline poverty Working in four counties in Western Kenya, the project will support County Directors of Meteorology to identify a range of services based on local demand, develop proposals for the streamlining of forecasting to deliver these, and make investments in improved seasonal forecasting techniques to provide better downscaled information for decision making.
WISER 1 bridge	WISER Western Kenya Bridge	Decentralised Climate Information Services for Decision Making in Western Kenya	National	Kenya	01/07/2017	28/02/2018	GBP	139,771.00	Finalised	UK MO	KMD	Deliver demand-led services of Kenya Meteorological Department in Kakamega, Siayam, Kimusu and Trans Nzoia to reduce vulnerability, grow economy and decline poverty Working in four counties in Western Kenya, the project will support County Directors of Meteorology to identify a range of services based on local demand, develop proposals for the streamlining of forecasting to deliver these, and make investments in improved seasonal forecasting techniques to provide better downscaled information for decision making.
WISER 1 & 2	ENACTS	Enhancing National Climate Services	Regional	Ethiopia, Kenya, Tanzania, Uganda	25/11/2015	31/03/2017	USD	1,231,936.00	Finalised	IRI - Columbia University	CARE ALP, TMA, KMD, ICPAC, UNMA, ENMA, AC-IPH, RWENZO GREEN	Transform local, national and regional climate-sensitive decision through widespread uptake of relevant, locally enhanced climate information. To "rescue" old weather observations from paper files, digitising and quality assuring data before combining it with new satellite data and other observations to produce a more detailed and accurate recent (30-50 year) climate record. This information is made available to users in openly accessible on-line map rooms on the relevant National Meteorological and Hydrological Services (NMHSs)'s website and as part of the IRI data library. Tailored applications (for agriculture, health etc.) will also

FullProjectList | ARRCC components budget | WISER Project Partners | Logframes

Document Screening & Sampling Strategy

During the inception phase, we were provided with a library of 98 WISER programme documents and wider literature, a further 50 was added to this, meaning our WISER document universe was 148 in total. Additionally, we reviewed 12 wider literature documents.

Sampling: inclusion criteria used on our documentation universe included: (i) Externally produced document that meets basic quality criteria, and (ii) end of programme / project document that synthesises evidence that meets basic quality criteria. This resulted in the shortlisting of 62 documents as outlined in Annex 4 that were thematically coded. Further details on sampling methodology is included in the Inception Report.

It should be noted that a number of additional key external documents were added to this core source of documents as the evaluation progressed. These included the HIGHWAY evaluation, the DARAJA Tanzania focused Story of Change produced by the ARCAN MEL Team and a document produced by the Pakistan Meteorological Department on their scale up of a WISER supported IBF project.

d. Key informant interviews

During the inception phase, we set a target for the number of KIIs to conduct for the evaluation. Given the anticipated challenges in engaging stakeholders, we adopted a flexible, snowball approach to identifying interviewees, recognizing that time constraints might require adjustments to the target number of KIIs per stakeholder group. While we fell short of the target in some categories, such as Regional Organisations and Non-WISER WCI experts, we exceeded the overall number of KIIs, adding robustness to the final findings. Table 3 summarizes the KIIs conducted during implementation (excluding intermediaries and end users, covered in Table 135) and compares them to the targets set during inception by stakeholder type. The full list of interviewees is available in Annex 5.

Table 11: Stakeholder types, interview purposes, and proposed number of KIIs

Stakeholder Type	Interview Purpose	KII Target	KII Achieved
FCDO team members (including core WISER SRO / PM, MEL, and country level officials)	Gain insights into FCDO's perspective and expectations, assess overall programme management, monitoring and evaluation whilst gathering FCDO country-level perspectives from relevant officials.	6-10 KIIs	**9 KIIs**
WISER MO team members, historic MEL partners, WISER IPs and other intermediaries	Better understand WISER delivery model, historical monitoring and evaluation practices, and the experience of IPs in implementing WISER projects.	15 KIIs	**29 KIIs** covering UKMO team members (11 KIIs), historic MEL partners (2 KIIs), and IPs (16 KIIs across 13 IPs)
Counterpart NMHS, related national government officials	Better understand WISER delivery model, WISER impact and the integration of WISER projects at the national level, understand the challenge faced and assess the alignment with national strategies and policies.	20 KIIs	**34 KIIs** covering MHS (22 KIIs across 8 NMHS), County level Met departments (5 KIIs), and National / Subnational Government officials (17 KIIs)
Regional organisations involved in WISER programmes	Explore regional impact and coordination aspects of WISER programme and specific WISER projects	10 KIIs	**7 KIIs**
Wider non-WISER WCIS specialists, including those working with both NHMS and end users in comparator programmes	Obtain external perspectives and insight on WISER programme, draw comparisons with other WCIS initiatives and gather feedback on the broader landscape of WCIS by country (complementing PEA analysis of deep dive selected countries)	3 KIIs	**2 KIIs**

e. Data Collection & Sampling

Data collection began early into the evaluation implementation phase, and included KIIs (described above), end user level FGD, surveys across contexts, and observations at regional forums. Table 124 below, provides a summary of projects initially selected within each deep-dive country for evaluative focus. Those highlighted in green were the projects we were able to undertake data collection within, and those in blue are projects we were able to undertake data collection through KIIs but that were not anticipated during inception. Sampling was undertaken in line with the process described in the inception report.

Table 12: Country options for deep dives including projects and themes coverage by projects

Country	WISER project	Project type	Stakeholders
ARRCC			
Asia Pacific Regional	South Asia Seasonal Climate Outlook Forum (SASCOF)	Regional	RIMES and Red Cross Climate Centre (RCCC)
Bangladesh	Wheat Disease EWS	Multi-country	Centro Internacional de Mejoramiento de Maíz y Trigo - CIMMYT (International Maize and Wheat Improvement Centre), end user farmers and SAAOs
	Impact Based Forecasting (IBF) with focus on monsoon and landslides	Multi-country	NMHSs, RCCC and Red Crescent society Bangladesh
	Sea Level Rise Projections	Multi-country	Bangladesh Institute of Water Modelling
	Agromet decision support systems	Multi-country	NMHS
	Non-WISER related: data collection in Rohingya based camps	N/A	Rohingya population (Bangladesh Camps 14, 15, 16, 21, 22 in Cox's Bazar)
Nepal	Wheat Disease EWS	Multi-country	CIMMYT
	IBF with focus on cyclones	Multi-country	NMHS, Red Cross Nepal, National Disaster Risk Management (NDRM) Agency Nepal
	Climate Services for Food Security	National	World Food Programme
	Development of new tools and services for the water and hydropower sectors	Multi-country	International Centre for Integrated Mountain Development (ICIMOD)
	Agromet decision support systems	Multi-country	Nepal NMHS, Nepal Agricultural Research Centre
Pakistan	IBF with focus on agriculture sector	Multi-country	Pakistan Meteorological Department
	Gridding climate observation records in Pakistan	National	
WISER 1 & 2			
East Africa Regional	AMDAR: Establishing Meteorological Observing programme with a fleet of Aircrafts	Regional	Kenya Meteorological Department (KMD) & Kenya Airways
	ENACTS: Enhancing National Climate Services	Regional	KMD & Intergovernmental Authority on Development Climate Prediction & Applications Centre (ICPAC)
	SCIPEA: Strengthening Climate Information Partnerships	Regional	KMD & ICPAC
	HIGHWAY: High Impact weather lake system	Regional	KMD, and WCI end user
	W2-SIP: WISER Support to ICPAC	Regional	ICPAC
Kenya	IMTR: Modernisation of the Institute of Meteorological Training and Research (IMTR) in Kenya	National	IMTR Kenya, Nairobi University
	WISER Western Kenya	National	KMD, County Met departments in Northeastern and Western Kenya
	CRISPP: Coastal Resilience and Improving Services for Potato Production in Kenya	National	Global Climate Adaptation Partnership (GCAP), Kenya Red cross

Country	WISER project	Project type	Stakeholders
	DARAJA: Developing Risk Awareness through Join Action	Multi-country	Resurgence, Konkuey Design Initiative (KDI), Weather Mtaani leaders and their contact
	Weather Wise	Multi-country	BBC Media Action, Radio producers, Radio listeners, WCI end user
Somalia	Somalia and South Sudan National Project	Multi-country	Inter-governmental Authority on Development (IGAD), ICPAC, World Meteorological Organization(WMO) Somalia, South Sudan Meteorological Department
WISER Middle East and North Africa (MENA)			
Country X[29]	Continued provision of regular WCIS data	National	Confidential

Table *13* summarises the primary data collection achieved in each deep-dive country. In Kenya, we exceeded the original target outline in the inception report. However, in Bangladesh and Nepal, a lack of information from CIMMYT prevented us from locating farmers or SAAOs from the earlier study or confirming the districts involved. With FCDO approval, we conducted end-user surveys in Bangladesh in areas historically affected by wheat rust (Meherpur, Pabna, and Rajshahi, districts in Bangladesh) and in humanitarian settings (Rohingya camps in Bangladesh). Notably, 37 (86%) of SAAOs interviewed had participated in a WCI project, though it was unclear if it was WISER/CIMMYT-supported. No data collection was possible in Nepal due to insufficient data from CIMMYT.

Table 13: Deep-dive countries - Overview of data collection

Evaluative Focus	Numbers Surveyed / Interviewed
Bangladesh	
Wheat Rust (CIMMYT): focused on wheat farmers and SAAOs in wheat rust coverage areas, their supply and use of WCI and action they may make as a result of WCI	Quantitative surveys with 43 SAAO (5 female / 38 male) and 45 wheat farmers (all male) across Pabna, Meherpur, and Rajshahi districts
Rohingya: the focus of the survey was to understand WCI flows in humanitarian environments	Quantitative survey with 110 people (84 Male / 26 Female)
Kenya	
DARAJA (Resurgence & KDI): the focus of the survey was to gather data from a set of contacts that current Weather Mtaani passed weather forecasts and other WCI to, and how they use it.	Completed by phone: ▪ 12 KIIs with Mtaani ▪ Quantitative survey with 134 Weather Mtaani contacts who mainly live in Kibera[30]
WeatherWise (BBC Media Action): The goal of this survey was to understand how individuals – especially those living in an area dominated by fishing and farming livelihoods – received and used WCI, both during the	Completed around the Lake Victoria, fieldwork took place in a range of communities, concentrated in Kendu Bay town and Seka, followed by Alego Kamser, Kabongo, Kanam, Kanjera, and Ochot Odong. ▪ Quantitative survey with 293 (119 male / 174 female) people around Kenya Bay with a focus provision of WCI through radio

[29] This country has been anonymised at the request of interviewees.

[30] Mtaani contacts are concentrated very heavily in the Kibera area. 96% of the sample come from four wards that overlap – in part or in whole – with Kibera. Most respondents were in Lindi, Makina, and Laini Saba (all three of which are part of the core of Kibera), Sarang'ombe (which includes western portions of Kibera), and Nyayo Highrise (to the east of Kibera) wards.

Evaluative Focus	Numbers Surveyed / Interviewed
Bangladesh	
WeatherWise programme's implementation and following it.	▪ 12 KIIs with journalists who were trained and supported under WISER/ BBC WW ▪ 20 FGDs with male and female and mixed groups with male and female farmers, pastoralists
Additional stakeholder KIIs were undertaken with local KMD officials and County Disaster Management Unit (CDMU) to better understand WCI flow. These were seen as critical actors- both intermediaries and producers of WCI and part of the wider enabling environment.	▪ 6 KIIs with CDMU members ▪ 5 KIIs with county level KMD staff

Data Collection Tools

A suite of data collection tools were developed for the evaluation for each specific stakeholder group including: FCDO/UKMO KIIs, IP KIIs, WeatherWise and DARAJA qualitative and quantitative survey, wheat rust survey quantitative survey etc. A sample of these can be found in Annex 6.

All tools were developed across the evaluation team, and as appropriate were contextualised by local partners in both Africa and Asia. They were then piloted, often during enumerator training, with final refinements made to all following this process prior to data collection.

In country primary data collection sampling methodology

DARAJA

Semi-structured interviews with 12 Mtaani Leaders conducted from 18th to 21st June 2024, provided insights into the DARAJA project, the Weather Mtaani groups established by the project, and the sustainability of WCI flow to their contacts. These leaders were part of a larger group of 20 to 25 members who regularly shared weather forecasts and climate information with their networks.

A quantitative survey of these contacts was conducted in Nairobi between 29th July and 4th August using computer-assisted telephone interviewing (CATI). The initial target was 300 contacts, but we received contact lists from only 12 Mtaani, providing 254 potential contacts, limiting the sample size. Given the small sample frame, a random sample was not drawn. Instead, we applied a 'take-all' approach, contacting every potential respondent on the list. This approach can introduce availability bias, as more readily available respondents are reached first. However, to mitigate this, we applied uniform contact procedures to all respondents, ensuring no one was excluded[31]. To boost response rates, SMS alerts were sent prior to calls, and the number of contact attempts was increased from four to five, spread over three days, followed by a final SMS reminder. Notably, three Mtaani provided 68.5% of all contacts, while the remaining Mtaani averaged eight contacts each.

In total, 134 interviews were completed, resulting in a 52.8% response rate. The main challenge was poor contact information, such as incorrect or disconnected numbers. Despite not reaching the original target, the

[31] Of course, not all respondents received six distinct contact attempts, if they outright refused to participate or it was clear that further contact attempts would not yield a response (e.g., if their phone number was disconnected by their mobile provider). For respondents who had incorrect or non-working contact information, we sought alternate contacts from KDI.

response rate offers valuable insights into the WCI distribution and its impact. The margin of error for the survey is estimated at 8.5%[32].

WeatherWise

A second quantitative survey was completed in the Lake Victoria region of Kenya, concentrated around Kendu Bay, with the content oriented around the WeatherWise programme. The goal of this survey was to understand how individuals – especially those living in an area dominated by fishing and farming livelihoods – received and used WCI, both during the WeatherWise programme's implementation and following it.

The target population consisted of households living in the greater Kendu Bay area, with a focus on coastal areas, where fishing industries (fishing, fish processing, and fish selling) are most common. The sample was a two-stage, clustered random sample of households. The first stage consisted of randomly selecting starting points for a random walk procedure. In this step, the technical team first defined the possible sample area as a polygon in GIS, consisting of the communities in Kendu Bay and surrounding areas. The team then randomly selected points over that polygon using a Python algorithm in QGIS. The starting points were reviewed to ensure they were located in a populated area; points that occurred outside a populated area were discarded.

A single starting point needed to support a random walk by more than one enumerator, owing to the logistics of transporting team members to the starting point and supporting them throughout the day. Therefore, for each starting point, we randomly selected four starting points within a 300m radius of the original, randomly selected point. These points constituted a unique starting point for each enumerator on a four-person team.[33]

From the starting point, enumerators were randomly assigned a direction of travel, at which point they began a standard random walk procedure. The procedure consisted of interviewing every second household on the left side of the path or road on which they walked. When reaching a junction, the enumerator continued straight if possible; if this was not possible, they alternated right and left turns, starting with a right turn at the first junction reached.

Upon reaching the second household on the left, the enumerator sought to recruit and interview the household. Interviews were conducted with a 'responsible adult' in the household – either the head of household, or an individual who had sufficient information about the household's income and livelihoods to answer all questions, including information about the household's actions during the WeatherWise programme (2018-2020). If no one was available at the household or the targeted respondent refused to participate, the household was replaced by the next randomly selected household according to the same random walk procedure (every second household on the left).

Training took place on 9-10 August, with a pilot test and post-pilot debrief completed on August 12 in Kendu Bay. The survey was implemented over the period 12 -19 August in Kendu Bay. Fieldwork took place in a range of communities, concentrated in Kendu Bay town and Seka, followed by Alego Kamser, Kabongo,

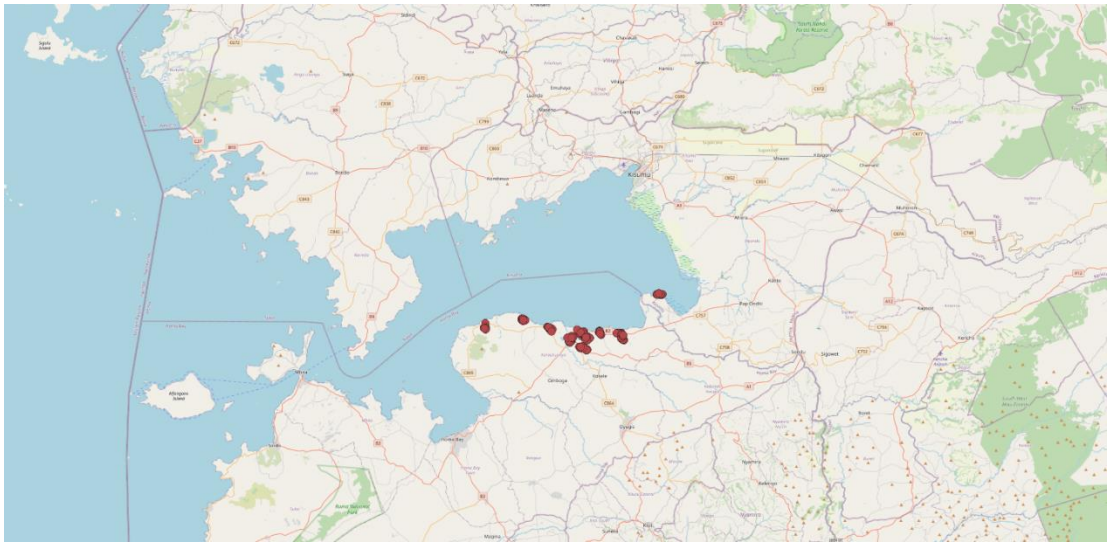
[32] This calculation takes into account that the survey used a non-clustered sample. It is conservative in an important sense, in that we do not employ the finite population correction, which adjusts the margin of error downward when the target population size is small. Because our population size is exceedingly small (n = 254), the margin of error would be reduced to 5.8 %; however, we opt not to employ this margin of error because we do not know the true population size, if we were to receive a full accounting of all Mtaani contacts. In order to remain conservative, we report the margin of error without adjusting for population size.

[33] In rare cases, just two or three starting points were selected for a team on a given day. This occurred if there were insufficient unique starting points that met our criteria – typically in peri-urban or outlying spaces. In these instances, two enumerators would start from the same starting point, traveling in opposite directions.

Kanam, Kanjera, and Ochot Odong. In total, 293 interviews were completed, across 33 unique clusters, where a cluster is defined as a unique starting point, with a unique direction of travel from the starting point.[34]

The geographic distribution of the sample is documented in Figure 4 below. The figure highlights the geographic coverage of the sample relative to the broader Winam Gulf / Kavirondo Gulf area of eastern Lake Victoria, around which Homa Bay and Kisumu are situated. As shown, the sample consists of communities in and around Kendu Bay. Each red dot represents a single household survey completed, with a small amount of random noise added to each GPS point to ensure protect the confidentiality of survey respondents. Kendu Bay town is seen as the mass of red dots in the middle of the sample coverage, with interviews completed in outlying villages shown to the left (west) and right (east) of Kendu Bay town proper.

Figure 6: Sample coverage in the greater Winam Gulf area



Source: developed by Kenya data collection team

Wheat Rust SAAO & Farmers in Bangladesh

A survey was initially planned to target farmers and SAAOs who had participated in the CIMMYT-implemented Wheat Disease Early Warning System (Wheat Rust) project in Bangladesh and Nepal. SAAOs are government employees at the Department of Agricultural Extension (DAE), responsible for disseminating agricultural innovations to farmers. Despite positive initial responses from CIMMYT regarding collaboration and data sharing, months of non-response prevented us from identifying the specific farmers and SAAOs who received WISER support. Furthermore, no publicly available data identified the districts covered by the CIMMYT study.

In response, the team selected districts in Bangladesh that had experienced wheat rust outbreaks in the past five years—Meherpur, Pabna, and Rajshahi—as the sampling criteria. The survey targeted wheat farmers and SAAOs from these districts.

- A total of 43 SAAOs were randomly selected for interviews, 12% of whom were female. These interviews provided insights into their activities related to WCI dissemination and their role in local agricultural development.

[34] We define clusters based on both starting point and direction of travel because of the size of the communities where fieldwork was completed. Due to their size, different directions of travel from a shared starting point often resulted in enumerators covering very different areas of the same community. In other words, enumerators were not operating in the same conceptual 'cluster.' This is most true in the cases where different starting points were selected in the same general area, as we noted above, but it is also true in the case of a single starting point with multiple directions of travel.

- With the aim to assess the impact of WCI on their agricultural practices during wheat rust outbreaks, 45 male wheat farmers were also randomly interviewed to capture their experiences with wheat cultivation, rust epidemics, and their knowledge of WCI. Farmers were chosen based on their involvement in wheat cultivation, though no female farmers cultivating wheat in the identified in the targeted districts during the survey.

Rohingya Survey

In order to better understand the provision of WCIS in humanitarian settings and the experiences of Rohingya communities on the WCI, the team conducted a survey in Rohingya camps in Cox's Bazar. The survey covered 110 Rohingya HHs selected randomly who were available to interview during the survey duration in Teknaf and Ukhiya upazilas. Among the respondents about 24% were females.

Steps 3 & 4: Analysis, Synthesis and Triangulation

Analysis

Our analysis processes included:

Descriptive characteristics and categorisation of programme and external documentation to enable document quality analysis, including categorising evidence, which was mainly undertaken in the inception phase, see Inception Report.

Thematic coding of selected documents and KII: To support accuracy and robustness in our evaluation findings, we developed an initial high-level code set for all qualitative data sources, as this allowed us to analyse and categorise data more efficiently, supporting later synthesis across qualitative and quantitative data sets. These were framed around the EQs and evaluation hypothesis, piloted with 10 selected programme documents, and refined. Table 6 summarises the final code set used.

Descriptive statistical methods - quantitative data were analysed using descriptive statistical methods. Measures of central tendency (mean, median, and mode) and measures of dispersion (range and variance) were calculated to summarize the key characteristics of the data. Descriptive statistics, such as frequencies and percentages, were used to describe the distribution of categorical variables (Pallant, 2020).

Table 14: Piloted and refined code set

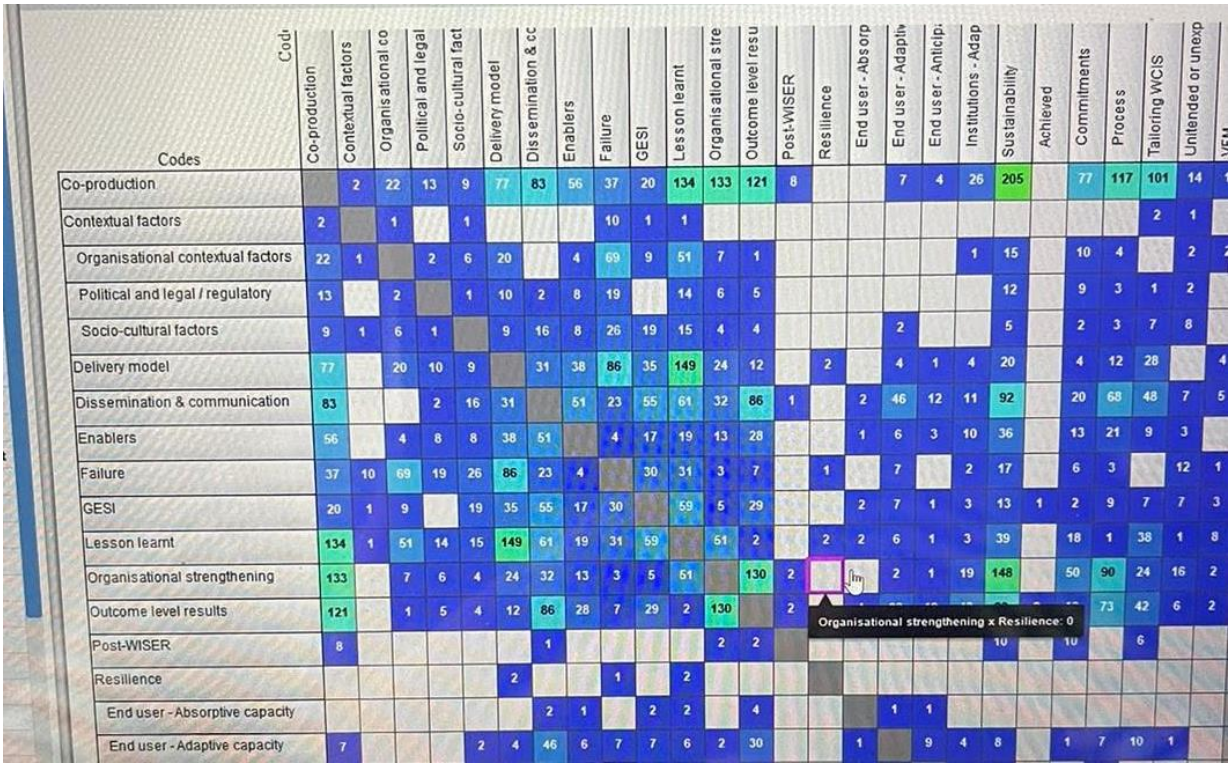
Code	What this code describes
Contextual factors Subcodes: Political & Legal regulatory factors, Socio-cultural factors, and Organisational contextual factors	Positive or negative impact of wider context / enabling environment. Context defined as: ▪ Political and legal / regulatory factors ▪ Socio-cultural factors ▪ Organisational contextual factors (specific to the organisations strengthened or their wider network)
Co-production	Evidence of approaches to co-production / co-produced WCIS used. Examples of where WCIS has been tailored (useful / relevant / accessible) to producer / end user – successfully or unsuccessfully.
Delivery model	Evidence of either a success or failure of a particular delivery model (include awards, leveraged money)
Resilience Subcodes: Adaptive capacity, Anticipatory	Institution = producers / intermediaries of WCIS ¦ End user = farm people / fisher people / HHs ▪ Adaptive capacity: Evidence of WISER supported enhanced "ability of a system to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences"

Code	What this code describes
capacity, Absorptive capacity	▪ Anticipatory capacity: Evidence of WISER supported enhanced "ability of an individual to undertake proactive actions in the short to medium term to avoid upheaval" (e.g. preparedness strategies that aim to avoid exposure and / or reduce vulnerability, heed early warning, change the way crops are planted, reduce landslide risk, etc) ▪ Absorptive capacity: Evidence of WISER supported enhanced "ability to buffer shocks in the short term (e.g. access to savings and finance, disaster preparedness, social protection"[35]
Dissemination & communication	Examples of where WSIC has been communicated in new or improved ways
Organisational strengthening	Evidence of success or failure of WISER supported organisational strengthening. In many cases this will be related to enhanced WCIS / service delivery or evidence of enhanced climate information services supported by WISER. This included impact-based forecasting, and early warning systems.
Failure / Limiting	Example of barriers, negative impact / process / result
Enabler / Positive	Example of enabler, positive impact / process / result
GESI	Evidence of GESI related results or lessons learnt
Outcome level result	Evidence based outcome level results provided This will include outcome level results at both, project and programme level.
Unintended / unexpected	Examples of unintended or unexpected results / outcomes from supported WISER. It should have nothing to do with intended project or programme results.
Lesson learnt	Evidence of a lesson learnt (positive or negative)
Sustainability Subcodes: Process, Commitments, Achieved	Evidence of sustained programme impact or processes to support sustainability of impact (e.g. translating docs into different languages in Uganda national project or Train of trainers) (includes commitments to post project activities) Evidence of use / adoption of WISER supported systems, process, tools, results post programme
VFM[36]	Evidence of value for money

[35] Resilience subcodes definitions extracted from NIRAS (2021) WISER Resilience Indicator Project Impact Report

[36] Although VFM is outside of the scope of this evaluation, we coded for this to test what might emerge from the data. As it happened very little VFM evidence was held within the documents

Figure 7: Provides a heat map of coded data



Political Economy Analysis

Enhancing WCIS to ultimately improve resilience outcomes at a household level, involves a long and complicated causal chain, with many actors and contributing factors. Understanding the wider enabling environments, that supported or limited outcomes, is critical to understanding what worked and why. We undertook a weather climate information focused PEA – at selected deep-dive primary country level and WISER portfolio.

We also developed three stories of change (SoC) that emerged from the evidence gathering phase:

- A Pakistan focused SoC that focused on WISER support through two core projects (IBF and climate grids) and Pakistan Meteorological Department's scaling up of activities following the end of WISER
- A Somalia focused SoC that outlined the regional and national WISER activities that contributed to the enabling environment that is supporting met services coming under one agency and ministry
- A Kenya focused SoC that focused on WISER support to intermediaries and end users in Kenya covering DARAJA and WeatherWise.

Evidence Findings Synthesis & Triangulation

Strength of evidence, triangulation, and contribution claims

Using the process above allowed us to develop an 'evidence package' mapped against EQs and outcome hypotheses. It was synthesised to generate robust evaluation findings using the 'strengths of evidence approach' (SoE), as outlined in Figure 5.[37] This allowed us to develop a simple SoE per finding, we then

[37] Please note that the cut offs described are indicative and will be confirmed prior to the process taking place. We will also stress test final findings by reviewing how the evidence package rigor might change if we remove from our analysis studies and KIIs at high risk of bias (for example internal KIIS and documentation).

undertook a pragmatic contribution analysis. Note that we piloted this approach following the first phase of qualitative and quantitative data collection and adjusted as required.

Figure 8: Strength of evidence criteria

Level	Description
High	Across regions (Africa and Asia), many projects (>4), and all relevant stakeholder groups. Evidence includes externally produced quantitative and qualitative evidence (including primary data collected through this evaluation)
Medium high	Only in one region, many projects (>4), and a limited number of relevant stakeholder groups. Evidence includes externally produced quantitative and qualitative evidence (including primary data collected through this evaluation)
Medium low	Only in one region, a limited number of projects (<3), and a limited number of relevant stakeholder groups. Evidence includes externally produced either quantitative or qualitative evidence (including primary data collected through this evaluation)
Low	Only applies to one geography, a limited number of projects (<3), and a limited number of relevant stakeholder groups. Evidence based on programme documents (produced by implementing partners or UKMO)

Triangulating evidence is a critical step in creating evaluation findings, but for some of the EQs, contribution claims (how far a result or change was due to WISER support) will also be important to understand and evidence. We used a simple Likert scale for assessing contribution as below in Figure 5.

Figure 9: Contribution claims criteria

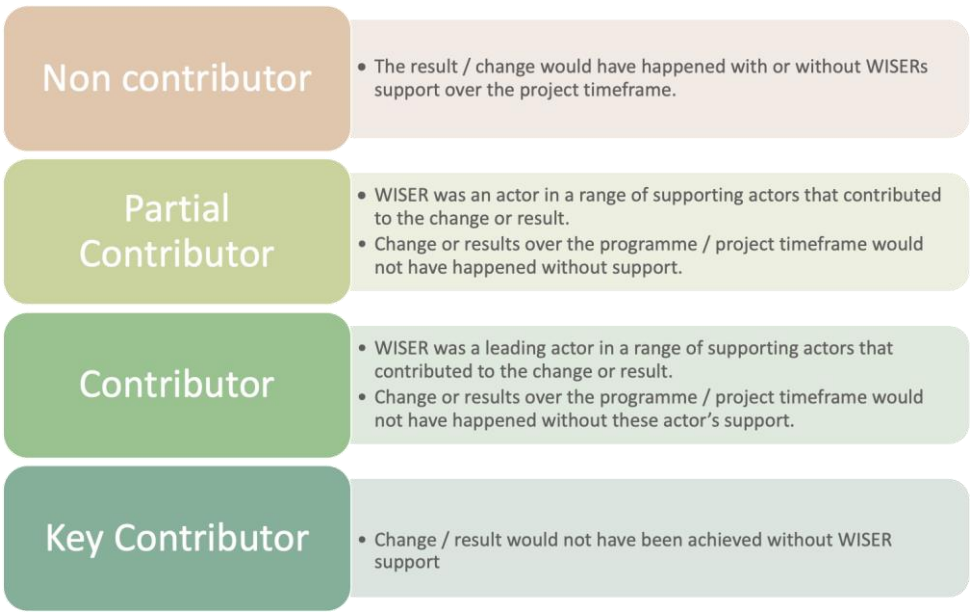


Table 7 provides an overview of each finding with strengths of evidence mapped and contribution claims when relevant.

Table 15: Overview of findings strength of evidence and contribution claims

#	Finding Statement	Strength of Evidence	Contribution Claim
EQ 1: WHICH APPROACHES HAVE BEEN MORE EFFECTIVE IN CO-PRODUCING USEFUL, RELEVANT, AND ACCESSIBLE WICS ACROSS CONTEXTS? WHAT LESSONS CAN BE LEARNT FOR DIFFERING CONTEXTS (INCLUDING FCAS) AND END-USER INCLUSION?			
1	The WISER approach of utilising existing regional organisations/bodies is effective and has enhanced national ownership and the strategic implementation of activities, but sustained capacity building and financial resources are needed to continue enhanced WCIS activities.	Medium high	**Partial Contributor:** WISER was not the only supporter of regional organisations
2	WISER has created a demonstration effect at the intervention level (in some contexts) internally and externally which has supported NMHS's in strengthening services and tools.	Medium high	**Partial Contributor:** WISER was not the only actor
3	Co-production processes (at all levels) are widely recognised as a valuable technique to support the development of useful and accessible WCIS and for sustainability. However, stakeholders across contexts confirmed that co-production processes were not synonymous with co-design and required significant time and financial resources to sensitise stakeholders to the value of the process.	High	**Key Contributor:** (For specific interventions, WISER was unique in bringing these to NMHS's)
4	WISER support has enabled NMHS' to better understand their own WCIS data flows and ecosystem within government and develop broader relationships across departments, bringing added value to co-production processes.	Medium high	**Key Contributor:** For specific interventions, WISER was unique in bringing these to NMHS's
EQ2: WHAT WERE THE KEY OPERATIONAL AND DELIVERY LESSONS LEARNT FROM IMPLEMENTING THE WISER MODEL ACROSS DIFFERING CONTEXTS FOR FUTURE PROGRAMMING?			
5	UKMO viewed as a very respected partner across stakeholder groups, with training and support consistently reported as valuable across NMHS and regional bodies supported in Asia and Africa.	Medium high	**Key Contributor:** For the FCAS evidence gathered, UKMO was alone in supplying technical assistance
6	There is evidence that WISER IPs who have proven track records and a good reputation, produced good results, and also increased the potential for both attracting other credible partners and future funding.	High	Not applicable (N/A)
7	IPs found it difficult to both focus on high quality technical activities and the production of materials demonstrating their success (communications and marketing activities).	Medium low	N/A
8	Historic MEL approaches, including independent evaluations, were limited and did not focus sufficiently on end-users and consider GESI.	Medium high	N/A
9	WISER has produced/supported WCIS for some FCAS and/or humanitarian settings and there is scope to enhance this offer.	Medium low	**Key Contributor:** For the FCAS evidence gathered, UKMO was alone in supplying technical assistance
EQ3: TO WHAT EXTENT, AND IN WHAT WAYS, WERE IMPROVED WCIS EFFECTIVE IN INFORMING DECISION MAKING AT THE PRODUCER, INTERMEDIARY AND USER LEVELS?			
10	UKMO introduced innovative assets, tools and systems to NMHS' which in general were well-received, although sustained use of these tools is not universal.	High	**Key Contributor:** WISER led specific innovative intervention and did this alone – without any other actor involvement
11	Provision of high-resolution, downscaled forecasts and WCI specifically tailored to the needs of end-users allowed critical preventive action to be taken to mitigate the effects of extreme weather events.	Medium low	**Contributor:** WISER was usually one actor amongst others

12	WCIS on their own are not completely effective in enhancing user-level resilience, without other supporting activities.	Medium low	N/A
EQ4: WHAT FACTORS, INTERNAL OR EXTERNAL TO THE PROGRAMMES, MAY HAVE LIMITED OR ACCELERATED THE APPLICATION OF IMPROVED WICS IN DECISION-MAKING FOR PRODUCERS, INTERMEDIARIES AND USERS? WHAT LESSONS CAN BE LEARNT FOR DELIVERY, IN GENERAL AND SPECIFICALLY IN AN FCAS CONTEXT?			
13	Evidence suggest that NMHS's were not sufficiently involved/consulted at the early stage of WISER project design.	Medium low	N/A
14	More evidence, (i.e. Business Case studies) needs to be produced to demonstrate the value of WCIS in other sectors such as Health, Urban Planning, Agriculture, etc., to enable NMHS' to make the case at national level for greater investment in the provision of timely and accurate WCIS. Existing evidence should be leveraged within FCDO to maximise impact of wider UK Government climate investments.	Medium low	N/A
15	Both external (COVID-19 and budget issues) and internal (UKMO structural constraints) factors had an impact on momentum, delivery timelines and the effectiveness of WISER.	Medium high	N/A
16	Short- and long-term delivery constraints were perhaps not always considered when designing NMHS support packages. There was also little evidence of UKMO/FCDO mapping of WISER to other FCDO/donor investments in WCIS, which could have ensured UK investment added value and sustainability	Medium high	N/A
EQ5: FOLLOWING THE CLOSURE OF THE WISER 1&2 AND ARRCC PROGRAMMES, WHAT PROGRAMME RESULTS HAVE BEEN SUSTAINED, IN WHAT WAYS, FOR WHOM? AND WHY?			
17	Closed WISER programmes do not appear to have been designed from the outset with a view to ensuring the sustainability of results, across the entire WCIS value chain	High	N/A
18	The 'readiness' of NMHS' and their on-going ability to take up or support improved WCIS assets, systems and processes was not always understood, and limited sustainability.	Medium high	N/A
19	Years after WISER programmes have ended, results and the mechanisms through which they have been delivered have been partially sustained for some users (i.e. producers, intermediaries and end-users). There remain significant sustainability challenges (financial and technical) and without ongoing support, these results are likely to taper off.	High	N/A

The same approach has been applied across the Stories of Change developed.

Validation with key stakeholders

Following the data collection phase, we validated with key stakeholders the findings generated through a series of participatory engagements with key stakeholders. These occurred and who was invited to attend was based on availability of attendees. Validation workshops included:

- In August 2024, two regionally focused workshops which included a mix of stakeholders who participated in the evaluation. The Asia focus validation workshop was attended by 19 stakeholders including representatives from UKMO, FCDO, CIMMYT, RCCC, ICIMOD. The Africa focus validation workshop was attended by 24 stakeholders including representatives of UKMO, IGAD, ICPAC, KMD, and Tanzania Meteorological Agency (TMA). During and following each workshop stakeholders were asked to provide feedback on findings and recommendations shared.
- Various focused meetings with FCDO, UKMO and WISER stakeholders at both regional and higher levels following the regional workshops to further validate and refine recommendations in particular.

f. Quality Assurance

Quality assurance (QA) took place on a number of levels, including at field level, for primary level data collection and collation, as well as the core ET and consortium level.

At the field level: Our field level QA process, in the context of the CATI-based surveys, consists of three primary methods. The first is an intensive training and pre-fieldwork preparation period. High-quality data is, first and foremost, a function of good tool design, good translation, and good training. Careful tool design guards against errors in skip logic, and also ensures questions are written to a high standard (e.g., avoiding double-barrelled questions, ensuring response options are exclusive and as comprehensive as possible). Our translation process is team- and consensus-based: two translators independently translate the survey from English to the needed languages.[38] The translations were then reviewed by the CATI manager, who adjudicated any discrepancies between the translations, after discussion with the translation team. The translations are then closely reviewed and revised during training with the full team, which took place over the course of two days, including a pilot test.

The second method is audio quality control, during which the CATI manager listens to a random subset of call attempts and completed interviews by each enumerator. This process involves assessment of the enumerator's interviewing style, ensuring they asked the question exactly as written, and followed all relevant instructions (e.g., do or do not read all response options, etc.). The CATI manager also checks the submitted data against the answers given by the respondent in the audio file, to assess whether the enumerator is faithfully recording the responses. Finally, the CATI manager assesses other aspects of the enumerator's work, such as whether they are rushing through the questions, answers the respondent's clarifying questions correctly, and so forth.

The third method is back-office quality control. During this process, an analyst reviews the data for potential or likely errors in survey administration, such as unusual patterns or distributions in the data (e.g., an unlikely distribution of respondent ages), contradictory responses, surveys that are unexpectedly short, duplicate interviews, and so forth. This information is passed back to the survey team on a daily basis for either correction (in the case of duplicates or other data that can be corrected), or for corrective action (in the case of issues driven by poor survey administration).

In the context of field-based, computer-assisted, personal interviewing (CAPI) surveys, an additional layer of data quality is added, consisting of field-based survey accompaniments and household back-checking by the Fieldwork Manager. The Fieldwork Manager accompanies a random subsample of interviews conducted by enumerators during the first three days of fieldwork, often supplemented by audio review of additional interviews, as outlined above. Later in fieldwork, the Fieldwork Manager back-checks households, visiting them after the enumerator has completed the survey to verify the interview was conducted, and check a subset of data with the individual interviewed.

At the evaluation team level: the Team Leader had oversight of all data collection activities, and technical oversight of the whole team. This included a series of QA checks through the evaluation findings and report writing processes by checking back to evidence sources attributed to each finding for a random selection of findings. In addition, the ET consortium partners have worked closely to provide additional QA and oversee contractual compliance and effective due diligence for the whole team.

[38] The Mtaani survey, implemented via CATI with almost exclusively Nairobi-based respondents, was translated into Kiswahili, with Sheng translations where appropriate. The survey completed in Kendu Bay, conducted in-person, was translated into Kiswahili and Dholuo, reflecting the ethnic composition of the area. The surveys completed in Bangladesh were undertaken in Bangla.

g. Ethics & Safeguarding

The evaluation adhered to the FCDO Ethics Principles for Research and Evaluation (FCDO 2020) and all related key principles, including informed consent, anonymity of data etc. Data collection teams were mixed sex and data has been held on secure, password protected sites. Our team adhered to strict data management protocols in compliance with the UK General Data Protection Regulations (GDPR).

References:

King, M. F., & Bruner, G. C. (2000). "Social desirability bias: A neglected aspect of validity testing." *Psychology & Marketing*, 17(2), 79-103.

Pallant, J. (2020). *SPSS Survival Manual* (7th ed.). Routledge.

Annex 4: List of documents reviewed

This annex provides an overview of all the WISER-related documents reviewed and mapped during the evaluation (160 documents):

- 104 documents received and quickly reviewed during inception to inform the evaluation design.
- 56 additional documents received during implementation (highlighted in orange in the list below).

During implementation, a selection of 62 documents (**highlighted in bold/bold** in the list below) were coded as part of the in-depth literature review process. Additionally, Programme and Project level logframes were reviewed[39].

This does not include the documents referenced to produce the Bangladesh, Kenya, and Nepal Political Economy Analysis (PEA) reports. The specific documents consulted for each PEA are listed at the end of the respective reports.

WISER programme documents

1. WISER (2023) FCDO Six Month Progress Report April to September 2023. WISER for Africa (ARCAN), Middle East and North Africa (MENA, PHENOMENAL), and Asia Pacific (AP, CARA).
2. UK MO & FCDO (2023) WISER 6 Month Progress Report April to September 2023 - Responses to FCDO Feedback. Word document.
3. WISER (2023) Gender Equity and Social Inclusion Minimum Standards
4. WISER Principles slide deck (undated), supplied by MO team
5. Watkiss, P. and Cimato, F. (2022) Socio-Economic Benefit Guidance for the WISER Programme. Published February 2022
6. Met Office (various) WISER knowledge and learning. https://www.metoffice.gov.uk/about-us/what/working-with-other-organisations/international/projects/wiser/knowledge-learning Consulted October 2023
7. Met Office (2022) Situational Assessment of Weather and Climate Services in sub-Saharan Africa Using the Met Office People Led Services Approach
8. Met Office (2019) Ten principles of co-production. https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/business/international/wiser/wiser0133_10_principles_coproduction.pdf. September 2019
9. Met Office (2020) Second edition of co-production manual. https://futureclimateafrica.org/coproduction-manual/downloads/WISER-FCFA-coproduction-manual.pdf. October 2020
10. British Embassy Kathmandu (undated) Resilience MEL Strategy. Power point document
11. IOD Parc (2020) Resilience MEL Unit – Reset and Strategy direction. Power point document
12. WISER for Africa (undated) Profile Weather and climate information user: Arable and livestock farmer
13. WISER for Africa (undated) Profile Weather and climate information user: Lake fisherman
14. WISER for Africa (undated) Profile Weather and climate information user: Journalist
15. **WISER (2024) FCDO Six Month Progress Report 1st October 2023 to 31st March 2024. WISER for Africa (ARCAN), Middle East and North Africa (MENA, PHENOMENAL), and Asia Pacific (AP, CARA).**
16. **UK MO & FCDO (2024) WISER 6 Month Progress Report 1st October 2023 to 31st March 2024 - Responses to FCDO Feedback. Word document.**

[39] Project level PCRs for WISER 2 ASPIRE and ARRCC interventions were not made available.

WISER 1 & 2

17. WISER Africa ToC
18. FCDO. Business case: Weather and climate information services for Africa. Published: September 2018
19. Met Office (various) Completed WISER projects webpages. https://www.metoffice.gov.uk/about-us/what/working-with-other-organisations/international/projects/wiser/completed-projects Consulted October 2023 – This contain 33 project documents (WISER 1&2 project summaries and project infographics for completed projects)
20. ICPAC (2021) ICPAC Guide for Engagement in Co-producing climate services. https://www.icpac.net/publications/icpac-guide-for-engagement-in-co-producing-climate-services/ Published March 2021
21. NIRAS (2021) WISER Resilience Indicator Project Impact Report
22. Tetra Tech (2020) Data System Review
23. Tetra Tech (2021) Activity Verification Visit – Beneficiary Feedback
24. Unknown (2022) Pilot Sustainability Assessment of Select WISER projects
25. WISER for Africa (Undated) Weather and Climate Information Services (WISER): East Africa 2015-2021 brochure
26. WISER for Africa (2016) Africa Annual Review. Review date June 2016
27. WISER for Africa (2017) Africa Annual Review. Review date July 2017
28. WISER for Africa (2018) Africa Annual Review. Review date July 2018
29. WISER for Africa (2019) Africa Annual Review. Review date June 2019
30. WISER for Africa (2020) Africa Annual Review. Review date June 2020
31. WISER for Africa (2021) Africa Annual Review. Review date June 2021
32. WISER for Africa (2022) Programme Completion Review. Review date April 2022
33. WISER for Africa (2021) Creating accessible and sustainable climate services through capacity development of NMHSs. Lessons from the WISER programme for NMHSs
34. WISER for Africa (2021) Redefining 'Business as Usual' with a gender lens. Designing and implementing gender-sensitive climate services projects for funders and implementers
35. WISER for Africa (2021) Designing the next generation of co-produced climate services. Enabling funding partners to develop impactful climate services projects and programmes
36. WISER for Africa (2021) Enhancing co-production in climate services projects. Lessons from the WISER programme for project implementers.
37. WISER for Africa (2022), East Africa Extension Closure Report (July – December 2021 & Further extension to end Feb 2022). Review date March 2022
38. WISER for Africa (undated) Lessons and recommendations from the WISER learning event
39. WISER for Africa (2022) Logical framework. Excel document published September 2022
40. WISER 1&2 (2022) Monitoring, Evaluation, and Learning (MEL) Guidance
41. WISER 1&2 (2022) Stories of Change Guidance
42. WISER 1&2 (2022) Tracking Transformational Change
43. WISER for Africa (2021) The Socio-Economic Benefits of the WISER Programme. https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/business/international/wiser/wiser-seb-results_final-web.pdf. September 2021
44. Climate data tools – User manual: Data Preparation & Quality Control Modules. March 2021
45. Enhancing national Climate Services at KMD – Training report 1st – 5th March 2021
46. Data Library & Maproom: Operational manual for KMD. March 2021
47. Merging and Updating of ENACTS Data Library / Maproom at KMD – Progress Report October 2020 – February 2021.
48. Data Library & Maproom: Standard Operating Procedures for Uganda National Meteorological Authority. April 2021
49. Enhancing National Climate Servicess at the Uganda National Meteorological Authority. April 2021
50. WMO (2024) Evaluation Report on HIGHWAY project. Version March 2024

WISER 1 Project Completion Reports

51. Columbia University (2017) ENACTS, Project Completion Report with Annexes. Version April 2017
52. Columbia University (2017) ENACTS, Extension review. Version March 2018
53. UK MO (2017) IMTR, Project Completion Report. Version April 2017
54. UK MO (2016) IMTR, Project Review. November 2016
55. UK MO (2017) MHEWS, Project Completion Report with Logframe. Version April 2017.
56. UK MO (undated) MHEWS, Project Review.
57. UK MO (2018) MHEWS, Project Completion Report Bridging phase. Version April 2018.
58. UK MO (2017) SCIPEA, Project Completion Report with Logframe. Version April 2017
59. UK MO (2017) SCIPEA, Project Completion Report Bridging phase. Version January 2018
60. UK MO (2017) SCIPEA, Extension review. Version March 2018
61. UK MO (2017) Western Kenya, Project Completion Report with Logframe. Version April 2017
62. UK MO (2018) Western Kenya, Project Completion Report Bridging phase with Logframe. Version March 2018
63. UK MO (2017) Western Kenya, Extension review. Version March 2018

WISER 2 Project Completion Reports

64. WMO (2021) AMDAR, Project Completion Report with Annexes. Version December 2020
65. UK MO (2021) ASPIRE, Project Completion Report. Version January 2020
66. UK MO (2021) CRISPP, Project Completion Report with Annexes. Version January 2020
67. Resurgence (2021) DARAJA, Project Completion Report with Annexes. Version September 2020
68. WMO (2021) HIGHWAY, Project Completion Report with Annexes. Version December 2020
69. CIAT (2021) Somalia and South Sudan national project, Project Completion Report with Annexes. Version December 2020 (document title says updated August 2021)
70. Tanzania Meteorological Authority (2021) Tanzania national project, Project Completion Report with Annexes. Submitted March 2021
71. CIAT (2021) Rwanda national project, Project Completion Report with Logframe Annex. Version December 2020
72. World Vision UK (2021) Uganda national project, Project Completion Report with Annexes. Version January 2020
73. South South North (2021) TRANFORM Project Completion Report with Annexes. Version December 2020
74. ICPAC (2021) W2-SIP, Project Completion Report with Annexes. Version December 2020
75. BBC Media Action (2020) Weather Wise, Project Completion Report with Annexes. Version September 2020

Asia Regional Resilience to a Changing Climate Met Office Partnership (ARRCC MOP)

76. ARRCC (2022), Programme Completion Review. Review date November 2022
77. ARRCC (2022), High Level Logical Framework. Excel document
78. ARRCC (2021), Indicator Framework. Updated September 2021
79. ARRCC (2022), Milestone and Results – Final Results. Excel document
80. CIMMYT (2022), Climate services to avoid food security threatening crop disease epidemics in South Asia. March 2022
81. ICIMOD (2022), Baseline Survey Report Weather and Seasonal Climate Services for Agriculture in Pakistan. April 2022
82. ICIMOD (2022), Weather and climate information services in Pakistan. Assessing benefits and impacts on key farm outcomes from a user perspective
83. ICIMOD (2022), Workshop report: Socioeconomic benefits of weather and climate services in Pakistan. August 2022
84. Met Office (various) Asia Regional Resilience to a Changing Climate (ARRCC) webpage. https://www.metoffice.gov.uk/services/government/international-development/arrcc. Consulted October 2023
85. Met Office (undated) ARRCC Impact Story IBF: Early warnings fit for today and the future
86. Met Office (undated) ARRCC Impact Story CARISSA: Gridding climate observation records in Pakistan

87. Met Office (undated) ARRCC Impact Story CARISSA: Creating local sea-level projections to manage coastal climate risk
88. Met Office (undated) ARRCC Impact story SCIPSA: Enhancing the Seasonal Monsoon Outlook
89. Met Office (undated) ARRCC Impact Story SCIPSA: Strengthening seasonal forecast services through the South Asia Climate Outlook Forum (SASCOF)
90. Met Office and RIMES (2022) Final report on Regional Enhancements under ARRCC: The SASCOF & Climate Services User Forum (CSUF). June 2022
91. OPM (2020), ARRCC Case Study: Understanding capacity gaps in National Meteorological and Hydrological Services - seasonal and climate forecasting. August 2020
92. OPM (2020), ARRCC Case Study: Role of regional forums in facilitating cooperation on climate services in South Asia. August 2020
93. OPM (2021), ARRCC Case Study: Innovation in climate services. September 2021
94. OPM (2022), ARRCC Case Study: Political economy of strengthening climate services. May 2022
95. OPM (2022) Stories of Change from ARRCC programme. September 2022
96. OPM (2022) Strengthening climate services in South Asia: Learning from the ARRCC programme. September 2022
97. OPM (undated), ARRCC Impact Stories: Early systems warning for wheat diseases
98. OPM (undated), ARRCC Impact Stories: Responding to Covid-19
99. OPM (undated), ARRCC Impact Stories: The Climate Innovation Challenge
100. University of Leeds (2022) Final Report for the Asia Resilience to a changing climate programme. August 2022
101. University of Leeds (2022) Policy Brief: Final Report for the Asia Resilience to a changing climate programme. October 2022
102. ARRCC (undated) Activities to date in Nepal, lessons learnt and future opportunities slide deck.
103. ARRCC (undated) Early warning fit for today and the future
104. ARRCC (2022) WP1 IBF: Country report Afghanistan
105. ARRCC (2022) WP1 IBF: Country report Bangladesh
106. ARRCC (undated) IBF for early action training workshop – Bangladesh feedback. Excel document
107. ARRCC (2022) WP1 IBF: Country report Nepal
108. ARRCC (undated) IBF for early action training workshop – Nepal feedback. Excel document
109. ARRCC (undated) Nepal Stakeholder survey for IBF. Excel document
110. ARRCC (undated) WP1 IBF: Summary of course feedback – Nepal Remote Event May – June 2020. PDF document
111. ARRCC (2022) WP1 IBF: Country report Pakistan
112. ICIMOD (2022) Baseline Report for IBF: Weather and Seasonal Climate Services for Agriculture in Pakistan. PDF document
113. ARRCC (undated) IBF for Pakistan – PMD training January 2022. Excel document
114. National Agromet Centre of Pakistan Meteorological Department (2024) The Future of Forecasts: Impact-Based Forecasting for Early Action! - IBF Project Assessment Report. PDF document. February 2024
115. RCCC (2022) Delf-Evaluation of the Climate Centre's Contribution to the ARRCC Programme. January 2022

WISER Africa, ARCAN

116. ARCAN MEL (2023) Validation Outputs slide pack
117. ARCAN MEL (2023) ARCAN Evidence Gap Map. June 2023.
118. ARCAN ToC power point
119. ARCAN FY2223 Q1 Report
120. ARCAN FY2223 Q3 Report
121. ARCAN FY2223 Q4 Report
122. ARCAN WISER 3 Progress Report Q4 21-22. Review date May 2022
123. FCDO. (2022) Annual Review of ARCAN. Review date 31/07/2022.
124. FCDO. Business case: Africa Regional Climate and Nature Programme (ARCAN). January 2022
125. Ecorys (2023) Independent Monitoring, Evaluation, and Learning Unit for FCDO's Africa Regional Climate and Nature Programme (ARCAN). Baseline Design Report. Draft August 2023

126. Ecorys (2023) Independent Monitoring, Evaluation, and Learning Unit for FCDO's Africa Regional Climate and Nature Programme (ARCAN). Draft Inception Report. March 2023
127. Ecorys (2023) Independent Monitoring, Evaluation, and Learning Unit for FCDO's Africa Regional Climate and Nature Programme (ARCAN). Draft Inception Report. Annex II. March 2023
128. Met Office (various) WISER Africa webpage. https://www.metoffice.gov.uk/about-us/what/working-with-other-organisations/international/projects/wiser/wiser-africa Consulted November 2023

WISER Asia Pacific, CARA

129. CARA ToC
130. CARA (2022) Annual Review. Review date unknown
131. CARA (undated) Approach to CARA 2023 Annual Review
132. FCDO Business case. Climate Action for a Resilient Asia (CARA)
133. CARA Portfolio Level Results Framework for 2023-24 AR
134. CARA Terms of Reference. Monitoring, Evaluation, and Learning Support for FCDO's Climate Action for Resilience Asia (CARA) programme. Draft January 2023
135. CARA Infographic & Organogram. August 2023

WISER MENA, PHENOMENAL

136. FCDO. Business Case. Pioneering a Holistic approach to Energy and Nature-based Options in MENA for Long-term stability – PHENOMENAL. August 2021
137. PHENOMENAL Logframe. Excel document reviewed September 2023
138. PHENOMENAL Scale-up Note
139. PHENOMENAL Addendum to the Business Case for Scale-up
140. WISER. Programme Design. WISER MENA
141. WISER MENA Logframe. Approved January 2020
142. WISER MENA Overview Eng & AR
143. WISER MENA (2022) External Scoping Report - Opportunities for improved weather and climate information in MENA region, Report & Appendices
144. WISER MENA (2022) Building resilience to hazards in the MENA region through enhancing use of weather and climate information. A summary of the WISER MENA Scoping Report
145. WISER MENA. Stakeholder Engagement & Theory of Change Validation report
146. WISER MENA. Stakeholder Identification Output. National and regional stakeholders
147. WISER MENA ToC & Assumptions
148. WISER (2024) Gender Equity and Social Inclusion in Middle East. PDF document. Submitted February 2024

Wider literature

149. 3ie (2022) Strengthening resilience against shocks and stressors in low- and middle-income countries: an evidence gap map. https://3ieimpact.org/sites/default/files/2023-05/Resilience-REAPER-EGM-brief.pdf Consulted November 2023
150. Agyekum et al (2022), The contribution of weather forecast information to agriculture, water, and energy sectors in East and West Africa: A systematic review, Front. Environ. Sci., 29 August 2022, Sec. Interdisciplinary Climate Studies, Volume 10 – 2022 https://doi.org/10.3389/fenvs.2022.935696
151. FCDO (2020). FCDO Ethical Guidance for Research, Evaluation and Monitoring Activities. Available at: https://bit.ly/3s05Tlq.
152. Practical Action (2023) Boosting flood preparedness in West Africa through enhanced early warning systems. https://practicalaction.org/news-media/2023/11/15/boosting-flood-preparedness-in-west-africa-through-enhanced-early-warning-systems/ Consulted November 2023
153. Practical Action (2023) The missing voices approach manual. https://practicalaction.org/knowledge-centre/resources/the-missing-voices-approach-manual/#:~:text=The%20Missing%20Voices%20Approach%20developed%20by%20Practical%20Action,a%20wa

y%20that%20prioritizes%20anonymity%2C%20privacy%2C%20and%20confidentiality. Consulted November 2023
154. SOFF (2023) SOFF Operational Manual. Systematic Observations Financial Facility. https://www.un-soff.org/document/soff-operations-manual/. Published June 2023
155. Translators without borders (2018) What Matters? Humanitarian Feedback bulletin. https://translatorswithoutborders.org/wp-content/uploads/2018/04/What-Matters-Humanitarian-Feedback-Bulletin-Issue_01-28-February-2018_English-language-.pdf Consulted November 2023
156. Translators without borders (2021) Language characteristics and perspectives of long-term Rohingya refugees. https://translatorswithoutborders.org/wp-content/uploads/2021/05/Language-Characteristics-and-Perspectives-of-Long-term-Rohingya-Refugees_EN.pdf Consulted November 2023
157. UK International Development (2023) International development in a contested world: ending extreme poverty and tackling climate change. A White Paper on International Development. https://assets.publishing.service.gov.uk/media/6560874b0c7ec8000d95bdcf/international-development-in-a-contested-world-ending-extreme-poverty-and-tackling-climate-change.pdf Published November 2023
158. WMO (2022) Early warnings for all. The UN Global Early Warning Initiative for the Implementation of Climate Adaptation. Executive Action Plan 2023-2027. https://library.wmo.int/idurl/4/58209
159. WMO (2022) Early warnings for all. The UN Global Early Warning Initiative for the Implementation of Climate Adaptation. Executive Action Plan 2023-2027. https://library.wmo.int/idurl/4/58209
160. WMO (2023) Project will build resilience in East Africa. https://wmo.int/media/news/project-will-build-resilience-east-africa. Published January 2023

Annex 5: List of people consulted during implementation

This annex provides an overview of the stakeholders consulted during implementation through semi structured interviews, focus group discussion, and quantitative surveys. Details on people interviewed during Inception are included in Inception Report, Annex 2

Stakeholders consulted through interviews during implementation

Table 16: List of FCDO team members interviewed

Organisation	Name	Role	Interview date
WISER DONOR / FUNDER TEAM MEMBERS (9 people)			
FCDO	Archana Shukla	Senior Programme Manager, Indo Pacific Regional Dept	28 June 2024
	Asgar Qadri	Senior MEL Advisor, Indo Pacific Regional Dept	27 June 2024
	Mary Green	ARCAN Senior Programme and Policy Manager and Programme Responsible Owner (SRO)	12 July 2024
	Rhiannon Clapham	Lead Advisor for WISER Africa	16 July 2024
	Dr. Federica Di Battista	Evidence and Knowledge Team Leader	09 August 2024
	Simon Lucas	SRO PHENOMENAL & WISER Lead advisor	20 August 2024
	Stephen Mooney	Head of Profession for the Climate and Environment Cadre	23 July 2024
	Ugan Manandhar	Cimate and Environment Advisor FCDO Nepal Office/ Sumt Dugar FCDO, ARRCC focal person from FCDO Nepal	02 July 2024
	Helen O'Connor	Previous WISER SRO	16 August 2024
WISER LEAD CONTRACTOR TEAM MEMBERS (11 people)			
UK MO	Catriona Johnson	Science Manager and Lead coordinator of ARRCC WP1 IBF	09 July 2024
	David Corbelli	Senior International Development Manager, ARRCC	18 June 2024
	George Gibson	International Development Team. ARRCC work with CYMMIT & RIMES	18 June 2024
	Helen Caughey	ARRCC WP1 IBF Manager in Nepal	15 July 2024
	Helen Ticehurst	International Development team, Regional Lead, MENA & South America	18 June 2024
	John Mungai	WISER Africa Lead	04 September 2024

Organisation	Name	Role	Interview date
	Joseph Daron	International Team member - involved in WISER Africa and ARRCC CARISSA	02 July 2024
	Lucy Faulkner	WISER MEL Lead	06 August 2024
	Luke Norris	ARRCC WP1 IBF Manager - Pakistan & Bangladesh	09 July 2024
	Rachel Nugent	Operational Meteorologist	18 June 2024
	Tamara janes	ARRCC WP2 SCIPSA Manager	11 July 2024
WISER IMPLEMENTING PARTNERS TEAM MEMBERS (17 people across 13 implementing partners)			
Bangladesh Red Crescent Society	Ahmadul Hassan	Technical advisor for forecast-based financing	15 April 2024
BBC Media Action	Lynn Morris	Country director Somalia and Kenya	18 April 2024
International Centre for Integrated Mountain Development (ICIMOD)	Mandira Singh Shrestha	Project Lead	15 April 2024
International Maize and Wheat Improvement Centre (CIMMYT)	David Hodson	Project Lead	16 April 2024
IWM	Dr Rezaul Hasa	Head of Climate Change and Environment Cell Plus 2 others – names inaudible (one who was retired)	09 May 2024
	Tarikul Islam	Director of Survey and Data Division	09 May 2024
Kenya Airways	Tom Ogendo	Responsible for the function where AMDAR is supported (Head of Dispatch)	29 May 2024
Konkuey Design Initiative (KDI)	Sabrina Ohler	WISER Daraja Coordinator	25 March 2024 & 23 May 2024
Nepal Red Cross Society	Rudra Narayan Adhikari	Deputy Director, Disaster Management Department	16 June 2024
	Umesh Dhakal	Executive Director Nepal Red Cross Society	
	Ganga Sagar Paudyal	Disaster Management Department	
Red Cross Red Crescent Climate Centre	Madhab Uprety	Technical Adviser and Asia Pacific Focal Point	15 April 2024
Resurgence	Sunayana Sen	DARAJA Programme Manager	14 June 2024
RIMES	Anshul Agarwal	Team Leader Hydrology	17 April 2024
	Dr Subbiah	Programme Unit Director	17 April 2024
WMO	Mark Majodina	WMO ESA Representative and Highway contact person	11 April 2024
World Vision UK	Jason Garrett	Programming and Technical	11 April 2024
WISER HISTORIC PROGRAMMES MEL PARTNERS			

Organisation	Name	Role	Interview date
(2 people)			
Oxford Policy Management	Christina Rumbaitis del Rio	ARRCC MEL Team Leader	4 June 2024
	Safa Khan	ARRCC MEL Program Manager	30 May 2024
NATIONAL METEOROLOGIAL AND HYDROLOGICAL SERVICES OFFICIALS (22 people across 8 NMHS)			
Bangladesh Meteorological Department	Quamrul Hassan	Meteorologist	30 May 2024
India Meteorological Department	Dr OP Sreejith	Scientist & Head Climate Monitoring and Prediction Group	10 June 2024
Kenya Meteorological Department	Beverly Aura	Projects and Partnerships department. New to KMD and not involved in WISER 1 & 2	25 March 2024
	Paul Murage	Deputy Director of IMTR	25 March 2024 & 11 April 2024
	Pascaline Chemaiyo	Geologist. Worked in Daraja and working ain ECREA	25 March 2024
	Ezekiel Njoroge	Forecaster. Worked in Daraja	25 March 2024
	Roger Ndichu	Communications. Worked on Daraja	25 March 2024
	Edward Muriuki	Head of IMTR within KMD	11 April 2024
Nepal Department of Hydrology and Meteorology	Dr. Archana Shrestha	DHM Deputy Director General	16 June 2024
	Dr. Indira Kandel	Senior Divisional meteorologist (Seasonal)	10 June 204
	Dr.Jagadiswor Karmacharya	DHM, Director General	16 June 2024
	Shanti Kadel	IBF Senior Hydrologist	13 June 2024
Pakistan Meteorological Department	Farah Ikram	Met Dept – climate analysis, tropical cyclones	21 May 2024
	Rizwan Khkhar	Senior Programmer Hydromet and Disaster manager	21 May 2024
	Zaheer Babar	Director of the Flood and Forecasting Department	13 May 2024 & 21 May 2024
	Irfan Virk	Deputy Director of the Flood and Forecasting Department	21 May 2024
	Ayaz Khan	Meteorologist	21 May 2024
	Dr Kazmi	Meteorologist	21 May 2024
	Dr Tariq	Deputy Director & coordinator	21 May 2024
South Sudan Meteorological Department	Mojwok Modo	Director SSMD	21 May 2024
Tanzania Meteorological Agency	Dr. Nyenzi	Director of Tanzania Meteorological Society (TMS)	16 May 2024

Organisation	Name	Role	Interview date
Yemen Ministry of Water and Environment	Husam Khamis Ghaithan	Head of WASH Emergency Unit, National WASH Cluster Coordinator, Ministry of Water & Environment, Re. of Yemen – Aden	03 June 2024
SUBNATIONAL METEOROLOGIAL AND HYDROLOGICAL SERVICES OFFICIALS (5 officials)			
Kenya County Met Wajir	Daniel Mwiri Wanjohi	Daniel Mwiri Wanjohi	14 June 2024
Kenya County Met Kitale	Edward Amoni	Edward Amoni	18 June 2024
Kenya County Met Bungoma	Noah Eledi	Noah Eledi	18 June 2024
Kenya County Met Kisumu	Paul Oloo	Paul Oloo	18 June 2024
Kenya County Met Kakamega	Vincent Sakwa	Vincent Sakwa	17 June 2024
NATIONAL & SUBNATIONAL GOVERNEMENT OFFICIALS IN COUNTRIES WITH WISER IMPLEMENTED PROJECTS (16 officials)			
Bangladesh Department for Agriculture	Dr Mazharuk Aziz	Agrometeorological Advisory Services	30 May 2024
Nairobi County Disaster Management Unit	James Njenga	Fire rescue team	20 August 2024
	Martin Muthami	Fire rescue team	21 August 2024
	Peter Mbugua	Fire rescue team	21 August 2024
	Lavi Mutaki	Fire rescue team	20 August 2024
	Sylvia Katu	Fire rescue team	25 August 2024
	Salome Njeri	Fire rescue team	23 August 2024
Nepal National Disaster Risk Reduction and Management Authority (NDRRMA)	Rajendra Sharma	Under Secretary	20 May 2024
Nepal NDRRMA, Local Municipality Staff - Triurasundari	Bigyan Bohara	DRR Focal Person	1 July 2024
Nepal NDRRMA, Local Municipality Staff - Bhotekosh & Sindhupalchowk	GS Poudel	DRR focal person	26 June 2024
Nepal NDRRMA, Local Municipality Staff - Jugal & Sindhupalchowk	Narayan Parajuli	DRR Focal Person	28 June 2024
Nepal NDRRMA, Local Municipality Staff - Raghu Ganga RM & Rasuwa	Daya Ram Paudel	Non gazetted first class officer	28 June 2024
	Nayab Subba	Non gazetted first class officer	28 June 2024
Nepal NDRRMA, Local Municipality Staff - Naukunda & Rasuwa	Purna Bahadur Bulun	DRR Focal Person	28 June 2024

Organisation	Name	Role	Interview date
Nepal NDRRMA, Local Municipality Staff - Baglung & Jaimini	Resham Lal Chapagain	NDRRMA Municipality staff	01 July 2024
Nepal NDRRMA, Local Municipality Staff - Malika Gaunpalika & Myagdi	Sushil Garbuja	NDRRA Information Person	02 July 2024
Nepal Agricultural Research Council (NARC)	Rameshwor Rimal	Climate Bulletin, Coordination with RIMES and DHM	09 June 2024
REGIONAL ORGANISATIONS INVOLVED IN WISER PROGRAMMES DELIVERY (7 people)			
ICPAC	Zachary Atheru	Project Manager	04 April 2024
ICPAC & WMO PR Somalia	Ibrahim Iman	Project Coordinator Rural Livelihoods' Adaptation to Climate Change in the Horn of Africa (RLACC II) Project	13 June 2024
	Omar Shurie	WMO PR Somalia	13 June 2024
IGAD	Calistus Wachana	WISER user engagement expert for ENACTS	10 May 2024
	Herbert Misiani	Climate Services	16 May 2024
NECJOGHA	Luganda David Nsiyonna	NECJOGHA coordinator	09 April 2024
SASCOF	Satyaban Bishoyi Ratna	Senior Scientist at the office of Climate Research and Services	10 June 2024
WIDER NON-WISER WCIS SPECIALISTS & INSTITUTIONAL WCI USERS (2 people)			
University of Nairobi	Professor Joseph Mutemi	Focal Point	16 May 2024
People in Need	Sanchita Neupane	ECHO DRR Programme Manager	6 June 2024
JOURNALISTS IN RADIO PARTICIPANTS IN WISER WEATHER WISE PROJECT (12 journalists across 11 radios)			
Radio Janqwani	Abraham Bulyar	Programs Manager	13 June 2024
KBC radio	Benard Maranga	Senior producer	08 June 2024
Radio Gulf	Edna Ouso Ochonyo	Project manager	10 June 2024
	Jeremiah Olondo	Producer / Presenter	10 June 2024
Lulu Radio	Hamis Kombe	Programme producer	12 June 2024
Kaya Radio	Janet Chirindo Shume	News editor	11 June 2024
Bukedde Radio	Paul Labwama	Producer & Reporter	12 June 2024
Jangwani Radio	Samuel Kosgey	Programmes manager	13 June 2024
SIFA FM	Susan Mbodze	Producer	08 June 2024
Mataa Radio	Vivian Achal Ajwang	Presenter & Producer	13 June 2024

Organisation	Name	Role	Interview date
Storm FM	Zubeda Harnish	News writer & producer	15 May 2024
Radio Ekeyekon	Maqueline Munialo	Programs manager	16 June 2024
WEATHER MTAANI LEADERS PARTICIPANTS IN WISER DARAJA PROJECT (KIBERA, KENYA) (12 Weather Mtaani)			
Weather Mtaani Leaders	12 team leaders interviewed between 18 – 21 June 2024		

Stakeholders consulted through Focus Group Discussions during implementation

The team conducted a total of 20 Focus Group Discussions (FGD) with Farmers, Pastoralists, Fisherfolk, and Fishersellers across Kendu Bay, Marsabit, and Turkana. This included 10 FGDs with Female, 8 FGDs with Male, and 2 FGD mixed.

Table 17: List of stakeholders consulted through Focus Group Discussions

Stakeholder	Rational	# of people consulted	Date
KENYA			
Farmers	Farmers who have lived for at least 5 years in Kendu Bay, Marsabit and Turkana, areas covered by radio shows supported by WISER-funded Weather Wise project	22 (8 Female, 14 Male)	July – August 2024
Pastoralists	Pastoralists who have lived for at least 5 years in Marsabit and Turkana, areas covered by radio shows supported by WISER-funded Weather Wise project	55 (27 Female, 28 Male)	July – August 2024
Fisherfolk	Fisherfolk who have lived for at least 5 years in Kendu Bay and Turkana, areas covered by radio shows supported by WISER-funded Weather Wise project	10 (5 Female, 5 Male)	July – August 2024
Fishersellers	Fisherfolk who have lived for at least 5 years in Kendu Bay, area covered by radio shows supported by WISER-funded Weather Wise project	22 (22 Female)	July – August 2024

Stakeholders consulted through quantitative surveys during implementation

Table 18: List of stakeholders consulted through quantitative surveys

Stakeholder	Rational & Location	# of people consulted	Date
KENYA			
Weather Mtaani contacts	Recipients of Weather Mtaani WCI from Nairobi and its informal settlements, including: • Kibera accounting for 91.04% (Laini Saba Ward, Lindi Ward, Makina Ward, Sarang'ombe Ward); • Lang'ata accounting for 5.22% (Nyayo Highrise Ward, Mugumo-ini Ward, Kenyatta Golf Course Ward); and • Other areas such as Bungoma, Kajiado, Kangemi Ward, Komarock Ward, and Mwiki Ward accounting for 3.73%	134 (70 Female, 64 Male)	July – August 2024
Farmers, Pastoralists, Fisherfolk, Fishersellers	Stakeholders who have lived for at least 5 years in Kendu Bay, area covered by radio shows supported by WISER-funded Weather Wise project	293 (174 Female, 119 Male)	July – August 2024
BANGLADESH			
Farmers*	Farmers who have lived in Meherpur, Pabna, or Rajshahi, districts affected by wheat rust in the past five years	45 (45 Male)	August 2024
SAAOs*	SAAOs who worked in districts of Meherpur, Pabna, or Rajshahi, areas affected by wheat rust in the past five years	43 (5 Female, 38 Male)	August 2024
Rohingya based camps	Cox's Bazar district in Teknaf and Ukhiya upazilas.	110 (26 Female, 84 Male)	August 2024

* We were not able to identify participants in the WISER-supported Wheat Rust project in Bangladesh due to the lack of identifying or geographic data from CIMMYT, the Evaluation Team selected districts affected by wheat rust in the past five years (Meherpur, Pabna, and Rajshahi). We then included farmers from these districts who had farmed wheat and resided there during the project period. Our survey focused on how they used sub-seasonal forecasts and advisories, and their actions based on information from local agricultural officers.

Annex 6: Data Collection Tools

This annex provides an overview of tools development and examples of the data collection tools that were used in the evaluation.

Overview

Development of tools for various stakeholder groupings

The ET developed a suite of data collection tools that were tailored for various stakeholders. These included:

1. FCDO / UKMO
2. Implementing Partners
3. Agricultural Extension Officers
4. Rohingya
5. Radio show presenters / producers
6. Farmers / Fisherfolk
7. Pastoralists
8. Local Met Officers
9. Community Disaster Management Unit Members
10. Mtaani Leaders
11. Mtaani Constituents (those that currently receive messages from Mtaani's)

The tools were initially developed by the core evaluation team and then provided to local team members for contextualisation, feedback and refinement. All tools were then piloted and adjustments made as needed to the questions and tools.

A number of tools overlap significantly so we provide below a sample across the range highlighted above. Others are available upon request.

Example WISER KII Interview Templates: WISER-funded WeatherWise

Evaluation Focus / Interview Purpose:

1. Institutional capacity strengthening & sustainability– are they still using techniques trained and supported by WISER (or updated / adjusted versions) today – i.e. co-production for tailoring Weather and Climate Information (WCI), mentoring radio presenters or other staff with respect to producing weather and climate radio content etc.)
2. Partnerships & sustainability – are partnerships formed (i.e. radio shows + Met Office + / BBC media action still working together today in WCI or other work), have radio shows been able to commercialise WCI and get further funding, and / or are organisations supported funding themselves to do the work as they consider it a public good
3. Decision making & people's resilience – impact of improved WCI on the people they are engaging through their work with. Gathering information about differing groups of people is particularly helpful (i.e. women, farmers, pastoralists, fisherfolk etc.)
4. Current weather climate information flows – mapping current flows and if they have been / still influenced by WISER supported work. Some of this will be gathered in the interviews below but please see the table in the section called Creating a Weather and Climate Information (WCI) Flow Map to be completed as you gather information about this. We aim to develop simple graphics to show WCI today for the final report.

We want to understand when things have worked or been sustained (for whom – including underrepresented groups) and when they have not, beyond the period for which the activities were funded under the WISER Weatherwise programme.

Please read the two-page summary document supplied which summarises what happened in WeatherWise before you start the interviews.

Stakeholder Type - In Kenya, the County-level Meteorological counterparts are referred to Kenya Meteorological Department (KMD) County Directors of Meteorological Services (CDMS). Please find out the similar titles or designations of the government officials who work in meteorological departments at similar administrative levels, like counties or districts, in Tanzania and Uganda, and refer to these officials by their designation when categorising them by stakeholder type.

The below questions do not include basic data (their name and sex, role now (and when under WISER project), the name of the radio station they worked for under the WISER-funded programme and/or currently work for (if they are still working in radio). We would expect that each interviewer carrying out the KII to collect these data on the interviewee and ensure that the interviewee has given their informed consent. For example, please ensure that the person being interviewed:

- is happy to participate in the interview
- knows they have the right to withdraw at any point (including after the interview) or not answer specific questions
- is aware that they will not be quoted directly but may be quoted in general (by the type of participant (stakeholder) in the WISER programme they are (i.e. local Met Official)
- is aware that this interview is focused on the historic closed WISER programmes (referred to as WISER 1 and WISER 2) and they were involved in some way in them.

IMPORTANT: These questions are a guide for the interviewer, we expect them to probe lines of enquiry as they emerge (i.e. if processes built resulted in engaging with a new partner / organisation not in the original

project, please explore this). If something has continued or happened / not continued or happened, why is this. The comments column provides details on background and what we are trying to gather data on.

WeatherWise Trained Journalists / Radio Show Producer Questions

Questions	Comments
1. Can you tell us a little about how you participated in WeatherWise, the BBC Media action project a few years ago? **a.** **Probe:** How did you / your radio station participate? In what ways was it helpful to you / your station in producing WCI focused radio shows? **b.** **Probe:** Ask the respondent about capacity-building workshops (online and in-person). **c.** **Probe:** Ask the respondent whether they attended any project events or events related to climate/weather (i.e. Greater Horn of Africa Climate Outlook Forum (GHACOF)) etc.). If so, what did they do there? What was the goal? **d.** **Probe:** Did you or anyone at your station receive training on funding, fundraising, or generating revenue through providing weather/climate information? If so, can you tell us about it?	We'd like a general overview of how the person being interviewed and the organisation they worked for participated in the programme and the stage the activities they were undertaking had reach by the end of the funding period. **Capacity building** - There were workshops – in person and online, attendance at big weather climate events (i.e. Greater Horn of Africa Climate Outlook Forum [GHACOF] or National Climate Outlook Forum [NCOF] meetings) etc. **Broadcasting activities** - by end of project many radio stations were often undertaking weekly weather climate shows in many local languages and providing tailored / contextualised forecasts. They were also undertaking radio shows are specific times in the day to target specific groups (i.e. women) It would be helpful to understand more about this.
2. Were you participating in other WISER supported projects at the time? **Probe:** Some radio stations were working with Kounkuey Development Initiative (KDI) and the Daraja project. Were you? If so, can you tell us about how you participated in that project?	Some radios were also working with Kounkuey Development Initiative (KDI) and the Daraja project, please pick this up and explore it!
3. By the end of the project what were you / your radio station doing regarding weather climate broadcasting? **a.** **If so,** how frequently did you provide this information? Weekly, daily, monthly, etc. **b.** **Probe:** Was there anything specific your radio station did differently from other stations that you know of?	
4. In what ways were your broadcasts or dissemination tailored and contextualized? **a.** **Probe:** For instance, maybe the information was translated into local languages or was adjusted for the needs of your particular audience. Can you tell us more about what steps you took to make sure the information was useful to your audience? **b.** **Probe:** What times of day were chosen for the broadcasts? Why?	
5. When WISER ended did your radio station continue producing WCI radio shows etc?	

a. **If yes,** how do you now source content for your WCI shows? Does your station provide you with budget for travel / content development? b. **Probe:** Please provide details, if you can. For instance, what is your budget for travel? c. **Probe:** Did anything change after WISER ended, in terms of your production, budget for content, or connections to KMD or other government offices? If so, what?	
Questions on Sustainability	
6. Are you / your radio station still using these processes and / or producing weather climate radio shows? a. **Probe:** Are you producing adaptations or versions of these programs? Anything similar? b. **Probe:** When was the last weather/climate radio show you produced? How long ago was it, and what was the topic? c. **Probe:** What would you say is the most impactful or important show (about weather/climate issues) you produced in the last 2-3 years?	We want to understand if they continue to use WCI production and dissemination techniques they received supported on. This includes how often they undertake WC radio shows, when they occur and targeted to whom / languages and where they get the information in the first place (it used to be KMD). There were concerns as the project ended that journalists would struggle to get content for you
IF YES, they still produce content/shows **7.** Please give details regarding the shows you produce. a. Where do you get WCI information from? b. What's the format of your show c. When and how often is it broadcast? d. Who is it targeted at? e. What languages broadcast in? f. Any other details you can give us are useful!	**Content** – At EoP there were concerns about the journalists being able to source content for the WCI shows as the project had funded travel budgets. How do they source content development and who does pays for related costs now? **GESI** - In the project, they found they needed to have radio shows at different time of the day to get more female listeners, so it would be good to understand if they do still do WC radio shows when they occur. If they have any data on **current listener/ coverage** numbers for **WCI shows** please get those too.
IF YES, they still produce content/shows **8.** How do you currently source content for your WCI shows? Does your station provide you with budget for travel / content development? a. **Probe:** Please provide details, if you can. For instance, what is your budget for travel? b. **Probe:** Did your station try to find donor funding to continue production? **IF yes,** from who / what organization? What was the outcome?	**Funding -** During WISER journalists were trained on the commercialisation of their weather and climate radio content and how to pitch for funds from potential donors to continue supporting the production costs of these programmes. So we'd like to understand if they were able to get further funding etc and / or if the radio continued doing them because they realised their importance / got good viewing figures
IF YES, they still produce content/shows	

9. Does your station train new presenters / radio producers in how to produce WCI radio shows like the ones that were provided under the WISER funded programme? **a. Probe:** When was the last time a new presenter was trained on weather/climate information radio shows? **b. Probe:** Do you mentor anyone?	
IF YES, they still produce content/shows **10.** Did your stations receive any broadcast equipment (laptops etc.) under the WISER program? **a.** Is any of that equipment still in use today? Can you tell us which equipment?	**Equipment** – many radios received 2 x equipment inputs from the project, one during and one just before the end. Each radio station was advised by BBC to lock their equipment away after a robbery at one station. It would be helpful to know if they did, how this equipment is being used / maintained and any challenges.
IF YES, they still produce content/shows **11.** Does your station receive more viewers because of the weather information? **a. Probe:** Did you ever hear about the number of listeners? **b. Probe:** Did your station view the weather information as profitable (by drawing in new listeners)?	**NOTE For Enumerator:** During WISER journalists were trained on the commercialisation of their weather and climate radio content and how to pitch for funds from potential donors to continue supporting the production costs of these programmes. So we'd like to understand if they were able to get further funding etc and / or if the radio continued doing them because they realised their importance / got good viewing figures
IF NO, they DO NOT still produce content/shows **12.** If not, why did you stop? **a. Probe:** What were the main barriers to producing weather/climate shows? **b. Probe:** Was it your decision to stop producing them, or the decision of a producer or the radio station? Do you know the reason for the decision?	
IF NO, they DO NOT still produce content/shows **13.** Were the weather and climate shows valuable to your station? For instance, did they bring in listeners and increase revenue? **a. Probe:** Did you ever hear about the number of listeners? **b. Probe:** If so, why were they stopped?	
Questions about Current Partners & Listerners	

14. Do you still work with other partners you worked with on the project or others related to WCI, i.e. **a.** Local Meteorological Officers (CDMS in Kenya) to produce / disseminate WCI? What is this process like now? Do you still use WhatsApp groups to disseminate WCI to specific people? Do they then pass this WCI on to others? Do you ever get feedback on whether this system is working? **b.** Have you continued to work with BBC Media Action since the WISER funding stopped? If so, what have you worked with them on since?	**MO** - In the project radio journalists worked closely with scientists from their local Met agencies to co-produce weather and climate radio programmes that were relevant, informative and accurate. For example, this may have been the journalist interviewing the local MO for a radio show about WCI etc. Does this still occur? WhatsApp groups were also developed between journalists and local MO – it would be good to know if this still exists / is being used etc. We'd like to know if two years on they still doing this. **BBC Media Action** – at the end of the programme, they committed to continue to work with five of the radio partners under WeatherWise so it would be good to understand what these partnerships look like now.
15. Do you / your organisation work with any new partners regarding WCI? A. **Probe:** Do you work with any new funders or have any new revenue that supports WCI shows? B. **Probe:** Do you work with any new programs related to weather and climate information? C. **Probe:** Do you work with any local groups, like farmers cooperatives, fishing associations or county governments? If yes, in what capacity?	**Funding** - If they have gone on to receive further funding for WCI radio shows / content etc please get details. We understand EU and Norwegian funding has been achieved but good to understand this. Other examples include: in Tanzania during WeatherWise, some of the privately owned radio stations in Tanzania were very reluctant to play radio shows containing WCI without the government paying them. Eventually the Tanzania Meteorological Agency (TMA) managed to convince them that this information should be considered a public good and therefore they should put it on the radio without payment. Does this still occur?
16. Do you know what current listeners to your WCI radio shows do with the WCI you broadcast? **a.** **Follow-up:** What actions do they undertake based on the WCI your radio provides? This could be people, farmers, fisherfolk, or any other listening group. **b.** **Probe:** Can you give us an example of the most impactful action you've heard about? Or the most recent case where someone used your weather/climate information in their lives?	**Decision making -** We'd like to know more about people's decision making / actions (or not) based on the radio shows they listen to. Actual examples would be helpful not just what the journalists thinks people do with it. Please probe if they do give an answer on this. Make sure you clearly get the type of stakeholder that the radio presenter is talking about (i.e. general population, fisherfolk, farmers, etc.) If they don't think people do anything why does the interviewee think that is?
17. **If this is a radio station based in Nairobi,** – during the recent / current flooding, what did your station do re WCI broadcasting? Did you have any WCI flood focused shows? Did you do more than normal / emergency due to crisis? Did you work with your local government Meteorological Office (in Kenya, KMD at Nairobi County level or possibly at the national level directly) on this.	**Current / most recent weather crisis** – to understand how WCI journalists have responded with a specific example please get an overview of the current flooding crisis, what is the WCI flows, has there be adaptations to what they normally would do, if they know of people taking action based on this. etc. In NBO this would be focused on the current flooding crisis, around Lake Victoria or elsewhere it would be another event.
18. **If you are interviewing someone from a radio station not based in Nairobi, but up-country or in another country** – has there been a recent big weather	

event that has or could have caused a big impact for people? What did the radio presenters do in response – did you undertake any emergency radio broadcasts? Does the radio presenter know if the CDMS (etc.) did anything differently to gather or share data with them? If so, what was this? Did the CDMS, for example, work with radio stations to communicate about this? Can you tell us more about this?	

Example WISER KII Interview Templates: ASIA

The below questions do not include basic data (their name, age, sex, location and basic demographic data for each survey). We would expect that each interviewer carrying out the KIIs / surveys below to collect these data on the interviewee and ensure that the interviewee has given their informed consent. For example, please ensure that the person being interviewed:

- is happy to participate in the interview
- knows they have the right to withdraw at any point (including after the interview) or not answer specific questions
- is aware that they will not be quoted directly but may be quoted in general (by the type of participant (stakeholder).

IMPORTANT

For the KIIs, these questions are a guide for the interviewer, we expect them to probe interesting lines of enquiry as they emerge (i.e. if processes built resulted in engaging with a new partner / organisation not in the original project, please explore this). If something has not continued or happened why is this, if it has, why is this, etc.

Wheat rust – farmer survey

1. **How long have you been a farmer / smallholder? (yrs)**
2. **How much land do you have in possession? (in decimal)**
3. **How long have you been farming wheat? (yrs)**
4. **Do you cultivate wheat every year?**
    a. Yes – every year
    b. Yes – often
    c. Yes – rarely
    d. Never
5. **If not cultivated every year, what are the reasons?**
    a. It is not financially viable
    b. Do not find good seed
    c. Challenge in marketing
    d. Others (specify)
6. **How much land did you cultivate for wheat in last crop year? (in decimal)**
7. **Do you own or rent your land?**
    a. Own
    b. Sharecrop
    c. Rent/lease
    d. Others
8. **Has your union ever suffered from wheat rust? y/n**
9. **How many wheats rust occurred during last 5 years in your union?**
10. **When was the last wheat rust occurred? (year)**
11. **Have your crops ever suffered from wheat rust? y/n**
12. **What impact has this had on your farming / your household? (tick all that apply)**
    a. I lost all my wheat crop that year
    b. I lost partial of my wheat crop (75%) that year
    c. I lost partial of my wheat crop (50%) that year
    d. I lost partial of my wheat crop (25%) that year
    e. I lost partial of my wheat crop (<25%) that year

f. I had to take out a loan to pay for the fungicides to stop the disease
g. I had to sell household assets to pay for fungicides to stop the disease
h. I had to use household savings to pay for fungicides
i. Other

13. **How much did this cost you in Taka (Taka figure)**
14. **What impact has this had on farming in your locality? (tick all that apply)**
    a. Most farmers (75% or more) lost their wheat crop
    b. Majority farmers (more than 50%) lost their wheat crop
    c. Many farmers (more than 25%) lost their wheat crop
    d. Some farmers (less than 25%) lost their wheat crop
    e. No farmers lost their crop
15. **Have you ever received information / advisories about wheat rust disease and weather forecasts to help you with wheat farming?**
    a. Yes – both wheat rust advisories and weather forecasts
    b. Yes – just wheat rust advisories
    c. Yes – just weather forecasts
    d. Yes – I have received these in the past but no longer receive
    e. Never received information / advisories about wheat rust disease
    f. Never received information / advisories about weather forecasts
16. **How long have you been receiving the wheat rust advisories?**
    a. For up to a year
    b. For up to three years
    c. Three years +
17. **Thinking about the information you receive or have received about wheat rust, how did you / do you receive the advisories? (Multiple responses- tick all that apply)**
    a. I receive messages on my phone (i.e. via WhatsApp / SMS)
    b. I hear about it from others in the community by phone (i.e. via WhatsApp / SMS)
    c. I hear about it from the agricultural extension officers by SMS / whatsapp
    d. I hear about it from the agricultural extension officers in person
    e. I hear about it on the radio
    f. I don't hear or receive any information about the wheat disease
    g. I can't remember
    h. Other
18. **What do you think is the best way for you to receive the advisories?**
    a. Via whatsapp / SMS
    b. In person
    c. On the radio
    d. On the TV
    e. Social media (Facebook etc.)
    f. Other
19. **How often did you / do you receive the information about the wheat disease?**
    a. Daily (in wheat growing season)
    b. Weekly (in wheat growing season)
    c. Fortnightly (in wheat growing season)
    d. Monthly (in wheat growing season)
    e. I received them but there was no set pattern
    f. I can't remember
    g. Never

20. **If you did / do receive the wheat disease information, what do you do when you receive it? (tick all that apply)**
    a. I monitor the crops more closely for signs of wheat rust
    b. I discuss options with the agricultural extension officer
    c. I share the information with other farmers nearby
    d. I use household savings to buy and use fungicides
    e. I take a loan to buy and use fungicides
    f. I used a local (cheaper) product to get rid of the wheat rust as I could not afford the fungicides
    g. I didn't do anything because fungicides are too expensive to buy
    h. I didn't do anything because I cannot afford to do anything
    i. Other
21. **How useful are / were the advisories to you?**
    a. Likert ranking 1-5 (very useful to very unuseful)
22. **If you have received the wheat disease warnings and taken action – how has this affect you/your family?**
    a. It meant I didn't lose all of my harvest
    b. Compared to others my loss was minimal
    c. It had no impact because the messages came too late to take action
    d. It had no impact as I was not able to action anything as I had no resources to do so
    e. It had no impact because I did nothing but did not get wheat rust
    f. Other
23. **Thinking about the advisories if you have received them, how could they be improved to be more useful?**
    a. They could be made more geographically local / they are not local enough to me to be useful
    b. I don't understand all the messages – they could be clearer
    c. They recommend products that are too expensive for me to use
    d. They recommend products I cannot get at my local market
    e. They could be more regular
    f. I don't have resources to do anything with the messages
    g. Other

Decision Support Tools and Seasonal and Sub-seasonal Forecasts

24. **Do you know about the Union IT / digital centres? (y/n)**
25. **Have you ever accessed them?**
    a. Yes – Frequently
    b. Yes – Infrequently
    c. No (skip to q28)
26. **If yes – what information do you ask for or receive?**
    d. From computers (tick all that apply):
        i. Seasonal forecasts
        ii. Agricultural data
        iii. Other
    e. Do you get this information by any other means?
        i. Radio
        ii. SMS

iii. TV
iv. Crop production app
v. DAE App
vi. Other

f. Agricultural extension officers
i. Community messaging services
ii. Word of mouth
iii. Social media (Facebook etc.)
iv. Other

g. From Agricultural Extension Officers (tick all that apply):
i. Seasonal forecasts via SMS / whatsapp
ii. Seasonal forecasts in person
iii. Agricultural data via SMS / whatsapp
iv. Agricultural data in person
v. Other

h. Do you get this information by any other means?
i. Radio
ii. SMS
iii. Community messaging services
iv. Word of mouth
v. Crop production app
vi. DAE App
vii. Other

i. How frequently do you visit the digital centre?
i. Weekly
ii. Every two weeks
iii. Every month
iv. Other

27. If no, why have you not visited or used them? (tick all that apply)

a. I do not know about them
b. They are too far away for me to get to
c. They are too expensive to travel to
d. The information is not real time, I need it when I am in my fields not something I need to travel for
e. The information they have there is not useful to me
f. There is no power at the centres so they computers don't work
g. I get the information I need from my SAAO in person
h. I get the information I need from my SAAO via whatsapp / SMS
i. Other

Thank you for participating in this research – if it is OK, if we need to in the future can we contact you again.

Wheat rust – SAAO Survey

Background information on their role

1. How long have you been an SAAO? Were you always an SAAO on this area? (get details on their experience being an SAAO)
2. Can you tell us a little about the role? What areas you cover? What's expected of you?
3. Does wheat rust effect crops in your region? How frequently does it occur? When did it last occur?
4. Have you ever been part of a project on WCI? (i.e. CIMMYT (WISER Wheat rust project, or Farmers hubs, Digital village centres, Bangladesh Weather and Climate Services Regional Project or use mobile apps (Crop Production App or DAE Office Directory App) or BAMIS (SEE BELOW for details).

Advisories

5. As part of your role do you give out advisories to farmers or small holders about their crops? What types? How often? When? And how do you convey the message (i.e. sms / word of mouth / whatsapp)? If you use your phone and / or have to travel to give out these advisories who pays for your phone time or travel?
6. Have you ever given any advisories related to wheat rust / blast? Can you tell us more about this? Who do you receive this information from? Who did you give it out to / what did they do with it? When was the last time you did this? Please get detail on this - (if the interviewer can get a picture of some of these advisories that would be great)

DSS sub seasonal to seasonal forecast products

7. As part of your role do you give out DSS sub-seasonal to seasonal forecasts to farmers or small holders about their crops? What types? How often? When? And how do you convey the message (i.e. sms / word of mouth / whatsapp)? If you use your phone and / or have to travel to give out these advisories who pays for your phone time or travel?
8. Can you tell us more about this? Who do you receive this information from? Who did you give it out to / what did they do with it? When was the last time you did this? Please get detail on this - (if the interviewer can get a picture of some of these forecasts that would be great)

General farmer / small holder practices around WCI

9. We understand that there have various projects – donor or government led (i.e. WISER, Farmers hubs, Digital village centres, Bangladesh Weather and Climate Services Regional Project or use mobile apps (Crop Production App or DAE Office Directory App) or BAMIS) – do you have any reflections on how successful or not they are for improving understandable, accessible and relevant WCI to farmer / smallholders? For example,
    - Do you think farmers in your areas use the crop production or DAE APP?
    - Do you think farmers in your areas use farmer IT hubs / digital village centres?
    - If so – how often do they use them and what do they do with the WCI information received (please get details on numbers / actions etc)
    - If not, why not? What are the challenges in doing accessing centres, using the app and applying the information received etc? (i.e.
10. How useful to you think forecasts and advisories are for farmers in your area? What could be done to forecasts or advisories to improve them for farmers or are they currently working in the right way? (i.e. right message for the type of farmer, in a way they understand that is accessible to them?)
11. What are the key challenges in conveying advisories or forecasts to farmers or small landowners? What could make your role easier to support better WCI flow to farmers etc?

Thank you for participating in this research – if it is OK, if we need to in the future can we contact you again.

Example MO/ FCDO KII template

Prior to each interview, provide a short overview of the evaluation, why you are speaking the interviewee today, and please:

- Confirm they are happy for you to record the interview and their participation
- Let them know they have the right to withdraw at any point (including after the interview) or not answer specific questions
- Confirm that they will not be quoted directly but may be quoted in general (by stakeholder type)
- Reconfirm that this is focused on the historic closed WISER programmes

Name of Interviewer	
Date: (DD/MM/YYYY)	
Name of interviewee	
Organisation:	
WISER Programme / delivery years	

Overview Questions

Can you provide an overview of your role within your organisation and as part of the closed WISER programme (and if any on the current)? This should include a short overview of what their organisation's did as part of the WISER programme, and its key WISER activities.

1. **Thanks for the overview of your programme, what were you trying to achieve when you / your organisation set out to undertake WISER activities work? (EQ5) (try to explore what the mechanism / triggers were for the mentioned results)**
    a. In your opinion, what were the standout / key results your organisation achieved by the end of the programme (for whom/ why etc.)?
    b. What was critical to you / your organisation's delivery and achieving these results? What hindered you / your organisation in achieving them?
    c. What was less successful from a results / delivery perspective and why?
    d. What do you consider WISER's contribution to.... (try to get from the interviewer what / how WISER has contributed to X, Y, Z)
    e. Are these results still being sustained and can you provide examples of this? This could be processes, systems, skills, cultural shifts etc
        i. If yes / no: why do you think this is?
    f. Did your organisations make commitments at the end of WISER? Was it able to achieve them? Was there a plan for results sustainability beyond the end of the programme that was delivered?

2. **Reflecting back to your experience / your organisations experiences on WISER, what was it trying to achieve and some of the results you have described, what were the key lessons learnt for delivering WISER?** For those projects operating in multiple contexts, please ask about this / below sub-questions across contexts **(EQ2)**
    a. If you were doing it again, what would you do differently (organisationally and from a delivery perspective) if you were undertaking a WISER style programme today, and what would you do the same and why?
    b. Were there key factors outside of WISER support that were important to you achieving your results?
    c. Did you have any engagement with other parts of the WISER programme in your country / region? How successful was this? Was this important to deliver your own work? What could be done better next time?
    d. In your opinion, could your style of WISER programming be delivered in other contexts successfully? Including FCAS?

3. **Working through organisations such as yours, a core overall goal of WISER was to improve decision making for producers, intermediaries, and users through access to improved WCIS,**
    a. If this was achieved, can you give examples of this in relation to your programme? What was less successful?
    b. Who were the main stakeholders you worked with to achieve this?
    c. If you are a producer of WCIS:
        i. What internal or external factors supported or stopped you utilising the enhanced WCIS within your organisation for decision making?
        ii. Thinking about activities beyond your organisation, if you worked with other intermediaries (local government, civil society, other WCIS partners) to improve their use of and decision making with your enhanced WCI what enabled and what limited their abilities to do so? Were there things within your organisation's control that could have been done better to support this? What worked well?
    d. **If you are an intermediary of WCIS:**
        i. What internal or external factors supported or stopped you utilising the enhanced WCIS you were provided with in your activities?
        ii. Thinking about activities beyond your organisation, if you worked with end users (farmers, people, agricultural officers etc.) what enabled and what limited their abilities to use improved WCI? Were there things within your organisation's control that could have been done better to support this? What worked well?

4. **Another goal was around improved WCIS partnerships and collaborations, if your organisation was involved in this, were these successful? Do they still exist? Can you tell me a little more about this?**

5. **Was your organisation engaged with any co-production processes, can you describe those please? In hindsight:**
    a. How useful do you think co-production processes are to the use, relevancy and uptake and usage of WCI by end users / other stakeholders? Can you provide examples of this?
    b. Were there any interesting insights from co-production processes undertaken? If you were starting the programme again what
    c. Have you used co-production processes on another other activities beyond WISER? Can you tell us about this if so?

6. How important do you think that WISER funding was to the success of your endeavours?

7. Is there anything else you'd like to raise which we haven't already covered today?

Thank you for participating in the interview, we're happy to feed back to you on the evaluation findings, please let us know if you want to see any related open available report. A few final admin related questions.

ANNEX 7: Delivering WCIS in FCAS and in Humanitarian Settings

This annex contains evidence gathered during the thematic evaluation focused on Fragile and Conflict Affected States (FCAS) and humanitarian settings.

Overview

A core theme, particularly emphasised by British Foreign, Commonwealth and Development Office (FCDO), for the thematic evaluation was a focus on relevant evidence and findings, where found, which came from and could be applied to Fragile and Conflict Affected Sates (FCAS) and humanitarian settings for Weather and Climate Information Services (WISER) style interventions. A new programme, Pioneering a Holistic approach to Energy and Nature-based Options in Middle East and North Africa (MENA) for Long-term stability (PHENOMENAL), has joined the current portfolio of FCDO regional programmes. This programme will deliver Weather and Climate Information Services (WCIS) in FCAS.

The terms of reference for this thematic evaluation had five core evaluation questions, two of which related to FCAS contexts (Evaluation Question (EQ) 1 and EQ4).[40]

Projects supported by WISER which were in scope for the thematic evaluation and could be described as operating in FCAS and/or in humanitarian settings including:

1. Elements of support to Bangladesh Meteorological Department – cyclone warnings[41] covering Rohingya settlements
2. Somalia and South Sudan National project (2018-2022), and other regional projects supporting the progress to achieve a Somali Met Agency under one ministry.
3. The Strengthening Climate Information Partnerships in East Africa Programme (SCIPEA) project which aimed to enhance early warning capabilities and decision-making by increasing resources for sustainable climate prediction skills. Although focused across Tanzania, Kenya and Ethiopia its work covered East Africa, including Somalia and South Sudan.
4. Humanitarian responses in Kenya and Uganda or provision of Weather and Climate Information (WCI) for key stakeholder groupings that could impact conflict dynamics (Kenyan pastoralists)
5. Afghanistan[42]
6. Forecasting support under PHENOMENAL to Yemen.

The following paragraphs summarise the findings related to FCAS and humanitarian settings, sourced from literature reviews, five key informant interviews with a range of stakeholders (covering FCDO, United Kingdom Meteorological Office (UKMO) and national partners in Africa and Asia) and primary data collection in Bangladesh and Kenya among pastoralists, farmers and Rohingya. A broader 'review and options' paper on future WCIS delivery in FCAS and humanitarian settings is provided at Annex 8.

[40] In providing evidence and recommendations we are considering FCAS and humanitarian settings, since WISER operates across both. We recognise that these terms are not interchangeable, and we have attempted to provide findings and recommendations for any WCIS intervention in a 'more challenging' context, i.e. not disaggregating between FCAS and humanitarian contexts.

[41] https://community.wmo.int/en/swfp-south-asia

[42] ARRCC intended to support Afghanistan Meteorological Department in capacity development to enhance and modernise current forecast processes and also provide support to establish Impact Based Forecasting. Some training and technical support took place. It was constrained due to poor data available and the project closed when the UK Government withdrew support to Afghanistan. WP1 – Country Report Afghanistan. September 2018 – August 2022.

Findings

1. WISER provides (selective) WCIS to programmes in FCAS and humanitarian settings, which are valued by recipients

WISER programmes have historically, and currently, provided WCIS to programmes in FCAS and humanitarian settings, such as Afghanistan (under the Asia Regional Resilience to a Changing Climate (ARRCC) programme; Somalia and Kenya under WISER and Yemen under the PHENOMENAL programme.

UKMO is sensitive to not providing a WCIS to other countries where there is an existing National Meteorological and Hydrological Service (NMHS), under the principle of not undermining existing NMHS. Where host governments have weak NMHS, UKMO is focussing on sharing forecasts and building capacity. In one anonymised interview a Government Official in a NMHS noted *'we don't get credible WCIS data from anywhere else, this is our only source'*.

Tailoring how UKMO works with counterparts in FCAS and humanitarian settings is critical and must be done to each environment; it might not necessarily be focused on delivering enhanced technology or capacity building in the first instance. In Somalia, attention needed to be focused on improving WCIS governance structures and drawing Met Services from across various ministries to one alone. As reported by various KIIs, this was achieved by taking a locally led approach, working through (and indeed strengthening capacity of) regional WCIS bodies, such as Intergovernmental Authority on Development Climate Prediction & Applications Centre (ICPAC). WISER supported ICPAC to directly engage with Somali stakeholders strategically and to lobby the Somali government to streamline their WCI governance structures to support a standalone Somali Met Agency. As of today, the law is in draft and is being discussed in parliament. This sensitivity to the wider operational context in FCAS has also been seen in one further highly fragile conflict affected country, with UKMO operating and engaging directly with the counterpart NMHS.[43]

2. As more countries become fragile and humanitarian needs continue to grow – expect weaker national meteorological services.

As countries become more fragile, NMHS will weaken rapidly (UKMO interviewee). In more fragile settings, very little observational data is usually available (as in the Afghanistan case and was the case in the Horn of Africa) – making countries more dependent on external sources of data and WCIS products. This is both a risk and opportunity for WISER/UKMO.

3. Unregulated WCIS providers in FCAS-humanitarian settings can lead to inconsistent and / or poor data quality that is difficult for end users to access, use and interpret

There is no global regulated or authoritative voice on WCIS. In FCAS-humanitarian settings, where there is likely to be no functioning NMHS, WCIS 'suppliers' are growing and there is no governance around the quality of data shared, e.g. (not FCDO supported) in Rohingya refugee camps in Bangladesh, Inter-Sector Coordination Group (the mechanism for coordination of the UN and NGO response) noted during research on landslide warning systems that they were offered multiple WCIS data from a range of sources.[44] 'Customers' of WCIS are faced with challenging decisions about who to trust, how to make informed decisions about which WCIS products they need, and how to make best use of these.

[43] Anonymised by Evaluation Team to protect identities.

[44] https://iri.columbia.edu/news/assessing-landslide-risk-in-rohingya-refugee-camps/ (Interview with lead author)

One interviewee (FCDO) noted that UKMO were not set up to operate in FCAS and humanitarian settings and that their risk appetite wasn't aligned to this operating environment.

4. WISER disaster response and anticipatory action was improved by increased access to, and wider dissemination of, WCI

Various bodies effectively utilised improved WCI to pre-emptively respond to potential health emergencies and environmental disasters. In Kenya, the Kenya Red Cross Society (KRSC), World Vision, and the National Drought Management Agency leveraged improved forecast data to identify potential emergencies and communities at risk[45], and to coordinate humanitarian responses[46].

Similarly, across WISER regions, including FCAS contexts, improved WCI was disseminated effectively to health bodies, with forecasts aiding projections of potential epidemic outbreaks[47]. This allowed for anticipatory drug stockpiling and other logistical bolstering actions.

> *'KRCS, World Vision and the National Drought Management Agency (NDMA) reported widespread use of the forecasting information to coordinate their humanitarian responses'[48].*

Drought, flooding, and heavy rainfall responses were also improved, again including in FCAS. In Uganda, students were relocated from flood-prone schools to safer community learning centres in response to WCI[49]. In the broader region, evidence indicated that the Strengthening Climate Information Partnership in East Africa (SCIPEA) early warning activities were beneficial during the 2016/17 drought,[50] with key stakeholders confirming this when interviewed for the evaluation. In an anonymous FCAS and humanitarian setting, actors used UKMO forecasts to plan weekly humanitarian actions – moving people living in Internally Displaced People's camps and building flood defences.

Regional actors, like Intergovernmental Authority on Development (IGAD), Drought Disaster Resilience and Sustainability Initiative and the Food Security and Nutrition Working Group integrated forecasts into their food security and nutrition updates, demonstrating the broader institutional use of climate information for resilience building.

In Kenya, pastoralists we interviewed as part of the evaluation reported that WCI information transmitted by WISER supported projects enabled them to use weather information to make decisions about livestock sales, migration routes, and water conservation. Before a drought hits, pastoralists have been advised to sell livestock to avoid losses, while others store water or migrate to areas with better pasture. These strategies have helped reduce livestock losses and prevent conflicts with neighbouring communities.

5. Contextual challenges in FCAS settings weren't always understood leading to inappropriate design of WCIS support. The importance of 'word of mouth' message transfer is underestimated.

Internet connections are often unstable, limited, and costly, especially in the FCAS context. Stable internet connections cannot be assumed to be in place and project design must accommodate for stretched, inconsistent, and expensive (especially for field researchers and end-users) internet connections. This issue can be compounded in fragile states[51].

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[45] WISER Pilot sustainability Assessment of Select WISER Projects 2022
[46] CRISPP Programme Completion Review 2020
[47] WISER Africa Resilience Indicator Project Impact Report Aug 2021
[48] CRISPP Programme Completion Review 2020
[49] WISER Africa Resilience Indicator Project Impact Report Aug 2021
[50] SCIPEA Programme Completion Review April 2017
[51] SOMALIA & SOUTH SUDAN Programme Completion Report August 2021

Poor quality internet connections impact on the delivery of training[52], the capacities of field researchers[53], WCI communicators[54], and the installation and maintenance of technical equipment[55].

'Stable internet with sufficient band width is not always available, [securing] equipment and resource to bring NMHS internet quality up […] would make a big difference to NMHS capacity and progress of projects'[56].

An over-dependence on generating digital WCIS (mobile messaging) in some humanitarian settings may be solving the wrong problem. In the Rohingya primary data collection, respondents overwhelmingly received WCIS from others in the community (NGOs or Government workers, by word of mouth (95%, N=110), with less than 2% receiving information on their mobile phones. Respondents also noted strong degrees of trust in receiving the information from local volunteers from NGO projects (99%). They described the information from NGO volunteers are being accurate, timely and reliable.

100% of respondents used WCIS information to secure their homes and belongings when warned of an imminent climate event.

When you have choices about the type of WCI you use what is most important to you?

- 99% = time the message arrives
- 84% = It's (locally) relevant to me
- 82% = who shared it with me

Rohingya primary data collection (n=101), September 2024

Other primary data from end users in both Kenya (fisherfolk / sellers, pastoralists, farmers, informal settlement dwellers) and Bangladesh (wheat farmers) highlighted that they are not necessarily the end users of WCI, with all reporting that they shared WCI data on with many others. Understanding these wider dissemination networks particularly in FCAS/humanitarian settings will maximise FCDO investment and results

6. WISER timeframes were consistently underestimated in project design and delivery: this is especially true in FCAS

Timeframes are particularly vulnerable to unexpected delays in FCAS, especially when relying upon regional or cross-border cooperation or fund transfers between regional partners[57]. Administrative and bureaucratic delays were common in FCAS, especially in regard to purchasing and contract processing[58]. KIIs with key stakeholders in WISER supported African contexts highlighted the impact of this.

Even with government support a project can experience lengthy, unexpected delays and so any project design should have flexible timeframes when 'working with government structures that implementation and approval relies on'[59]. Therefore, future projects need should factor in[60] additional flexibility in their timeframes for unforeseen bureaucratic hurdles or design work arounds should needs be.

7. There is limited evidence on UKMO ability to understand needs in FCAS-Humanitarian settings.

[52] Third Party Monitoring WISER Activity Verification Visit-Beneficiary Feedback Report March 2021
[53] CRISPP Programme Completion Report 2020
[54] SOMALIA & SOUTH SUDAN Programme Completion Report August 2021
[55] ENACTS Project extension review March 2018
[56] W2SIP Programme Completion Report July 2021
[57] ENACTS Programme Completion Report, logframe and other annexes March 2017
[58] AMDAR Programme Completion Report 2021
[59] UGANDA NATIONAL PROJECT Programme Completion Report 2020
[60] AMDAR Programme Completion Report 2021

UKMO has, and is, attempting to take an 'action first' approach in some FCAS or humanitarian settings (and all its end user focused work). Work is limited by UKMO ability to operate in some of these contexts and relatively limited experience in development programming. Where they have delivered interventions - they have done this through various co-production activities and intermediaries – engaging at the community level and understanding local contexts, finding out what communities' options would be in the event of a climate event, and understanding which WCIS sources and channels of information are available and trusted. This was done through a variety of ways including, i.e. 'community intermediaries' (HIGHWAY project), 'listening groups' (WeatherWise project), and key stakeholder engagement when working with other intermediary levels.

WCI products were then designed accordingly. For example:

a) In the Daraja programme, UKMO was investigating extreme heat and its impacts. One of the biggest concerns in the community was about food rotting quickly (not the temperature inside informal housing). This then informed how the forecasts were designed and disseminated.
b) In a fragile setting (anonymised for sensitivity), the UKMO forecast is the *'single source of data'*. The Government representative asked UKMO to adjust the geographical coverage of the forecasts shared to cover areas exposed to cyclones. UKMO adjusted the product accordingly.

8. FCDO has invested in getting WCI to humanitarian advisors (funded outside of WISER), this can be strengthened further

Under other FCDO programmes (SHEAR and now CLARE) monthly Climate Outlooks[61] on extreme weather are produced and shared widely across FCDO networks. These outlooks layer weather information over other risk data to identify the humanitarian risk in contexts of concern and help decision-making on whether to issue specific alerts in the monthly Humanitarian Early Warning Note (HEWN). The HEWN has a wide distribution across FCDO country offices and beyond to a range of international actors, and the Climate Outlooks are recognised as an important source of reliable seasonal forecasts by HEWN recipients.

Suggested actions for future WCIS work in FCAS or humanitarian settings:

FCDO focussed:

1. Enhance WCI civil service understanding and competencies

Design and roll out simple core professional development for relevant advisors on the importance of weather for agriculture/for health/in conflict etc. to build a broader base of advisor level expertise and understanding on the role of weather in their programming. Embed this into the evolving civil service curriculum and competency frameworks ensuring it is mandatory for specific types of advisors.

Design and deliver specific short courses on WCIS for humanitarian advisors. Humanitarian advisors need to be able to talk with confidence about weather and climate. UKMO previously designed some training

[61] Seasonal Climate Outlooks - Met Office, Seasonal Climate Outlooks - archive - Met Office

content on a UKMO training portal.[62] This could be refreshed/relaunched and used to generate new energy around the topic.

2. Enhance existing WCIS products and both utilise and maximise existing FCDO research and evidence focused contracts

Support FCDO staff at post to understand and act on data shared in the HEWN by building in a wraparound package of support for this, i.e. brief training to go alongside the HEWN plus a named point of contact for follow ups or detailed technical support. Ensure easy access to this for countries with higher humanitarian risks.[63]

3. Create formal and informal opportunities for climate, humanitarian and conflict advisors to exchange ideas and learn together.

A 'Natural Science Hazards Hub' is currently being designed within FCDO – there may be opportunities to 'design' in some of these interactions with new programme funding.

4. Explore opportunities to embed WISER style activity into FCDO humanitarian work and social protection activities

FCDO should map future FCDO humanitarian investments or those in FCAS that may overlap or engage with the need for WCI / WISER activities. This could result in opportunities to embed WCI/WISER activities at the business case or within the theories of change. This would need to be with the lens of not just producing or designing advanced WCI tools, data or products for these environments but working alongside teams to collectively understand the humanitarian context and partnerships at play so that more tailored solutions (or partnerships) can be created that have long term uses and can be sustained.

There may be opportunities to utilise existing FCDO investments to undertake mapping of the wider operating environment in FCAS and humanitarian settings and the impact of enhanced WCI in these spaces. For example, the Social Protection Technical Assistance, Advice, and Resources Facility, including BASIC (Better Assistance in Crises) Research and Technical Assistance, the Frontiers Technology Hub and other framework contracts.

5. Develop stronger links between UKMO and the Humanitarian Department

Similarly to the above, build on the successes of UKMO-Research and Evidence Department secondments, ensuring future secondments take place and have specific humanitarian lenses.

UKMO/FCDO focussed:

1. Understand the WCI FCAS and Humanitarian landscape and work through it

Where there are weak governance arrangements, identify through robust stakeholder and systems mapping, where the authoritative WCIS voices are (they may be in INGO's and/or UN agents) and work with them - in the hope that these voices will play a role in future WCIS delivery when governance

[62] Funded previously under tasks related to work on Indo Pacific Tilt. We believe this could be edited to be used more widely

[63] A UKMO secondee into FCDO recently ran some key informant interviews recently to understand how the HEWN was being used – the results of this could be useful to inform future work.

improves. They may also have existing mediums that can be used to channel tailored WCI through that can be used both in the longer and shorter term.

In environments where UKMO wont or is not able to operate in specific FCAS, take an arms length approach and focus on capacitating regional / national partners, INGO and UN bodies (etc.) and / or supplying them with tailored WCI for use in their operational settings.

2. Showcase enhanced WCIS with contextually relevant evidence

Where there are no functioning Government institutions, UKMO can pull together publicly available information and generate useful contextually products, showcasing what can be done and what value expert WCI advice brings. In this way, UK expertise can support data vacuums without creating dependencies.

3. UKMO develops its WCIS FCAS / humanitarian focused capacities and understanding in WCIS

As WISER Global expands into more FCAS and humanitarian settings there is a need to enhance its expertise in these areas. This could include additional team members who are dedicated to this and / or working with existing teams within the UKMO (i.e. the Expert Weather Hub) to assess their understanding of these settings, and whether their skills need enhancing to tailor for these contexts and stakeholders. This could include raising the profile of Weather Translators in met services more generally (see Annex 8).

Annex 8: Options and Ideas for future WCIS delivery in FCAS and humanitarian settings

This annex contains a selective set of options and ideas for consideration in future WCIS programme design and delivery in FCAS and humanitarian settings. It is drawn from original writing by Andrew Kruczkiewicz, Senior Staff Researcher at Columbia University and from research from the evaluation.

Overview

Weather Climate Information Services (WCIS) are gaining more attention and investment, but questions remain related to translating these investments into usability and usefulness of WCI. For example, we still do not know enough about how the information is used by certain intended audiences – both their initial use and how this changes over time. In FCAS settings this is even less understood. People living in fragile contexts and/or humanitarian settings are likely to be more vulnerable to extreme weather and climate events. They have less agency in understanding and perceiving risk, and thus fewer choices to take action in advance of weather events. These challenges are often underpinned by a variety of barriers (e.g. if they receive early warnings they may not be in the appropriate language or format; they may have no safe shelter options, and they may not have the resources to do anything with the WCI received etc.). In this instance, bilateral donors may be best to invest in intermediaries serving these communities – supporting clear early warning messages with appropriate and credible action-oriented advice.

With the rapid growth in the interest for WCIS, comes the responsibility to reflect carefully on both the success stories of uptake and integration but also the best practices for the reviewing and potential revision of WCIS. Roles and responsibilities of the intermediary organisations and 'steps' to think long term about job profiles and career tracks to facilitate the growth of that specific space within WCIS also need to be considered (Jagannathan et al. 2023).

Create multi-disciplinary teams and support a new set of career pathways

Generating useful WCIS in the first place is a complicated task. What makes it more complicated is the need for frequent revisions of how we generate and share WCIS. Lots of different thematic disciplines are needed to do this well – meteorologists, hydrologists, disaster risk specialists, agriculture specialists, community development workers, communications teams, journalists etc. The value chain requires that each actor has a clear role and responsibility – without this the potential impact of WCIS for end users decreases. In FCAS, perhaps roles and responsibilities will not be as clear as non-FCAS, however the potential overlap in roles and responsibilities can be described and adapted to ensure added value.

As multi-stakeholder processes emerge and evolve, we need to find incentives for each stakeholder to remain engaged. Career progression, or the lack therefore, within some of these professions means that we frequently lose skilled workers – intellectual property around creating useful WCIS gets lost, and it takes years to rebuild as new staff to enter the profession. We need to think about continued professional development pathways for critical WCIS workers and incentives for these to be established.

What works for the most vulnerable communities?

Many assumptions have been made that generating accurate WCIS leads to reduced vulnerability, with vulnerable stakeholders often being lumped into one homogenous bucker of needs and lack of resources. We must challenge these assumptions and generate robust evidence in asking and address the more specific question: *what works for whom, where, and when* in each operational context. i.e. *what works* for the most vulnerable groups within one population? *What works* for people living in Internally Displaced

People's camps? And *what works* for transient populations? The current spectrum of available (often anecdotal) success stories generally lack sufficient evidence on what works for different types of vulnerability. Therefore, we need stronger guidelines and standards for WCIS development, especially for FCAS and humanitarian settings. We need actors to be clearer on who exactly they are trying to reach – how, when and why, and how this will be evaluated.

Designing inclusive, actionable, sustainable WCIS

If we plan to invest in more inclusive, actionable, sustainable WCIS, which intend to reach the most vulnerable - we need to take an integrated approach centred on frequent feedback loops and adaptations to improve as the evidence base grows.

The next steps along the pathway towards more inclusive, actionable, sustainable WCIS which substantively support the most vulnerable, will require integrated approaches. The following steps should not be seen as linear or presented in a stand-alone way. Rather, depending on the context, they should be done in a certain order or perhaps in parallel – adapting to situations whereby priorities cannot be identified due to rapidly evolving socioeconomic and/or climate context (Guentchev et al. 2023).

4. A critical review of what has worked, what hasn't worked, and what we don't have sufficient evidence on

This review (which could take the form initially of an evidence gap map and potentially a deeper/later study) could be focused on which specific WCIS has led to:

a) Measurable results for FCAS and humanitarian contexts. What intervention design works best for the most vulnerable – e.g. how does that differ from 'generic' WCIS intervention design?

b) A state of strengthened WCIS capabilities to improve and use forecasts and risk information;

c) Ability to translate such information into various useful forms;

d) Ability to prioritize action specifically for the most vulnerable populations

The review should focus specifically on seasonal forecasts and sub seasonal forecasts, but all forecast timescales can be reviewed, as many National Meteorological and Hydrological Services (NMHS) have not yet built substantive capacity to develop their own forecasts - as well as lacking the capacity to disseminate, communicate, and integrate within decision making (Brasseur and Gallardo 2016).

5. Design your WCIS, products and tools intentionally: understand your products in context, who you want to reach with them and what you believe they will do with it

We must encourage people involved in all elements of WCIS to be 'intentional' about what the goal is of the WCIS they design and produce. For example, there is an emerging space for WCIS research and experimentation. This type of work is of significant value; however, the intention here is unlikely to inform any long-term decision making and/or policy. While once-off and/or short term 'successes' may occur as a result of a specific WCIS research output, it is important not to assume this can be translated or generalised into other contexts or can be scaled or sustained within the context it has been trailed without on-going support. For example, our interviewees noted short-term success from availability and use of forecast and risk information but if no attention is paid to developing sound governance structures, longer term planning around WCIS may never take place and actors may struggle to acquire and sustain funding for core activities. If the intention of the development of a short-term, project based, or research

driven WCIS was to inform the longer term (sustainable) development and integration of WCIS outputs, then this should be clear in the design. Additional ideas include being intentional about:

- **Your audience:** WCIS is a broad spectrum of activity with many actors. Each intervention needs to be clear on the intention of the work – the intended audience, the means of delivering WCIS to them, the role of all the critical actors.
- **Sustainability:** What needs to happen for WCIS to be delivered long term – sustainably in FCAS and humanitarian settings. Discussions related to sustainability within FCAS will be more complex than similar discussion in non-FCAS, however the variability of future socioeconomic states must be acknowledged to some extent.
- **Not stifling or replacing emerging NMHS** - Where we are attempting to reach populations in countries where there is a seriously constrained NMHS or a non-functioning one – we need to create options which will allow for capacity building when/if this becomes possible – i.e. not creating 'replacement' outsourced solutions. In these cases – is it ethical/preferable/possible to seek funding to 'buy in' WCIS services to reduce vulnerability in FCAS contexts?

6. Identify and support WCI career pathways and planning

In general, there is a need to develop and/or enhance roles that are designed specifically to exist long-term at the interface of WCIS relevant science, policy and practice. In FCAS and humanitarian settings, this is likely to be incredibly challenging – that said, there are opportunities for communities of practice or networks to emerge around WCIS delivery in these contexts.

These types of jobs, and the actions and decisions which make up these jobs, sometimes referred to as **Climate Science Translators**[64] (Enenkel and Kruczkiewicz 2022), are increasingly in demand, however there continues to be strong disincentives for scientists to enter, and particularly remain and build a career, at this interface. The complexity of climate and weather-related risks, solutions and challenges is growing, and even in the initial stages of defining and describing risk (even before describing changes in the risk and forecasting such changes), climate scientists must be engaged in a substantive way. However, many climate scientists up until now are not trained to engage in these complex, multi-sector settings. Many report that they risk losing their 'specialist' credibility if the spent time working with the humanitarian and disaster management sector - this is seen as being 'distracted' from the science. More must be done to close this gap and develop translators that are able see where the WCIS research is evolving and how to best link it to action and policy. Fortunately, there are good examples of this happening, such as the UK Met office and FCDO secondments to support work within the humanitarian space.[65]

Create incentives for multidisciplinary teams and new 'climate science translator' roles within these. The skillset of such teams should be interdisciplinary, but they should have strong roots in science and partnership management. Communication skills are important, as is the ability to build partnerships, trust, flexibility and the ability to tailor, harmonize and iterate both complex scientific and 'real-world' "data".

[64] CST could be defined as – professionals who broker discussions across academic domains, between scientists and practitioners in the field. CST could be created at the NMHS level and at the partner and donor levels. A typology of this type of work should be developed, with a clear value for money case. These roles could become critical in managing funds, relationships and the ever-changing scientific data space as availability of funds increase – e.g. the new loss and damage fund. NMHS's and donors will need to be agile and creative in attracting these funds for critical institutional strengthening work in WCIS.

[65] Current this is a UKMO to FCDO secondment. Secondments in reverse (FCDO to UKMO) would likely bring rich new perspectives on how these public actors can best forge new ways of working.

These blended skills are currently lacking. For educators training the next generation of WCIS experts - there is a gap in the market.

UK investments and Influence on the global stage

FCAS and humanitarian specific: The British Government is playing a critical role in the climate finance and fragility space, e.g. through its work in the *Coalition for Climate Action in Conflict and Fragile Settings* – which brings together climate and development actors, humanitarian organisations and researchers to explore avenues to scale up climate action in countries affected by conflict and fragility (co-convened by the International Committee of the Red Cross (ICRC), Overseas Development Institute (ODI) and the World Bank.) The British Foreign, Commonwealth and Development Office (FCDO) also contribute significant evidence and research on climate finance and fragility through the Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC) programme. There may be opportunities to bring coherence to the UK investments on climate and fragility (namely CLARE, WISER, SPARC, Least Developed Countries Initiative for Effective Adaptation and Resilience (LIFE-AR), UK role in the United Nations Framework Convention on Climate Change (UNFCCC) processes etc.) ensuring that lessons are appropriately shared, and research is used effectively for influencing.

Broader UK investments: more broadly, as the number and scale of global climate initiatives grow, there is an increased need for 'brokers'[66] to develop guidance and ways of working on how the evidence and experience from these initiatives can be used to influence global climate funds. Where possible, opportunities to co-ordinate action and results in these large-scale programmes should be prioritised, e.g. WISER could align some reporting to the Climate Risk and Early Warning Systems (CREWS) global data set[67] and/or the Early Warning for All emerging indicators[68].

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[66] These could be (for example) initiative leaders or climate advisors in donor departments.
[67] https://crews-initiative.org/dashboard/ and https://crews-initiative.org/measuring-impact/
[68] https://earlywarningsforall.org/site/early-warnings-all/early-warnings-all-dashboard

Annex 9: Framework to inform future needs assessments for WCIS actions at a country level

This annex contains a draft framework on Weather and Climate Information (WCI) actions to inform future Needs assessment at country level having into consideration six core elements: institutional framework, data infrastructure, technical capacity, policy and legal framework, user engagement and communication, and international cooperation.

Overview

To provide effective weather and climate information, particularly for seasonal forecasting relevant to ministries such as Agriculture, Water, and Energy, minimum governance mechanisms need to be in place at the national level. The following summary includes six core elements which would form the necessary governance mechanisms. The elements below could form a rapid diagnostic for donors on entry points and inform programme design – assessing the current provision and providing a framework for action.

1. Institutional Framework

Centralised National Meteorological and Hydrological Services (NMHS):

NMHS (or similar centralised structures such as Meteorological Agencies, Department etc., at national level) should be established and function under a centralized government department or ministry, such as the Ministry of Environment, Science, Technology, or similar. This body should be responsible for collecting, analysing, and disseminating weather and climate data.[69,70]

Inter-agency/department/ministry coordination:

A formal mechanism for coordination among various ministries (e.g., Agriculture, Water, Energy) and NMHS to ensure that climate data is tailored to the specific needs of each sector. This coordination can be facilitated through regular inter-agency meetings and the establishment of climate information focal points within each ministry[71].

2. Data Infrastructure

Observation Systems:

Robust networks of weather stations, radars, satellites, and other observation tools are essential. These systems should cover key climatic variables such as temperature, precipitation, soil moisture, and wind patterns to support accurate forecasting[72].

Data Management and Sharing Platforms:

Development of integrated data management systems that allow real-time data collection, storage, and sharing among relevant stakeholders. Platforms such as the Regional Climate Outlook Forums (RCOFs) e.g. South Asia Climate Outlook Forum (SASCOF) and Greater Horn of Africa Climate Outlook Forum (GHACOF)

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[69] World Meteorological Organization (WMO). "State of Climate Services." https://wmo.int/publication-series/state-of-climate-services

[70] UN Economic Commission for Africa (UNECA). "Climate Information Services." https://www.uneca.org/african-climate-policy-centre/climate-information-services

[71] World Meteorological Organization (WMO). "State of Climate Services." https://wmo.int/publication-series/state-of-climate-services

[72] UN Economic Commission for Africa (UNECA). "Climate Information Services." https://www.uneca.org/african-climate-policy-centre/climate-information-services

and National Climate Outlook Forums (NCOFs) play a critical role in this process by fostering collaboration and data sharing across regions and sectors[73,74].

3. Technical Capacity

Capacity Building:

Continuous training and capacity building for meteorologists, climate scientists, and sector-specific experts to ensure they can interpret and utilize climate data effectively. This also includes training for end-users in ministries to understand and apply the data in their decision-making processes.

Technical Support and Maintenance:

Ensuring that there is adequate technical support and regular maintenance for observation and data management systems to prevent data gaps and ensure reliability.

4. Policy and Legal Framework

National Climate Policy:

A comprehensive national climate policy that outlines the roles and responsibilities of various stakeholders in climate information provision. This policy should also integrate climate services into broader development and sectoral plans.

Legal Mandates:

Legislation that mandates the collection and sharing of climate data, as well as the use of climate information in planning and decision-making processes across different sectors.

5. User Engagement and Communication

Stakeholder Engagement:

Mechanisms for regular engagement with end-users, including farmers, water managers, and energy planners, to ensure that the climate information provided is relevant and user-friendly. This can include feedback loops where users can report back on the utility of the forecasts.

Communication Strategies:

Effective communication strategies to disseminate climate information to the public and specific user groups. This involves using various media channels and formats that are accessible and understandable to non-specialists.

6. International Cooperation

Collaboration with Regional and Global Institutions:

Participation in regional and global climate initiatives and frameworks, such as the Global Framework for Climate Services (GFCS) by the World Meteorological Organization (WMO), to leverage international expertise and resources.

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[73]**UN Economic Commission for Africa (UNECA).** "Climate Information Services." Available at: https://www.uneca.org/african-climate-policy-centre/climate-information-services

[74]**World Meteorological Organization (WMO)**. "State of Climate Services." Available at: https://wmo.int/publication-series/state-of-climate-services

Funding and Support from Donors:

Securing financial and technical support from international donors and development agencies to build and sustain climate information services.

These governance mechanisms collectively ensure that countries can provide reliable and relevant seasonal forecasts and other climate-related information to support critical sectors like agriculture, water, and energy, thereby enhancing resilience and informed decision-making.

Annex 10: WCIS Voices - Intermediaries & End users

This annex includes headline findings from our primary data collection activities, focusing on intermediaries and end users of Weather and Climate Information Services (WCIS) many of whom who had participated in or could have benefited from the Weather and Climate Information Services (WISER) supported activities in Africa and Asia.

Who we interviewed and what they told us

We interviewed fisherfolk, sellers, pastoralists, farmers and radio show presenters/producers in Kendu Bay, Marsabit, and Turkana[75], informal settlement dwellers in Nairobi, Kenya Meteorological Department (KMD) County Directors of Meteorological Services (CDMS) and their staff, and member of the Kenya County Disaster Management Units (CDMU). We also interviewed agricultural extension officers (SAAOs) and farmers in the same wheat farming districts in Bangladesh in which WISER operated, as well as people in camps in southern Bangladesh in which the Rohingya live. All are highly vulnerable to the effects of climate variability, and/or have roles that engage with WCIS and have previously received WISER support.

Table 19: Intermediaries interviewed

JOURNALISTS IN RADIO PARTICIPANTS IN WISER WEATHER WISE PROJECT	
Radio Producers	12 radio journalists, producers and programme managers across 11 radio shows between 8-16 June. Radio shows covered included: KBC radio, Radio Gulf, Lulu Radio, Kaya Radio, Bukedde Radio Jangwani Radio, SIFA FM, Mataa Radio, Storm FM, Radio Ekeyekon and Radio Janqwani
WEATHER MTAANI LEADERS PARTICIPANTS IN WISER DARAJA PROJECT (KIBERA, KENYA)	
Weather Mtaani Leaders	12 team leaders interviewed between 18 – 21 June 2024

The team conducted a total of 20 Focus Group Discussions (FGD) with Farmers, Pastoralists, Fisherfolk, and Fishersellers across Kendu Bay, Marsabit, and Turkana. This included 10 FGDs with Female, 8 FGDs with Male, and 2 FGD mixed.

Table 20: List of stakeholders consulted through Focus Group Discussions

Stakeholder	Rational	# of people consulted	Date
KENYA			
Farmers	Farmers who have lived for at least 5 years in Kendu Bay, Marsabit and Turkana, areas covered by radio shows supported by WISER-funded Weather Wise project	22 (8 Female, 14 Male)	July – August 2024
Pastoralists	Pastoralists who have lived for at least 5 years in Marsabit and Turkana, areas covered by radio shows supported by WISER-funded Weather Wise project	55 (27 Female, 28 Male)	July – August 2024
Fisherfolk	Fisherfolk who have lived for at least 5 years in Kendu Bay and Turkana, areas covered by radio	10 (5 Female, 5 Male)	July – August 2024

[75] Kendu Bay, Marsabit, and Turkana were areas covered by radio shows from the WISER-funded WeatherWise project. All participants in the KIIs or FGDs had lived in these areas for the past five years, ensuring they were present during the radio shows and could have benefited from them.

Stakeholder	Rational	# of people consulted	Date
	shows supported by WISER-funded Weather Wise project		
Fishersellers	Fisherfolk who have lived for at least 5 years in Kendu Bay, area covered by radio shows supported by WISER-funded Weather Wise project	22 (22 Female)	July – August 2024

Through Key Informant Interviews (KII), Focus Group Discussions (FGD) and quantitative surveys we asked them about their experiences under the WISER-funded programme activities[76] and their experiences today (now that WISER funding has stopped), related to weather climate information. Often, we tried to ask and triangulate answers across stakeholder types and through both types of surveys. These findings provide evidence support the final part of the thematic evaluation hypothesis: *'(h)ousehold level end users of WISER interventions trust, access and use WCIS information which contributes to improving their resilience'*. It should be noted that any statistics provided relate only to the household/quantitative surveys undertaken and that while many responses across sexes were similar; if there was a considerable difference in responses between males and females, these data are disaggregated.

In summary, many welcomed support and training through WISER-supported projects (DARAJA and WeatherWise in Kenya) and the importance of WCIS for their farmers and SAAOs for wheat rust affected areas in Bangladesh. These intermediary stakeholders often went on to convey improved WCI to their own constituents (i.e. farmers, informal settlement dwellers, fisherfolk and dwellers etc.) during and after WISER support, although with reduced frequency or with some quality comprised, after project support ended. Intermediaries, such as Weather Mtaanis and SAAOs, often used SMS/WhatsApp to convey messaging but they and their constituents continued to convey the importance of word of mouth as a medium for WCI flows. These end-users, in turn, often conveyed WCI messages widely within their own communities. Stakeholders reported that improved weather forecasts have helped reduce livestock losses, supported how farmers respond to agricultural disease outbreaks, mitigated the possibility of conflicts, and improved income generation. The overwhelming majority related that they experienced significant challenges related to WCIS accuracy, locality, and accessibility, with on-going funding constraints across contexts and stakeholder types being a significant issue.

Lives, Income, and Livelihoods: How vulnerable are they to weather changes?

The primary livelihoods across contexts—fishing, farming, and pastoralism—are intrinsically linked to weather patterns. Seasonal variations in rainfall, drought, and temperature significantly influence the productivity and income of these communities. This also holds for informal settlement dwellers in Nairobi who face significant weather climate challenges from flooding and extreme heat.

[76] We were not able to identify participants in the WISER-supported Wheat Rust project in Bangladesh due to the lack of identifying or geographic data from Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), the Evaluation Team selected districts affected by wheat rust in the past five years (Meherpur, Pabna, and Rajshahi). We then included farmers from these districts who had farmed wheat and resided there during the project period. Our survey focused on how they used sub-seasonal forecasts and advisories, and their actions based on information from local agricultural officers.

Kendu Bay, fisherfolk and fishsellers reported that their income fluctuates depending on weather conditions. Fisherfolk, who primarily depend on favourable lake conditions for fishing, earn between Kenyan Shillings (KES) 5,000 and KES 20,000 per month. KIIs reported that, bad weather, such as strong winds and rainstorms, often disrupt fishing activities, leading to damaged equipment and reduced catches. Fishsellers face similar challenges, particularly when heavy rains prevent them from drying fish, leading to spoilage and reduced market access.

'Storms damaged our fishing nets, and we lost several days of income.'

Fisherperson in Kendu Bay

'Heavy rain make drying fish impossible, and fish spoilage increases when access to the market is disrupted'

Fisherseller in Kendu Bay

'During the rainy season, it becomes hard for fishermen to transport their products to the market due to poor road conditions, and once the arrival of fish at the market is delayed, it spoils quickly'

Fisherperson in Turkana

In Marsabit and Turkana, pastoralists rely primarily on livestock for their income, with the health and market value of livestock varying significantly over seasons. During the rainy season, livestock prices peak for healthier animals, with goats for example, reportedly selling for up to KES 9,000. During droughts, prices fall sharply as animals become weak from lack of pasture and water, with goats selling for as little as KES 4,000.

Farmers in Marsabit, on the other hand, rely on both farming and livestock sales, but face significant challenges during dry periods when crops fail, and livestock die. This loss cycle can force pastoralists to migrate in search of pasture and water, increasing the risk of conflict over scarce resources, highlighting the importance of WCI. Greater emphasis is placed on farming activities or a diversification of livelihood strategies during periods of sustained drought.

In Turkana, fishing plays a key role in the livelihoods of Turkana communities. Fisherfolk face challenges during the rainy season, poor road conditions impact on transport time and have an impact on fish spoilage.

In Bangladesh, 95% of SAAOs reported that farmers in their catchment areas had suffered from Wheat Rust, which impacts crops significantly. Confirming this, 80% of farmers confirmed that they had suffered from wheat rust, with 55% of these farmers stating that they had lost up to 25% of their crops in the year they suffered from wheat rust.

Accessibility & Access: How are stakeholders (intermediaries & end users) receiving and sending enhanced WCI?

Weather Mtaani, staff from the KMD CDMS and radio producers in Africa (mainly Kenya) shared their experiences as WISER-supported WCI intermediaries, discussing how they conveyed WCI to their communities during and after WISER funding ended. Accessibility and access to WCI, particularly related to wheat rust advisories and sub-seasonal forecasts, were also commented on by Bangladesh stakeholders.

Key results from Weather Mtaani leaders and those who were recipients of WCI are:

- Reception and understanding of Weather Mtaani WCI: During WISER, 81% of those interviewed indicated they were recipients of WCI from the Weather Mtaani, and the majority understood the information they received very well, primarily due to the language the Weather Mtaani leaders used. Today, only 60% indicate they continue to receive WCI. 86% of those receiving WCI indicated they understood the WCI well, both during the DARAJA project and today. KIIs with Weather Mtaani leaders confirmed that most leaders received weather information from KMD via intermediaries such as KDI (which worked with different stakeholders to co-produce WCI in a format that was easily understood by informal settlement dwellers) on WhatsApp or directly through email. During WISER, this information was seen as crucial for planning and community preparedness.
- Frequency of Weather Mtaani WCI dissemination: post-DARAJA, the frequency of dissemination of WCI and the quality of the WCI has varied considerably. As with other intermediaries interviewed, the frequency of communication between the Weather Mtaani and their contacts has diminished over time. For instance, during the DARAJA project, most respondents reported receiving weather updates weekly. But, among those (n = 80) contacts who continue to receive WCI from an Mtaani, just 30% reported receiving WCI within the past month.
- Reach of Weather Mtaani WCI: Many of the Weather Mtaani have expanded their set of contacts long after the programme ended, indicating that their lists are not merely being sustained – in which case, we would expect their impact and reach to dwindle over time - rather, they seem to be adding new contacts, as 29% of the contacts we interviewed first received weather updates in 2023 or 2024.
  Additionally, Mtaani contacts are not the "end of the line" of WCI dissemination. Indeed, among those who received WCI during the DARAJA programme, the average respondent shared that WCI with another 22.2 individuals. Transmission rates have gone up slightly today with 89% reported sharing WCI others today, on average with 29 additional people[77].
- Anticipatory actions based on Weather Mtaani WCI: The main actions from those who received WCI through the Weather Mtaani system today include: moving belongings to safe space, carrying out house repairs, cleaning or repairing their own household drains and those within their communities. Only 4% reported no action after receiving WCI.
- Trust and impact of Weather Mtaani WCI: Many Weather Mtaani interviewed noted that community trust in WCI messages grew as they saw practical benefits, especially during floods. This has been evidenced by data gathered from Mtaani contacts regarding the devastating floods in Nairobi (and across Kenya) in July of 2024. During this time, 62% of Mtaani contacts were

[77] It should be noted that the 'average' could be deceptive. Some recipients of WCI from Weather Mtaani leaders did not share it with anyone, while others shared it with over 100 further recipients. Understanding incentives and hindering factors to share WCI further may support greater reach and uptake.

impacted by the floods, with 75% receiving WCI from Mtaanis before the floods and 94% reporting that it helped them prepare for flooding.

Nearly all respondents living around Lake Victoria within the coverage areas of the WeatherWise programme, reported listening to the radio to hear weather information during the project. Most respondents reported listening for this purpose daily or weekly. However, listenership is not exclusive to – or even primarily associated with – Gulf Radio, the main beneficiary radio station in this area of the Lake Victoria region. 39% of respondents had listened to Gulf Radio for weather/climate information at some point; a further 7% had listened to Ramogi FM for this purpose, making it the most popular radio station in the sample. In Turkana, KIIs also reported that radio stations such as Ekeyokon and Maata are the primary sources of weather information, with forecasts provided daily, weekly, and seasonally. Other popular stations included Namlolwe, Lake Victoria Radio, and Citizen FM, each with between 12% and 19% of listeners. In Marsabit, stakeholders reported that they have better access to formal weather forecasts. Daily weather updates are broadcast through local stations like Radio Jangwani and Ekeyokon, providing communities with timely information on upcoming weather patterns.

'One of the workshops involved the journalists and the scientists. The scientists helped us understand the more complex terms they use so that we can package it in a way our listeners can understand'

'We still do once in a while interview the experts of KMD when matters arise to either prepare people for what is coming up in the season occasionally, but that consistency is not there'

Radio show producers, participant to Weather Wise

Compared to programme beneficiaries in Nairobi's informal settlements (Mtaani contacts), the language of dissemination is more important in the Lake Victoria area, where a meaningful share of respondents do not speak Kiswahili. Of our sample, the vast majority speak Luo as their first language, and 10.6 percent of respondents do not speak Kiswahili at all. A significant share of the population will be excluded from hearing the relevant information if it is not reported in Luo, especially because many respondents may speak Kiswahili at a less-than-advanced level. Gulf Radio broadcasts appear to have been made in the Luo vernacular, as 99% of Luo-speaking respondents who listened to Gulf Radio during the programme period indicate WCI was provided in Luo.

Among the smaller set of respondents who receive WCI from Gulf Radio currently, all (100%) report that the broadcasts are in Luo. This appears to be true of other radio stations that provided WCI as well, not just Gulf Radio.

In Kendu Bay, WCI is often used to make consequential decisions regarding agricultural production and fishing. Thinking about the period 2018-2020, 72% of respondents who received WCI from the radio say they used the information; a similar rate (71%) say the same for current WCI they receive from the radio. Among fisherfolk who received WCI from the radio during 2018-2020, 37% say they changed their fishing patterns or decision to go on the lake in response to WCI. This rate is even higher at present – 43% of fisherfolk who received WCI from the radio recently say they changed their fishing patterns in response.

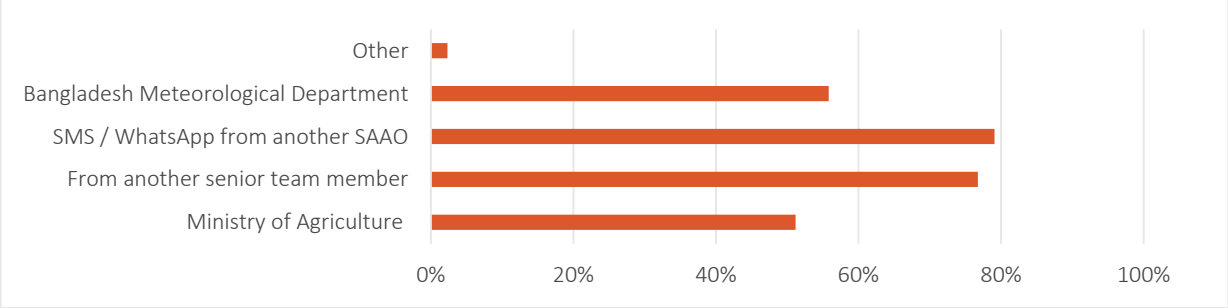
Farmers also report significant impacts of WCI. Among individuals engaged in farming and who received WCI in the relevant period (e.g., 2018-2020 or at present), approximately 54%, in each period, reported making farming decisions based on WCI (54% in 2018-2020, 54% more recently).

Nearly all radio show producers, who had participated in WeatherWise, praised the capacity-building workshops provided by the BBC Media Action. They reported that the training significantly enhanced their understanding of meteorological information and improved their ability to communicate this information effectively to their audiences. As one commented, *'(o)ne of the workshops involved the journalists and the scientists. The scientists helped us understand the more complex terms they use so that we can package it in a way our listeners can understand'.* They highlighted the positive collaboration with KMD on the project and how they had significantly increased the number of WCI focused segments on their radio shows during WISER. That being said, many highlighted that the frequency of WCI focused radio shows on their stations has declined since WISER support ended, one commenting: *'We still do once in a while interview the experts of KMD when matters arise to either prepare people for what is coming up in the season occasionally, but that consistency is not there'.*

Like the Mtaani contacts, many radio listeners – around 80%, either during WeatherWise or currently – share WCI they receive with other people, especially their family, friends / neighbours, as well as work colleagues. Including those who do not share information with anyone, the typical respondent shares WCI with 7.4 other individuals at present (6.8 other individuals during the period 2018-2020).

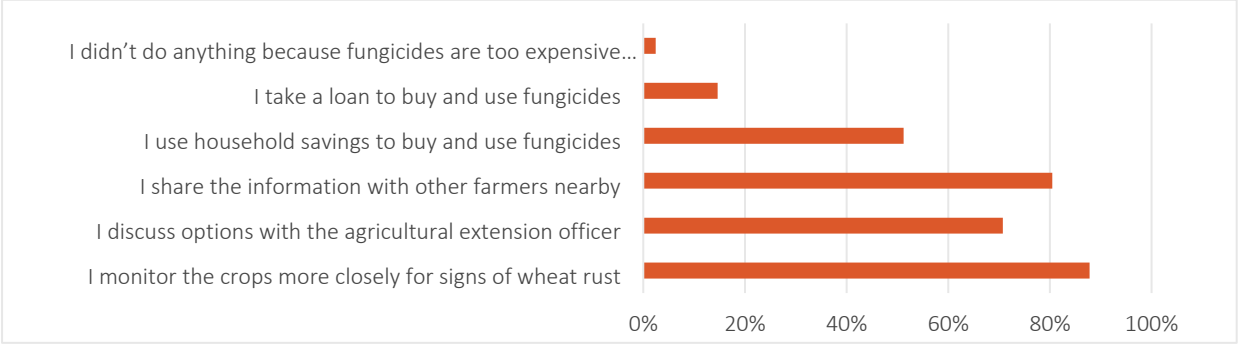
In Bangladesh, all SAAOs reported sharing both weather forecasts and advisories to farmers, sharing reportedly sub-seasonal forecasts often weekly or bi-weekly, with the same frequency in the growing season for advisories. All SAAOs also stated they did this either in person or over the phone / WhatsApp. The WCI they used for this was in the main received from other team members. This frequency and way of WCI transmission was broadly confirmed by Bangladeshi farmers.

Graph 1: Where do SAAOs get their WCI information from?



Most Bangladeshi farmers (95%) had been receiving weather advisories for over three years, and most have previously received both wheat rust advisories and weather forecasts (84%), 18% just wheat rust advisories and only 4% never receiving any. Most (81%) said they received wheat rust advisories in person, with 54% saying they also received it through others in the community by phone (i.e. via WhatsApp / SMS). All farmers said they best way to receive the advisories was in person.

Graph 2: What do Bangladeshi farmers do with the wheat rust advisories they receive?



Across all contexts and stakeholders, communities rely on various sources of weather information, including radio, mobile phones, and communal networks, with the importance of word of mouth being highlighted as important in both African and Asian contexts.

In Bangladesh in particular, farmers wanted to receive more WCI today in person, but this could be a function of the fact that the WCI is overwhelming shared by SAAOs, who they might wish to also view their crops and provide advisories.

'Call our customers and advise them not to come to the market if the weather is unfavourable'

Fisherseller in Kendu Bay

'We sell livestock before a drought hits and migrate to places with better pasture, although sometimes this leads to conflict with neighbouring communities'

Farmer in Marsabit

'With weather information, we can prepare better, selling livestock early and storing pasture for the dry season'

'Weather forecasts help us sell livestock before droughts and plan water storage to prepare for the dry season'

Pastoralists in Turkana

WCI related actions: How is WCI making a difference in people's lives?

Fisherfolk, farmers, and pastoralists alike rely on weather forecasts to mitigate risks and make informed decisions about their livelihoods.

In Kendu Bay, fisherfolk continue fishing despite adverse forecasts due to economic pressure, though many sellers shift to alternative livelihood activities such as farming or running small businesses during bad weather. Weather information is critical for fish sellers, with forecasts accessed via radio stations like Ekeyokon and Maata Radio. Seasonal and monthly forecasts helped pastoralists decide on livestock sales, grazing areas, and water conservation.

In Marsabit, pastoralists and farmers use weather information to make decisions about livestock sales, migration routes, and water conservation. Before a drought hits, pastoralists have been advised to sell livestock to avoid losses, while others store water or migrate to areas with better pasture. These strategies have helped reduce livestock losses and prevent conflicts with neighbouring communities.

In Turkana, similar adaptive strategies are employed. Respondents emphasized the importance selling livestock before droughts, storing pasture, and using weather forecasts to plan for farming and grazing activities. However, respondents also highlighted the need for more localized forecasts to prevent "blind" migrations and ensure better planning.

Similarly, in Turkana, weather information plays a crucial role in guiding pastoral and farming activities. Seasonal forecasts, in particular, are valuable for planning livestock sales before droughts, identifying safe grazing areas, and managing water resources. However, respondents noted limitations in the accuracy and frequency of forecasts, as well as gaps in the coverage of local areas.

In Nairobi, many Weather Mtaani leaders and community members viewed the DARAJA project positively, having made significant impacts on community preparedness, cohesion and building a sense of community and collective action when active.

In Bangladesh, SAAOs reported overwhelmingly (between 90-97%) that they believed that farmers either changed the planting and harvest timing or crop type based on sub-seasonal forecasts shared. In the case of wheat rust, they all stated that they believed that farmers used pesticides or fungicides

based on their advisories. That being said farmers overwhelmingly did not find the current forecasts or advisories useful.

Box 6: WCI insights from a Female Pastoralists in Turkana

'Upon receiving weather information concerning rain, I will make sure all my livestock is grazing away from the riverbank so as to prevent the risk of them being washed by the rainwater. One way the weather helps me is, as a pastoralist I am able to identify grazing area for my herd away from raiders.

We use the weather information from Ekeyokon radio which is very important it has enabled us to understand about boundaries which was the major cause of conflict between pastorals in the country.

As a farmer the forecast helps me plan on land preparation, planting, harvesting, water conservation and better storage of the farm produce so as to prevent it from being destroyed by rain. Information from the radio made an impact on our livestock herds because we have fewer livestock losses because pastoralists have received information about disease outbreak. We received information about vaccines given to prevent livestock from dying. This has promoted a healthier herd.

Apart from pastoral and farming activities most of us can indulge in business activities such as retailers, sisal making, charcoal business and beadwork because, it enables us bring food to the table other than depending on farming which is hindered by harsh weather conditions.

We receive information about weather and climate change in our local language which makes it easy for us to understand and take precautions, radio stations should use mass communication to increase number of people getting information in the village this will make people gain trust about their weather information since seeing is believing. This will impact our lives because people will be able to get education about weather and climate information and how to apply them in our daily life.

If people are given radios to ensure they all receive information many people will not be affected because they will prepare well for the coming situation. In my household we will ensure that everybody gets the information and puts it in practise to protect our livestock from dying and crops from drying up to have food in the dry or rainy seasons.'

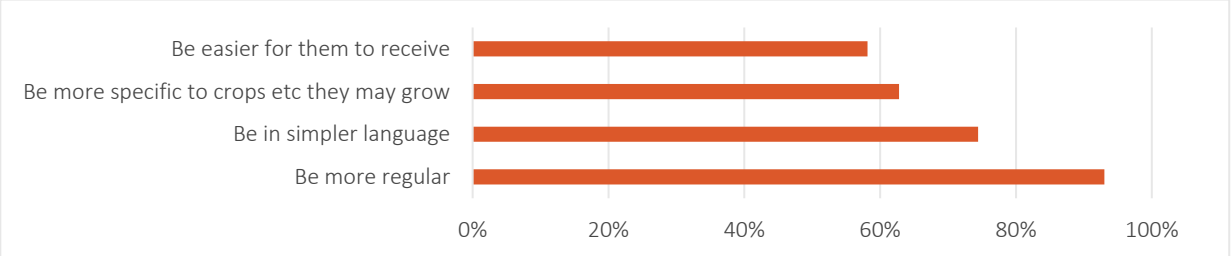
Female Pastoralist Turkana, August 2024

WCI today: What challenges & opportunities exist for enhanced WCIS impacts on intermediaries and end users?

The evidence presented above highlights the often-positive impacts that enhanced WCIS can have on people's lives, other evidence though suggests that some limiting factors persist.

In Bangladesh SAAOs felt that advisories and forecasts could be more specific to farmers crops, simpler language and most significantly be more regular (Graph 3). This was echoed by the farmers who felt that wheat advisories could be improved by being clearer from a messaging perspective and be more regular (78%) and be more locally relevant (62%).

Graph 3: What SAAO's think could be done to improve forecasts or advisories for farmers



In Kendu Bay, respondents expressed their frustration with the lack of localized, accurate forecasts. Most Kendu Bay fishermen rely on informal methods or communal discussions to assess weather

before fishing. Many of these fisherfolk KIIs reported that they did not trust weather information from several radio stations, prompting a call for more localized information, Fisherfolk and sellers suggested the establishment of local weather stations or the use of Unstructured Supplementary Service Data (USSD) codes, which would allow those that don't listen to the radio to receive WCI and forecasts on their phones in real time. This would enhance their ability to plan fishing trips and market activities more effectively. Weather forecasts from radio stations were often considered inaccurate, which reduced their utility.

In Marsabit and Turkana, respondents highlighted the need for more detailed and accessible weather updates. In Marsabit, there was a strong preference for SMS-based alerts for those without access to radios. In Turkana, respondents recommended extending radio broadcast times, improving frequencies, and providing weather updates earlier in the day to ensure that more people, especially those in remote areas, receive timely information.

In the informal settlements in Nairobi, Weather Mtaani leaders reported that after WISER had ended, participation levels in community-based WCI dropped significantly. While some community members still showed interest and asked for weather information, overall engagement in organised activities like clean-ups decreased drastically due to the lack of incentives and resource. Many also requested better communication regarding the project today and whether it will continue.

KMD local officials also highlighted some key challenges today including: a lack of advisory support being provided by the Ministry of Agriculture making it harder for users to interpret the data; the on-going impact of language barriers as messages continue to be sent by them to end-users in English; a significant challenge with the lack of funding for continuous dissemination and infrastructure maintenance; and the overall lack of team members that have been trained to interpret the data.

'They trust their own observations and older fishermen's advisor more than radio forecasts'

'We need more localised and reliable weather forecasts to avoid unnecessary risks

Fisherpeople in Kendu Bay

'Radio Ekeyokon should increase its broadcast times and frequency so that more people can receive weather updates in remote areas'

Pastoralist in Turkana

'The challenge is that we are not reaching many people, there are very few people who were trained on interpreting the weather information after KMD releases it'

KMD local official

Sustainability was a critical issue for nearly every respondent across stakeholder groups for a range of reasons, with sustained budgets being a core issue. For example:

- 97% of SAAOs interviewed in Bangladesh paid for their own travel and phones for their work, this was echoed by Mtaani and radio producers in Africa
- A major challenge highlighted by all Mtaani was the lack of financial resources to buy airtime for financial support (airtime for SMS, stipends) and logistical support (cleaning tools, protective gear) to continue effective dissemination of weather information and community activities by Mtaanis[78]

[78] Under WISER Daraja funding, Weather Mtaani leaders received a monthly contribution to phone airtime.

- Many radio stations, although not all, faced significant challenges in sustaining their weather programmes after WISER due to a lack of funding. This, they suggest has led to a decrease in the quality and frequency of the programme.

Annex 11a - WISER Global Theory of Change Narrative

Thematic Evaluation Team

April 2024 (originally submitted)

September 2024 (revised with suggested amendments)

Table of Contents

WISER Global Theory of Change: suggested amendments September 2024

1. Document Purpose

This document comprises two core sections:

- Section 1 covers the original WISER Global[79] theory of change (ToC) deliverable submitted in April 2024 following work with FCDO and MO on co-developing a ToC that could be utilised across contexts by WISER stakeholders-
- Section 2 covers suggested amendments to the original deliverable based on evidence gathered as part of the thematic evaluation. It also maps evidence against the original evaluation hypotheses which were used to frame data collection tools and approaches and can be broadly seen to be reflective of the high-level WISER programme trajectory.

2. WISER Global Theory of Change, April 2024

Why are we creating a WISER Portfolio level Theory of Change?

A ToC helps explain how change happens and specifically what changes your investment is expected to deliver – it is normally supported by evidence, the identification of key stakeholders and the changes that may be supported by your programme, alongside any assumptions that a programme (and its delivery team) is making about how change happens. ToCs are linked to, but should not just be, a narrative description of a results framework.

While ToCs had existed for all historic and current WISER programmes, covering their different approaches and their broad range of expected outcomes, there was not one unifying ToC at the portfolio or global level. While important for evaluative purposes, stakeholders also discussed the need for this to support the WISER elevator pitch or articulation of the 'WISER' approach to build a shared narrative around the higher-level impacts to which all the WISER interventions aim to contribute. This was considered particularly important as the WISER programme may scale and replicate in new contexts.

The narrative below is purposively kept concise to allow for it to be used as a communication tool. Mapped out below is reflections on WISER portfolio anticipated success in five years' time, a jointly agreed vision statement, why WISER is needed, change areas and key assumptions.

What would success look like for WISER in five years' time?

As part of both workshops, we asked staff what success would look like in five years' time for WISER, this was to allow us to then track back how this could be achieved, or the change pathways.

Many noted a range of statements at the programme impact/outcome level, e.g.:

- National Meteorological and Hydrological Services (NMHS) have improved capacity to produce Weather and Climate Information Services (WCIS) and share it with vulnerable communities
- Improving resilience to climate impacts for vulnerable communities

[79] Please note that when we originally worked on the ToC, it was named as the WISER portfolio ToC, we now use WISER global in line with FCDO and MO who refer to it as such.

Others noted aspirations around WISER **influencing** beyond programme boundaries, e.g.:

- WISER evidence influences WMO, UNFCCC and climate finance funds
- WCIS grow and sustain beyond WISER funding
- WISER creates a 'global good' knowledge base which captures regional differences for sustainability, lesson learning and scale up on WISER work to date
- WISER as demonstrated a set of principles/approaches that could be adopted by private sector and other national governments
- WISER has supported sustainable income streams for NMHS funding
- WISER funds mandated regional/national initiatives and doesn't have any projects of its own

Many noted aspirations for strong **impact level evidence** on, e.g.:

- Improved resilience
- Institutional strengthening and sustainability of WISER investments – i.e. sustained networks
- Scalable solutions on how improved WCIS build resilience across a range of contexts and stakeholders
- WISER policy work has demonstrated a strong return on investment in terms of lives saved and economic losses avoided

Some staff noted ambitions on the **processes** around WISER and its **future**, e.g.:

- Equitable partnerships between Northern based and Southern based organisations
- WISER as a recognised and credible brand with an increasing portfolio and widening pool of investors
- Clear response/use of Artificial Intelligence adding value and delivering for the most vulnerable

The WISER Vision

As part of the dialogue with FCDO and the Met Office (MO), the following WISER portfolio vision statement was created:

To support equitable access to accurate, actionable and trusted weather and climate services that make a difference to peoples' lives.

The need for WISER

Staff explored the problems which WISER seeks to address. These were summarised by a need to:

- Create Low- and Middle-Income Country NMHS led solutions
- Build NMHS capacity (improved communications and systems)
- Support the generation of NMHS action plans
- Generate tailored and appropriate climate hazard messaging, which reaches the most vulnerable
- Ensure that the most vulnerable people receive information to support decisions, which lead to actions
- Support donor alignment on Met services investment

Change areas

Collectively, three change areas have been identified in the portfolio ToC.

These are briefly explained below.

1. Transformed generation and use of WCIS by a diverse group of stakeholders

   WISER programme work aims to improve the capacity, systems and tools in NMHS, through direct training of staff and the provision of new tools and process (such as seasonal or impact-based forecasting, and early warning systems). This is done with a view to improving their (NMHSs) production and delivery of WCIS to a range of stakeholders, including intermediaries and users. Much of this work is informed by co-production principles, which are seen to support the generation of more useful and accessible WCIS (linked with assumptions 1, 2, 3, 5, 7). Examples of this work include: strengthening the capacity of media professionals and technical experts to respond to climate and weather information needs of audiences; improving NMHS at county and/or national level; co-production of early warning products – e.g. multi-hazard early warning service in Tanzania introduced impact based multi hazard products.

2. Most vulnerable people more informed to make decisions and take action to mitigate effects of climate shocks and hazards

   WISER programme work aims to strengthen the capacity of WCIS producers, intermediaries and users. It also seeks to strengthen the integration of these stakeholders, through co-production processes so that producers are informed by WCIS user needs. Climate information knowledge and capacities are generated and exchanged across these stakeholders and end users (most vulnerable people) receive relevant and timely information, which will help them make informed decisions around climate shocks and reduce climate related risk / exposure. (Linked with assumptions 3, 5, 8). Examples of this work include: packaging WCIS for targeted households (e.g. 300,000 households were targeted through the Coastal Resilience and Improving Services for Potato Production, Kenya – CRISPP), and stakeholders (e.g. marine information supplied to small transport vessels in Lake Victoria – HIGHWAY); Translating WCIS into appropriate formats and languages – e.g. 22 districts in Uganda were targeted.

3. Improved Met Services enabling environment

   WISER supports regional Met services – building climate information partnerships, supporting collaboration and enhancing the capacity of NHMS systems and the adoption of new tools. It also builds a knowledge base and supports data and knowledge exchange across a range of partners – collectively this strengthens the quality of WCI data and improves the Met Services enabling environment (ideally leading to increased demand for quality WCIS). In parallel, FCDO engages in a range of climate diplomacy tasks which also seek to contribute to an improved enabling environment – where quality WCI data is generated and utilised to improve the resilience of the most vulnerable. (Linked with assumptions 1, 2, 4, 6, 7). Examples of this work include WISER support to ICPAC – leading to improved forecasting for the Greater Horn of Africa with 92 regional and national organisations given access to climate services.

The impact WISER contributes to

Collectively all WISER programmes contribute to the following two impacts:

- Empowered people and organisations are better able to adapt to the impact of climate change and extreme weather events
- Improved resilience to the impacts of climate change – reducing the vulnerability of the poorest

Table 1 provides an overview of key WISER stakeholder groupings in the WISER ecosystem.

Table 21: WISER Stakeholders

Stakeholder[80]	Examples
WCIS producers	▪ NMHS ▪ Citizens sharing WCIS data ▪ Regional Climate Centres
WCIS end users	▪ Farmers ▪ Fishermen and women ▪ Vulnerable people
WCIS intermediaries	▪ NGOs taking WCIS and sharing it to community level e.g. Red Cross ▪ Journalists and news agencies sharing WCIS ▪ Any service provider sharing WCIS (public or private) ▪ Sub national government stakeholders who may use/translate WCIS to local communities ▪ WISER projects (at national and regional levels) ▪ NMHS ▪ Citizens sharing WCIS data ▪ Regional Climate Centres
Wider Government	▪ Other national government departments who influence decisions/budgets of Met services
National / Regional / international bodies	▪ Regional WCIS platforms ▪ World Meteorological Organisation ▪ National climate outlook forums
Indirect stakeholders	▪ Other donors/actors who adopt or adapt WISER approaches or are influenced positively by WISER effects but not directly targeted.

Stakeholders by ToC level

Different stakeholders will experience impacts across the various levels of the portfolio ToC. E.g.

Input:	WCIS producers, intermediaries
Output:	WCIS producers, end users, intermediaries, wider Government, National/Regional/international bodies
Intermediate Outcome:	WCIS producers, end users, intermediaries, wider Government, National/Regional/international bodies
Outcome:	WCIS producers, end users, intermediaries, wider Government, National/Regional/international bodies, indirect stakeholders
Impact:	WCIS producers, end users, intermediaries, wider Government, National/Regional/international bodies, indirect stakeholders

[80] Some Stakeholders have various functions and may appear in more than one category.

Assumptions we make about the WISER portfolio theory of change

1. World Meteorological Organisation is supporting effective national Met services policy at a national level
2. NMHS have the space to absorb capacity building and systems strengthening
3. NMHS will respond in ways that reduce vulnerability of the poorest and have effective ways of reaching them
4. International development funding is aligned with and responds to local needs
5. Upstream and downstream sharing of data takes place effectively
6. National politicians and senior decision makers buy into WISER objectives and act on enhanced WCIS to improve resilience of vulnerable people
7. WISER builds strong incentives for changes to be adopted/sustained
8. Providing vulnerable people with improved WCIS data is an effective way to enhance their resilience

Thematic evaluation team reflections on creating the portfolio ToC

As part of the WISER thematic evaluation, over its Inception and early delivery phase (October 2023-March 2024), the Evaluation Team mapped outputs and outcomes from across the WISER portfolio of three current programmes and developed a strawman Portfolio level ToC on an online whiteboard (image below) to use with key stakeholders in workshops.

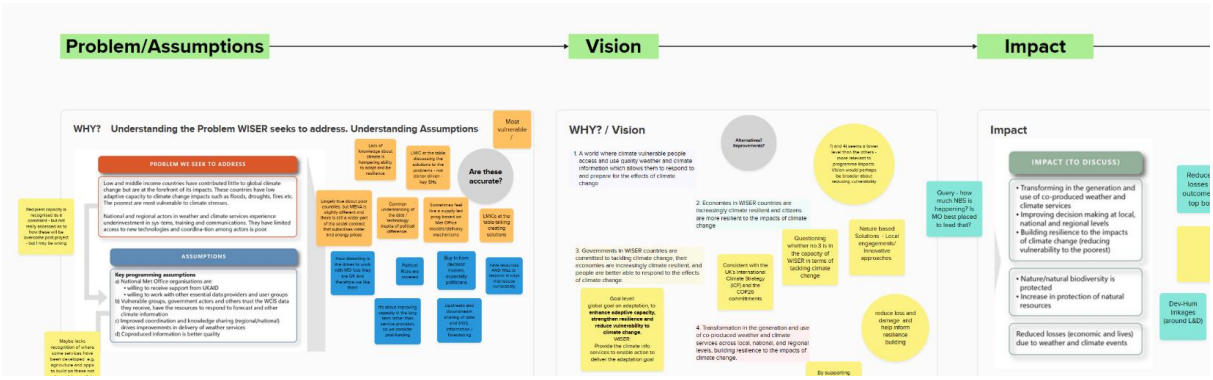


Figure 10 Screenshot from online Whiteboarding exercise

Using this as a starting point, two workshops were undertaken, one with FCDO and one with the Met Office (MO), with some FCDO representation, to further refine and validate the portfolio ToC. Further time for input was also given to both the FCDO and MO and additional small meetings were held with people who were unable to attend the workshops. A common reflection from both the FCDO and the MO on the workshops was the space and time it gave to come together to discuss WISER as a wider team.

FCDO engagement

We began with an FCDO online workshop with representatives invited from all WISER programmes. This session led to new outcome level text suggestions around climate diplomacy (influencing at national and international levels) and the importance of WISER evidence and networks in achieving some of these aspirations. Some staff also noted potential linkages with nature-based solutions – potentially demonstrating the rising importance of this theme within UK Government. Discussions also led to questions about how WISER data could be leveraged further in other FCDO programmes (e.g. in parametric (or index based) insurance). Staff also noted that the 'cost benefit analysis' or return on

investment of resilience remained a challenge – invest now and reduce losses versus the costs of humanitarian relief and reconstruction – highlighting the perpetual challenge of evidencing the value of investing now – which is sometimes politically challenging.

FCDO staff naturally considered the wider policy ambitions of WISER – UK, partner government and international policy spaces. One staff member noted that WISER impacts should align with the global goal on adaptation (i.e. delivering action to contribute to the global goal) - to enhance adaptive capacity and resilience; to reduce vulnerability, with a view to contributing to sustainable development.[81] Loss and damage were also raised frequently. Staff also noted that there were WISER linked activities, which were not Met Office led.

FCDO staff also discussed some of the risks and challenges around WCIS data and the emerging 'suppliers' of data without due diligence and data quality. FCDO staff also commented that they'd enjoyed learning about other WISER interventions, and it had been useful to think about the 'whole' in a participatory space and would like to do more learning and sharing style work in the future.

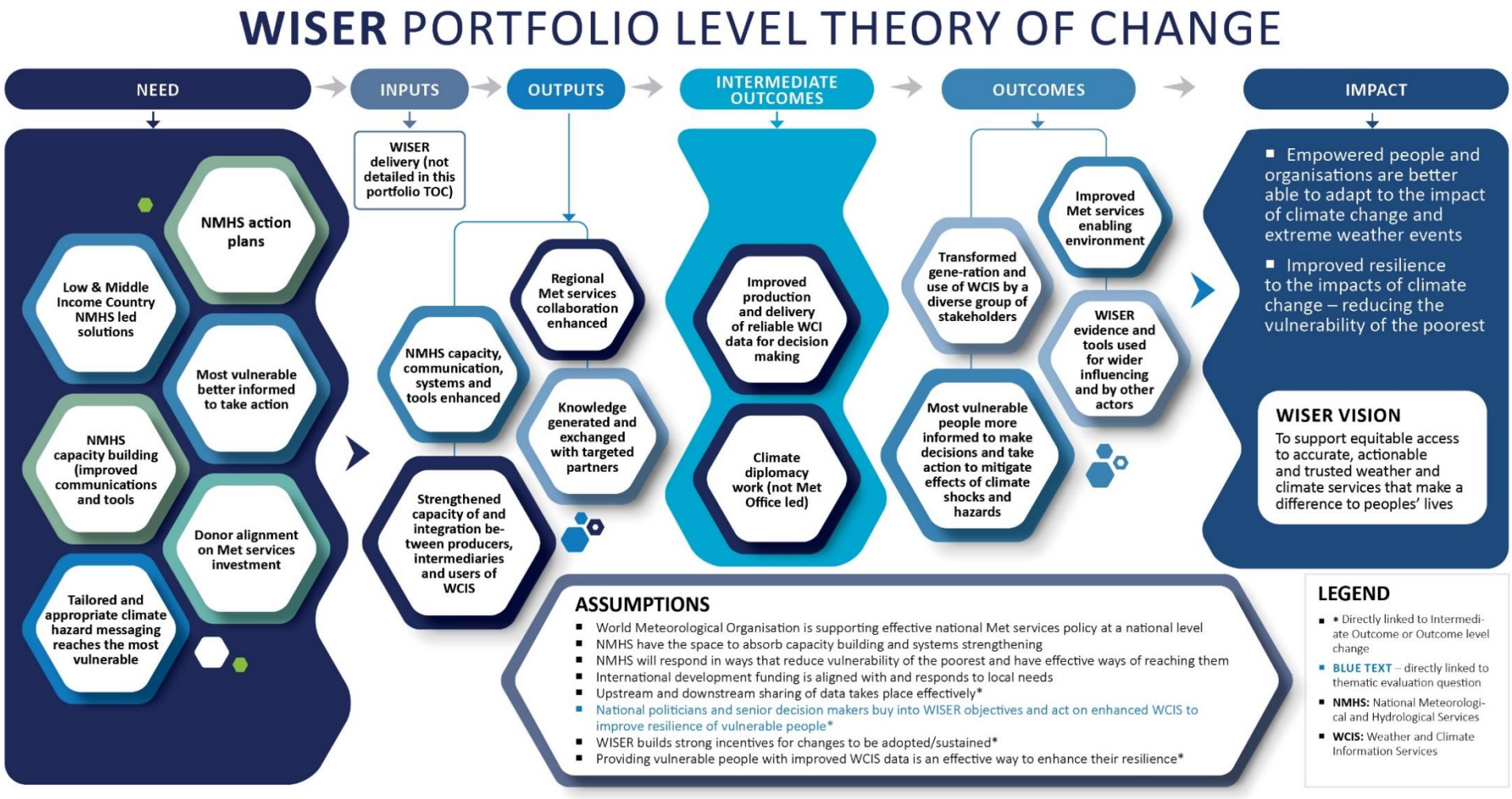
Met Office/FCDO workshops

The evaluation team then led a one-day workshop at the MO with around 15 key staff and 2 FCDO staff. A second online workshop was then offered to three further MO staff to widen stakeholder views.

This event was more detailed than the FCDO version with a full day available to explore the same structured elements of the ToC. As MO staff were more closely involved in delivery of WISER (some with more than 8 years' experience), the level of detail was deeper. MO staff were keen to ensure that regional variations were observed and understood. Many staff spoke of the importance of building locally led solutions with practical application and local ownership. The importance of demonstrating impact from WISER and communicating this in compelling ways came up repeatedly. Some MO staff noted that some NMHS are now overwhelmed by multiple donor approaches and offers of investment. A lack of donor coordination twinned with limited NMHS capacity, and absorptive capacity is a real challenge. MO staff also reflected on some of the models of delivery e.g. the grant windows and the need to encourage Southern led institutions. In contrast to some FCDO opinions, MO staff did not voice a need to frame any WISER work in the context of nature-based solutions. Many staff noted the continued need to 'make the case' for investment in WCIS.

[81] https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/new-elements-and-dimensions-of-adaptation-under-the-paris-agreement-article-7

Figure 11: WISER Portfolio TOC April 2024



Next steps

The evaluation team will be reviewing evidence around the change areas noted above through the use of evaluation hypothesis (see Inception Report for more details). They will gather new evidence via key informant interviews. This will likely lead to evidence supporting or challenging the assumptions above. We may revise the portfolio level ToC at the end of the evaluation period (October 2024) and potentially suggest some Outcome level indicators which could be deployed across WISER to collate portfolio level evidence and learning going forward.

Beyond the evaluation team, this portfolio ToC could become a useful reflection tool for MO / FCDO to:

- Routinely come together and reflect on whether these anticipated changes / results have held and for other cross programme learning purposes
- Identify and highlight specific behaviours WISER is trying to influence and impact, and critically reflect on whether its current model and activities are achieving them
- Examine monitoring, evaluation and learning evidence being gathered across all WISER programmes and identify whether it supports programme theory and delivery (thereby leading to both adaptive programming and a further refined portfolio ToC)
- Challenge and track critical assumptions across change pathways
- Surface critical evidence gaps that the WISER portfolio should fill to support its change related claims

3. Suggested Amendments following thematic evaluation, September 2024

Hypothesis or high-level WISER programme trajectory

The three evaluation hypotheses script (see Annex 4, Thematic Evaluation Inception Report for a complete overview of methodology) the 'trajectory' of the WISER programme – i.e. if the hypotheses are accurate, evidence should build against each hypothesis as the programme matures. Naturally, evidence is more likely to exist around interventions that are directly delivered by UKMO and/or FCDO (and more likely to be picked up by programme level MEL systems). The hypotheses themselves broadly covered the HydroMet value chain and could be read or used as one long hypothesis but we broke down into three for ease of use. As we move along the HydroMet value chain, and more actors engage on the periphery of WISER, we anticipated that evidence would be likely less strong. Using primary and secondary data gathered as part of the thematic evaluation, we mapped evidence across each hypothesis. This allowed us to 'test' the WISER Global ToC developed in April 2024, feed into evaluation findings and recommendations and also make suggested further revisions for FCDO and MO to consider adjusting the ToC. This now rests with FCDO and MO as owners of the ToC to action as they see fit.

Table 2 below summarises the evidence gathered as part of the evaluation by hypothesis in headline form. Using a 'red, amber, green' (RAG) rating – where red notes no or little evidence and green notes good evidence. More details and examples of evidence can be found in the main final evaluation report.

Table 22: Mapping evidence against the evaluation hypothesis

Evaluation Hypothesis / WISER programme trajectory	Summary	RAG rating
WISER interventions have improved the capacity, systems, and policies of 'producers and intermediaries' to use generate, communicate, access, and use WCIS data (at national/regional levels).	Evidencing - Tools, systems and processes all enhanced to generate improved WCIS as reported by many KIIs by multiple NMHS's in Africa and Asia. Significant bodies of programme documentation across contexts confirms this. - Producers / Intermediaries confirm improvements (e.g. International Federation of Red Cross and Red Crescent Societies, radio shows / producer supported by BBC Media Action WeatherWise, and Mtaani's supported by the DARAJA project). - Regional bodies confirm improvement (e.g. ICPAC, SASCOF). - Primary data collection in Kenya across multiple WISER supported projects across intermediaries and producers confirmed enhanced access, relevant and usability of WCIS following institutional capacity enhancements supported by WISER. Challenging - While enhancements to WCIS have been reported across contexts, which have produced more useful and relevant WCIS, questions remain on the on-going sustainability of tools, processes and systems without on-going support of NMHS, producer or intermediary concerned. - Some limitations remain on the ability of some NMHS's today to fully utilise all new tools due to financial and wider resourcing constraints.	

Evaluation Hypothesis / WISER programme trajectory	Summary	RAG rating
Co-production processes in the development and dissemination of WCIS lead to improved confidence in the delivery of services and decision making (by producers and intermediaries).	Evidencing - New partnerships have been sustained to this day - e.g. KMD, Kenya Airlines and WMO memorandum of understanding. - Multiple NMHS's confirm satisfaction with technical support and exposure to new tools, and usefulness of co-production processes. Challenging - What is co-production in reality? Co-production processes welcomed across the board but should be enhanced to include *co-design* with national counterparts for future programmes. - Tapering off of co-production processes following the end of WISER support reported across projects and stakeholder groupings. Some concerns on sustainability of services remain.	
Household level end users of WISER interventions trust, access and use climate information which contributes to improving their resilience.[82]	Evidencing - Project specific primary evidence exists in Kenya (from closed WISER programmes) that WCI produced by enhanced WCIS producer and intermediaries is making a difference to end user's / people's lives (i.e. anticipatory actions of informal settlement dwellers, livelihoods planning for fisherfolk / sellers and pastoralists. As with co-production processes, the levels of this being reported by various stakeholders grouping has tapered off following the end of WISER support. Serious constraints remain on funding which limit sustainability. Challenging - While project specific end users have reported the above, it would be challenging from an evidence perspective to extrapolate and generalise this to global / portfolio, regional programme or indeed country level.	

Using the evidence generated by the thematic evaluation, the evaluation team met on 12 September 2024 to reflect on and make suggestions to update the WISER global ToC; suggestions are provided below.

1. Impact:

   Resilience: – consider revising the language around resilience indicator to add in '*contribution* towards'. The team will need to reflect on how resilience is measured in general and across geographies. 'Reach' (KPI1) is perhaps a more realistic key marker given current evidence base. Resilience measures and reporting should be limited to those projects that work directly with end users, and not extrapolated up to evidence higher levels of reporting. Links to CREWS and their simpler sets of indicators are perhaps more appropriate for a global programme to use coherently. It would also allow WISER to wider HMG global data sets, which may support a more coherent approach across FCDO with communicating around WCIS programmes.

2. Needs:

Although all the needs identified in the ToC still hold, some reflection is needed regarding what this means practically for programme delivery:

[82] We suggest this is amended to: 'making a difference in people's lives' in line with the WISER Global vision agreed earlier this year at the joint ToC workshop, or at least is understood to mean this by all parties concerned

- UKMO could improve political economy analysis at the early stages of design in order to better set out how change happens for NMHS's and how UK support will improve WCIS.
- UKMO offers should, where possible, align with national policy priorities
- Ensure clear understanding of wider donor interventions

3. Outputs:

UKMO support should enable NMHSs to plan for and secure future funding and be prepared for the end of UK funding. E.g. Business case development support for future investment, communications and knowledge products which evidence current impacts and future needs.

Add an output on resilience / improving people's lives which notes that the current WISER approach is a piloting mechanism (and specific to the country/targeted area it operates in), which can generate evidence and options for future funding/scale up.

4. Intermediate Outcomes:

Add an intermediate outcome on:

- Enhanced support to NHMS to identify and engage externally with potential future funders and internally support them to engage better within their own government ecosystem for funding support

Leveraging greater impact within FCDO:

- Add text on connecting WISER to wider FCDO programming (climate programming and beyond)
- Diplomacy – use WISER evidence to inform influencing through enhanced WISER evidence, learning and communication.

5. Outcomes:

Add an outcome related to the development of sustainable funding and clear exit strategies post FCDO support.

6. Vision:

UKMO and FCDO should use the vision and incorporate this into future logframes and programme theories of change

Recommended actions on ToC and assumptions

1. UKMO and FCDO as part of their on-going coordination and portfolio management, should review the suggested edits to the ToC and decide which to accept/reject. An updated version of the TOC can then be finalised and integrated into future programme level logframes and ToCs as part of a more strategic approach to measuring impact across the portfolio.
2. UKMO and FCDO should discuss and agree how the assumptions will be tracked as part of a risk management strategy for WISER.
3. As UKMO and FCDO review the wider evaluation recommendations, particularly around measuring resilience, it will be important to assess which technical skills will be needed (within UKMO or through a partner agency) to both *deliver* household level resilience change and *measure* this. There would be advantages to adopting global indicators e.g. the CREWS indicators.

Revised Assumptions around the WISER portfolio theory of change

Edits and suggestions are made in green.

1. World Meteorological Organization is supporting effective national Met services policy at a national level
2. NMHS have the space to absorb capacity building and systems strengthening
3. NMHS will respond in ways that reduce vulnerability of the poorest and have effective ways of reaching them
4. International development funding is aligned with and responds to local needs
5. Upstream and downstream sharing of data takes place effectively and the resources exist to support this (e.g. IT infrastructure etc.)
6. National politicians and senior decision makers buy into WISER objectives and act on enhanced WCIS to improve resilience of vulnerable people
7. WISER builds strong incentives for changes to be adopted/sustained
8. Providing vulnerable people with improved WCIS data is an effective way to enhance their resilience
9. Interventions are co-designed and prioritised by NMHS's – taking account of current NMHS capacity and planning for sustainability.
10. Future UKMO/FCDO regional approaches are supported by action at the national level (not necessarily by UK)
11. Clear and realistic exit strategies are in place for post UK support to ensure value in the longer term of investment

Annex 11b1 - WISER Thematic Evaluation Story of Change:

WICS Intermediaries & End Users in Kenya -September 2024

This story of WISER-supported change summarises the evolving Weather and Climate Information Systems (WCIS) in Kenya, and the support provided over two WISER phases, with specific focus on WCIS) intermediaries and end users.

Story of Change Summary

WISER 1 & 2's (2015-2022) goals were to deliver transformational change in the quality and accessibility of WCIS and subsequent use at all levels of decision-making. WISER 1 & 2 supported a range of African countries, including Kenya. It was delivered over two phases and supported 17 projects that focused both on regional and national WCIS institutional strengthening, and WCI capacities, generation and uptake at national levels. Working along the WCIS value chain, 10 of these projects covered Kenya.

Prior to WISER's involvement, WCIS in Kenya, although considered more advanced than that of other WISER supported African nations, required infrastructural upgrading, institutional capacity building, and improved end user accessibility to WCI. At this point, the provision of WCI was housed in Ministry of Environment and Mineral Resources and was delivered by Kenya Meteorological Department (KMD). A series of Strategic Plans, Sector Plans, Medium Term Plans and the national goals set out in Kenya Vision 2030 had been developed following the establishment of the Constitution of Kenya (2010), which included WCIS across many government policies and strategies.

Through WISER support, Kenya has enhanced climate services that are designed to respond to user needs. Through co-production processes, training, new WCI infrastructural assets, regional collaboration and enhanced WCI technology, Kenya has publicly accessible Maprooms, downscaled seasonal forecasts, a modern World Meteorological Organization (WMO) recommended approach to forecast production, and enhanced links and data exchanges between global, regional, and national climate organisations. Through the projects dedicated to working with radio producers and community weather leaders (Mtaani) WCI produced by KMD became more tailored to end users needs, and in a number of projects by the end of programme (DARAJA and WeatherWise), evidence was suggesting it was making a difference to people's lives and decision making.

Today, although welcoming WISER WCIS support and training, there are significant sustainability challenges and tapering off of processes and results. Intermediary stakeholders often conveyed improved WCI to their own constituents (i.e. farmers, informal settlement dwellers, fisherfolk and dwellers etc.) during and after WISER support, although with reduced frequency or with some quality comprised, after project support ended. End-users, in turn, often conveyed WCI messages widely within their own communities. Stakeholders reported that improved weather forecasts have helped reduce livestock losses, supported how farmers respond to agricultural disease outbreaks, mitigated the possibility of conflicts, and improved income generation. The overwhelming majority related that they experienced significant challenges related to WCIS accuracy, locality, and accessibility, with on-going funding constraints across contexts and stakeholder types being a significant issue.

The WCI problem addressed:

Prior to WISER's support, KMD was in the process of delivering WCIS aspects of the Ministry of Environment and Natural Resources Strategic Plan 2013-2017. The primary goals of this plan were to improve the integration of emerging technologies, engage in regional and global partnerships, and to enhance the capacity of KMD's personnel. To achieve these aims KMD had digitised 10 years of various weather data, installed new WCIS infrastructure, two upper air observing systems, five seismic stations, and, crucially, decentralised meteorological services to all 47 counties.

This move emphasised the government's focus on efficiency and better management in the utilisation of natural resources to encourage economic growth. Various deficiencies in achieving this goal were identified. KMD lacked, by its own reckoning, sufficient meteorological facilities, infrastructure, quality management, and the resources to perform regular and effective maintenance of the equipment they did have. KMD continued to focus on partnership building, effective WCI communication, capacity building of personnel, and further regional decentralisation.

Much of Kenya's economy is highly sensitive to weather and climate and so reliable predictions are of major importance to support resilience in the region. The impacts of climate variability can trigger crises in food security, health, and reverse years of economic development. Prior to WISER, much of KMD's output has had limited uptake, end-user engagement, and only limited local level access. Climate change was only weakly integrated into food production, energy, and health sectors, thus exposing Kenya to greater risk. Much of this risk can be traced to decades old subjective approaches to forecasting that were not in step with WMO objectives centred on traceable, and reliable recommendations.

KMD or its antecedents have been providing climate information services for almost 100 years, having been originally established as the British East African Meteorological Service (BEAMS) in 1929. KMD proper came into existence in the post-colonial period and was formerly established in 1977, under the Ministry of Power and Communications. Since then, KMD has answered to seven different ministerial departments.

What WISER did and what changed as a result:

Between 2015 and 2022, WISER 1 & 2 supported 10 projects directly relating to Kenya and the KMD that sought to work along the WCIS value chain. Projects and support included: institutional strengthening and training of KMD staff; provision of meteorological infrastructure assets, technology and systems; the promotion of collaboration and co-operation and enhancing end user accessibility. There were many successes (as well as challenges) during the course of this programme. These included for example:

Enhancing National Climate Services (ENACTS) aimed to enhance climate-sensitive decision-making at all levels by digitizing historical weather data (Ethiopia, Kenya, Tanzania, Uganda) and integrating it with new satellite data. Amongst the products which had a significant impact on the improved delivery of WCIS, the project created a detailed 30–50-year climate record accessible online by the Inter-governmental Authority on Development (IGAD) member states' National Meteorological and Hydrological Services (NMHS) and the International Research Institute (IRI) data library, with tailored applications for sectors such as agriculture and health. It established the foundation for the current Maprooms, which function by using a High Performing Computer (HPC) cluster, the data library, and various data sources to provide NMHS with accurate, up-to-date WCIS and the ability to downscale forecasts. Key stakeholders interviewed highlighted how important the Maprooms and data library

were key WCI advancements and, as NHMS capacities increased in one country as this provided a demonstration effect and motivated others to collaborate on WISER.

Institute for Meteorological Training and Research department (IMTR) aimed to develop and deliver collaborative training courses between KMD's IMTR and the Met Office College (MOC). Between January 2016 and February 2017, a total of 16 modules covering 99 topics were delivered to meet WMO Basic Instruction Package for Meteorologists (BIP-M) standards. This training raised the profile and capability of the Regional Training Centres (RTC) and was co-produced and delivered alongside Intergovernmental Authority on Development Climate Prediction & Applications Centre (ICPAC) and the WMO regional office.

Strengthening Climate Information Partnerships East Africa (SCIPEA) aimed to enhance early warning capabilities and decision-making by increasing resources for sustainable climate prediction skills. This regional project strengthened climate partnerships by boosting collaboration and data sharing among climate centres, providing training to NMHS (Ethiopia, Kenya, Tanzania Uganda), and co-developing improved seasonal forecast products tailored to user needs. It enhanced links between climate organisations, co-developed prototype services, and created training modules on dynamical seasonal prediction.

WESTERN KENYA Project aimed to support the KMD's strategy for decentralisation, providing a suite of standardised climate services designed and delivered with end-users at the forefront of this. The project aimed to support the KMD's decentralisation strategy by providing standardised climate services designed with end users in mind. It has largely succeeded, leading to the creation of Climate Information Service (CIS) plans for counties in the Lake Victoria region, which have helped shape WCIS and link various strategies for climate change mitigation and adaptation. The project also generated demand-driven, downscaled forecasts following consultations with end users, and developed new communication methods for local forecasting and advisory products, including radio, SMS, and website updates. Additionally, it improved the capacity of County Directors of Meteorology (CDMs) to deliver relevant services and enhanced the effectiveness of Community Climate Outlook Forums (CCOFs) by expanding participation, holding them at more opportune times, and broadening the range of advisories provided.

AMDAR aimed to enhance weather forecasting accuracy and improve sector-specific products and services, particularly in aviation, agriculture, health, and climate change, at national, regional, and international levels. The Kenya Aircraft Meteorological Data Relay (AMDAR) Programme was a collaborative effort between the WMO, the KMD, and Kenya Airways (KQ) to establish an automated system for reporting meteorological data from aircraft. This programme utilised the existing sensors and communication systems on aircraft to collect and disseminate atmospheric information, such as altitude, wind speed, temperature, and wind direction, at all phases of flight. To achieve this, the programme focused on equipping the Kenya Airways fleet with AMDAR capabilities, the goal being to enable KMD to process and use the data to improve their services, increasing the availability of AMDAR observations on the WMO Global Telecommunications System, and optimising Kenya Airways' flight operations to reduce fuel consumption and environmental impact. By end of programme, two (of a hoped for 13) had been equipped due to various delivery constraints.

Coastal Resilience and Improving Services for Potato Production in Kenya (CRISPP) aimed to provide weather and climate information to 300,000 households in Kenya's coastal region, focusing on Kwale, Kilifi, Mombasa, and Taita Taveta counties. It concentrated on developing and delivering demand-

driven, decentralised services by the KMD, streamlining KMD's forecasting to enhance existing services, and investing in improved marine forecasting techniques. The project involved collaboration between producers, users, and intermediaries to design and test services that aid decision-making for livelihoods and sector strategies. Key achievements include creating CIS plans for the coastal counties, generating downscaled forecasts based on user needs, developing innovative communication methods for disseminating forecasts, and conducting studies to assess the project's impact and contribute to broader learning within the WISER programme.

Developing Risk Awareness through Joint Action (DARAJA) aimed to address the vulnerability of informal settlements in Kenya (and Tanzania) to extreme weather events like flooding, heatwaves, and droughts by collaborating with NMHSs, city stakeholders, and residents to co-design and test new communication systems for reliable weather and climate information. This initiative, in collaboration with the KMD and Kounkuey Design Initiative (KDI), focused on enhancing resilience by improving end-user access to relevant weather data. A critical part of the project was the training and suage of Weather Mtaani who supported tailoring of WCI for the communities they lived in and conveyed WCI via SMS, WhatsApp and word of mouth to their local communities. The project involved co-designing new communication systems with stakeholders, including KMD, to ensure that weather information was not only understandable but also actionable for end-users. The project led to the production of more localised and user-friendly forecasts, with KMD producing adjusted weekly and new daily forecasts. The success of DARAJA has also strengthened KMD's relationships with local intermediaries like radio stations and community organisations, enhancing the credibility and reach of its weather and climate information. By the end of the project, the endline study conducted highlighted improved access to enhanced and tailored WCI for slum dwellers in the project target areas in Nairobi, and provided a proof of concept for the Weather Mtaani medium to enhance WCI flows to local people.

High Impact Weather Lake System project (HIGHWAY) aimed to enhance meteorological observations and early warning systems (EWS) in Kenya, particularly around Lake Victoria. It facilitated the creation of a regional WMO Integrated Global Observing System centre between Kenya and Tanzania, boosting national, regional, and global meteorological data coverage. KMD benefited from increased observational data reporting to the Global Telecommunications System, improving weather predictions. The project led to new or adapted weather and EWS tailored to the needs of Lake Victoria communities. It established a robust institutional framework for EWS in the East Africa Community (EAC), involving Kenya, Uganda, Tanzania, and Rwanda. Additionally, the project strengthened cooperation among regional meteorological services, particularly through daily discussions on forecasts, which enhanced disaster risk reduction, especially for Lake Victoria. A crucial achievement was enhancing access to operational data essential for EWS, including the establishment of the EAC Regional WMO Integrated Global Observing System (WIGOS)Center, co-hosted by the KMD and the Tanzania Meteorological Authority (TMA), which manages station metadata and addresses issues related to the quality and availability of observations. Key infrastructure improvements in Kenya included the installation of a data archival system at KMD, upgrades to two upper air sounding stations, the refurbishment of 15 Automatic Weather Stations (AWS), and the delivery of an emergency power generator to Lodwar. These efforts resulted in improved resilience for over 634,000 people in Kenya and contributed to a 30% reduction in weather-related deaths on Lake Victoria. Additionally, communication of weather warnings was expanded through radio, WhatsApp messages, and colour-coded flags at landing sites.

WEATHER WISE aimed to enhance the ability of media professionals and technical experts to meet the climate and weather information needs of communities in Northern Kenya, the Lake Victoria shores of

Kenya and Uganda, and the coastal areas of Kenya and Tanzania. This was achieved through mentoring journalists from 10 partner radio stations, providing specialised training for journalists and scientists on effective communication, producing weekly weather and climate radio content tailored to the target audiences, and supplying high-quality radio equipment to boost broadcasting capabilities. The project successfully organised workshops that brought together journalists and scientists to co-produce content, provided ongoing mentoring to select journalists, and strengthened the broadcast capacity of partner stations through equipment upgrades. Over 400 media professionals and scientists participated in various climate-related events, and a total of 672 weather and climate radio programme s were produced and broadcast in local languages, along with public service announcements and audio explainers featuring scientists. The creation and formalising of Weather Mtaani during the DARAJA project was an 'important success', which brought benefits to local communities, and community-owned EWS.

WISER support sort to make WCI more accessible through co-production processes across a range of projects and had key successes. An example of this approach was demonstrated in the HIGHWAY project, where local communities around the Lake Victoria Basin were involved in making sure forecasts were 'timely and understandable', thus ensuring 'uptake from local communities'[83]. The ENACTS project, for example, ensured a continued demand for its services by working with local partners to ensure that climate information was 'easy to access' and able to be accurately interpreted by the end-user[84]. DARAJA engaged with the regional NMHS, 'city level stakeholders, and residents of informal settlements' to co-design 'downscaled and daily forecast[s]' to make them more 'user-friendly and actionable'[85]. DARAJA also enabled the Disaster Risk Management Committee to implement a risk assessment programme identifying disaster hotspots and develop anticipatory action plans for these areas[86]. The CRISPP project in Kenya provided critical information to the insurance sector via CDM, aiding claims for weather-related damages[87].

The KMD played a key role in enhancing climate resilience across various sectors through improved collaboration and the effective use of weather and climate information. The partnership between KMD, the TMA, and the National Meteorological Agency (NMA) has strengthened national forecast analyses, benefitting stakeholders such as Base Titanium in the mining sector, which uses weather data for disaster planning. Similarly, KMD's close collaboration with KenGen has led to more effective power generation planning, preventing crises like power rationing and stabilising the power supply through the SCIPEA project. This integration of weather forecasts into energy planning has had broader implications, demonstrating the significant impact of meteorological data on various sectors. In addition to energy and mining, the Kwale Water and Sanitation Company (KWAWASCO) used weather forecasts to manage water resources more effectively during heavy rains, ensuring efficient capture and storage.

Moreover, the improved WCI supplied by KMD supported intermediaries such as the Kenya Red Cross Society to anticipate and respond to potential health emergencies and environmental disasters. Loss avoidance and insurance provisions have also increased through better access to WCIS, with significant outcomes reported in regions like Siaya, where communities have experienced fewer casualties and accidents since receiving weather forecasts and alerts.

[83] HIGHWAY (2020), Project Completion Report
[84] WISER Pilot sustainability Assessment of Select WISER Projects (2022)
[85] DARAJA, (2020), Project Completion Report
[86] DARAJA, (2020), Project Completion Report
[87] CRISPP, (2020), Project Completion Report

WISER enhanced the WCIS environment at both the East Africa regional and Kenyan national levels while building Kenya's in-country WCIS capabilities. KMD staff highlighted the success of WISER in promoting the co-production process, a process that has been institutionally adopted. By aligning to KMD's departmental goals, WISER's objectives were easier to implement and received departmental support. KMD representatives also emphasised the shift in what forecasting can do, moving not away from simply being something to be created to an end-user focussed and actionable product. This is supported by radio presenters and researchers who emphasise the change in their relationship to the communities they serve. They speak of an increased engagement with their communities and the positive impact of the information flow from KMD to the community via their radio stations.

Nonetheless, WISER faced various challenges, including covid-19, resistance from regional administrations, and a sometimes volatile political situation. Strategic CIS plans were delayed due to two presidential elections, resulting in budgetary cuts for KMD. Various workshops, training and research was put on hold due to travel restrictions stemming from COVID-19, or shifted online, which, despite enlarging the potential engagement, was hampered by unstable, poor quality internet connectivity, and therefore limited engagement.

After WISER – what is happening now?

The AMDAR project had critical delivery challenges, and at project close was not considered a significant success. Although only two aircrafts were equipped to transmit weather data from airplanes (B737s) to support weather forecasts and applications by end of programme (instead of the planned 13), these have continued to relay weather and climate data. As of 2023, there have been continued annual agreements for the continued operation of the Kenya Airways AMDAR system between WMO, KMD and Kenya Airways. The most recent agreement allows WMO to support the ongoing communications costs for the aircraft, and also to allow for the expansion of the fleet to include equipping the rest of the KQ B737 and Embraer 190 fleet when resources might become available.[88] There are analysis challenges, with the data initially meant to be analysed by KMD, but instead having to be sent to the United Kingdom Meteorological Office (UKMO) and WMO headquarters due to KMD's capacity constraints processing the data. Stakeholders though have commented that the data collected has enhanced decision-making in aircraft flight planning and provided valuable input for KMD's forecasts, particularly in regions like Kisumu, where weather conditions are dynamic and challenging. However, the programme has faced challenges, including delays in software upgrades due to funding issues and bureaucratic obstacles within government organisations. Despite these hurdles, Kenya Airways reported that the installed technology are sustainable, requiring only occasional software updates. The WMO continues to support the work, with data regularly being shared by Kenyan Airways to WMO. It is unclear how the data is being used.

'KMD used the data we have provided to improve forecasting accuracy, which in turn can improve our routing, altitude, speed etc. We have seen the accuracy in forecasting has improved – we can say that it has improved – both for aviation and other needs'

Kenya Airways Official, June 2024

As part of the thematic evaluation[89], we interviewed Weather Mtaani, Radio show presenters, fisherfolk, sellers, pastoralists, farmers and radio show presenters/producers in Kendu Bay, Marsabit,

[88] See https://community.wmo.int/en/activity-areas/aircraft-based-observations/newsletter/volume-25
[89] Please note that this is drawn from evidence collated in Annex 10 of the thematic evaluation

and Turkana[90], informal settlement dwellers in Nairobi, KMD County Directors of Meteorological Services (CDMS) and their staff, and member of the Kenya County Disaster Management Units (CDMU). We asked them about their experiences under the WISER-funded programme activities and their experiences today (now that WISER funding has stopped), related to weather climate information. As such the story for what is happening today presented below is focused on these end users and intermediaries.

Many welcomed support and training through WISER-supported projects (DARAJA and WeatherWise in Kenya). These intermediary stakeholders often went on to convey improved WCI to their own constituents (i.e. farmers, informal settlement dwellers, fisherfolk and dwellers etc.) during and after WISER support, although with reduced frequency or with some quality comprised, after project support ended. Intermediaries, such as Weather Mtaanis, often used SMS/WhatsApp to convey messaging but they and their constituents continued to convey the importance of word of mouth as a medium for WCI flows. These end-users, in turn, often conveyed WCI messages widely within their own communities. Stakeholders reported that improved weather forecasts have helped reduce livestock losses, supported how farmers respond to agricultural disease outbreaks, mitigated the possibility of conflicts, and improved income generation. The overwhelming majority related that they experienced significant challenges related to WCIS accuracy, locality, and accessibility, with on-going funding constraints across contexts and stakeholder types being a significant issue.

Weather Mtaani, staff from the KMD CDMS and radio producers in Africa (mainly Kenya) shared their experiences as WISER-supported WCI intermediaries, discussing how they conveyed WCI to their communities during and after WISER funding ended. Key results from Weather Mtaani leaders and those who were recipients of WCI include:

- **Reception and understanding of Weather Mtaani WCI:** During WISER, 81% of those interviewed indicated they were recipients of WCI from the Weather Mtaani, and the majority understood the information they received very well, primarily due to the language the Weather Mtaani leaders used. Today, only 60% indicate they continue to receive WCI. 86% of those receiving WCI indicated they understood the WCI well, both during the DARAJA project and today.
- **Frequency of Weather Mtaani WCI dissemination:** post-DARAJA, the frequency of dissemination of WCI and the quality of the WCI has varied considerably. As with other intermediaries interviewed, the frequency of communication between the Weather Mtaani and their contacts has diminished over time. For instance, during the DARAJA project, most respondents reported receiving weather updates weekly. But, among those (n = 80) contacts who continue to receive WCI from an Mtaani, just 30% reported receiving WCI within the past month.
- **Reach of Weather Mtaani WCI:** Many of the Weather Mtaani have expanded their set of contacts long after the programme ended, indicating that their lists are not merely being sustained – in which case, we would expect their impact and reach to dwindle over time - rather, they seem to be adding new contacts, as 29% of the contacts we interviewed first received weather updates in 2023 or 2024.

  Additionally, Mtaani contacts are not the "end of the line" of WCI dissemination. Indeed, among those who received WCI during the DARAJA programme, the average respondent shared that

[90] Kendu Bay, Marsabit, and Turkana were areas covered by radio shows from the WISER-funded WeatherWise project. All participants in the KIIs or FGDs had lived in these areas for the past five years, ensuring they were present during the radio shows and could have benefited from them.

WCI with another 22.2 individuals. Transmission rates have gone up slightly today with 89% reported sharing WCI others today, on average with 29 additional people[91].

- **Anticipatory actions based on Weather Mtaani WCI:** The main actions from those who received WCI through the Weather Mtaani system today include: moving belongings to safe space, carrying out house repairs, cleaning or repairing their own household drains and those within their communities. Only 4% reported no action after receiving WCI.
- **Trust and impact of Weather Mtaani WCI:** Many Weather Mtaani interviewed noted that community trust in WCI messages grew as they saw practical benefits, especially during floods. This has been evidenced by data gathered from Mtaani contacts regarding the devastating floods in Nairobi (and across Kenya) in July of 2024. During this time, 62% of Mtaani contacts were impacted by the floods, with 75% receiving WCI from Mtaanis before the floods and 94% reporting that it helped them prepare for flooding.

The impact of the WeatherWise project allowed journalists to continue to provide improved WCI to a wide audience. After the closure of the project, participating journalists and radio stations reported that, although reduced, they continued to produce radio programmes relating to WCI. Due to the training provided the journalists were able to better tailor their output to the communities they serve, either through the interpretation of scientific language used by their sources such as KMD, or by translation of programming into regional and local languages. There has been a drop-off in the production of "impact stories" and personal narrative stories. These stories were seen as important to implementing partner BBC Media Action, but cost implications of travel have meant these have reduced significantly. When "impact stories" are created now they are locally focussed to the areas in which the journalists live or work.

Nearly all respondents living around Lake Victoria within the coverage areas of the WeatherWise programme, reported listening to the radio to hear weather information during the project. In Kendu Bay, WCI is often used to make consequential decisions regarding agricultural production and fishing. Thinking about the period 2018-2020, 72% of respondents who received WCI from the radio say they used the information; a similar rate (71%) say the same for current WCI they receive from the radio. Among fisherfolk who received WCI from the radio during 2018-2020, 37% say they changed their fishing patterns or decision to go on the lake in response to WCI. This rate is even higher at present – 43% of fisherfolk who received WCI from the radio recently say they changed their fishing patterns in response.

Farmers also report significant impacts of WCI. Among individuals engaged in farming and who received WCI in the relevant period (e.g., 2018-2020 or at present), approximately 54%, in each period, reported making farming decisions based on WCI.

Nearly all radio show producers, who had participated in WeatherWise, praised the capacity-building workshops provided by the BBC Media Action. They reported that the training significantly enhanced their understanding of meteorological information and improved their ability to communicate this information effectively to their audiences. As one commented, *'(o)ne of the workshops involved the journalists and the scientists. The scientists helped us understand the more complex terms they use so that we can package it in a way our listeners can understand'.* They highlighted the positive collaboration with KMD on the project and how they had significantly increased the number of WCI

[91] It should be noted that the 'average' could be deceptive. Some recipients of WCI from Weather Mtaani leaders did not share it with anyone, while others shared it with over 100 further recipients. Understanding incentives and hindering factors to share WCI further may support greater reach and uptake.

focused segments on their radio shows during WISER. That being said, many highlighted that the frequency of WCI focused radio shows on their stations has declined since WISER support ended, one commenting: *'We still do once in a while interview the experts of KMD when matters arise to either prepare people for what is coming up in the season occasionally, but that consistency is not there'.*

Like the Mtaani contacts, many radio listeners – around 80%, either during WeatherWise or currently – share WCI they receive with other people, especially their family, friends / neighbours, as well as work colleagues. Including those who do not share information with anyone, the typical respondent shares WCI with 7.4 other individuals at present (6.8 other individuals during the period 2018-2020).

Despite the many positives across the Kenyan WCI eco-system contributed to by WISER, sustainability is an issue across many projects. These are highlighted below and presented for the learning perspective for current programming and reflections on sustainability of results and WISER sphere of influence in its activities.

KMD local officials also highlighted some key challenges today including: a lack of advisory support being provided by the Ministry of Agriculture making it harder for users to interpret the data; the on-going impact of language barriers as messages continue to be sent by them to end-users in English; a significant challenge with the lack of funding for continuous dissemination and infrastructure maintenance; and the overall lack of team members that have been trained to interpret the data:

'(t)he challenge is that we are not reaching many people; there are very few people who were trained on interpreting the weather information after KMD releases it'.

KMD still disseminate their information to Weather Mtaani community leaders (although at a lower frequency than before) but there appears to be a bottleneck in the further dissemination of this information due to community level funds, and intra-organisation communication.

'We still receive and send the weather information, but the rate has slowed down. It used to be weekly [from KDI]. Like the previous 2 months I have gotten the message twice […] I usually send the messages to them mostly by SMS and a few who have WhatsApp I share with them'.

A major challenge highlighted by all Mtaani was the lack of financial resources to buy airtime for financial support (airtime for SMS, stipends) and logistical support (cleaning tools, protective gear) to continue effective dissemination of weather information and community activities by Mtaanis. A lack of credit for SMS messaging since the end of DARAJA has meant that the infrequent information that is received from KDI is being transmitted by word of mouth.

'The greatest challenge after DARAJA ended was credit. We no longer attended the workshops. After attending workshops, we used to receive something small and we could send it directly to our account'.

'After WISER ended, we no longer met the leaders, we stopped getting messages. […] Last week I received a weather forecast message but I didn't share it since I do not have any credit. I used word of mouth to explain the message on weather forecast to my friends and also to some of the community members. After the WISER project ended, we continued sending SMS messages on weather forecast for one month after which we stopped'.

During DARAJA, additional support was supplied for cleanup activities, vehicles and monetary support, encouraging participation. Since the end of the project this support is no longer occurring at the levels previously undertaken and cleanup activity has dwindled.

'I think we only did a cleanup once [this year]. The reality is there is no communication, people are not serious. There is burnout from volunteering. The credit was motivation'.

Evidence sources:

Interviews with key stakeholders from KMD, FCDO, KDI, Weather Mtaani, Radio Show Presenters, and quantitative surveys undertaken with Mtaani constituents (those who receive WCI from Mtaani) and people living in Kendu Bay, Turkana and Marsabit, who receive WCI from radio stations. Evidence presented here is also seen in the main evaluation report and a number of annexes.

AMDAR (2021), Project Completion Report

Annex 7 National Strategic Plan Kenya (2016), World Meteorological Organization

DARAJA (2020), Project Completion Report

ENACTS (2017), Project Completion Report

HIGHWAY (2020), Project Completion Report

SCIPEA (2017), Project Completion Report

WESTERN KENYA (2017), Project Completion Report

WEATHER WISE BBC Media Action (2021), Project Completion Report

WMO (undated), Regional programme status and developments, WMO Region I, Africa, ABO Status Kenya, accessed 8 September 2024 from https://community.wmo.int/en/activity-areas/aircraft-based-observations/newsletter/volume-25

W2SIP(2021), Project Completion Report Updated

Annex 11b2 - WISER Thematic Evaluation Story of Change:

Weather and Climate Information Services in Pakistan - September 2024

This story of WISER-supported change summarises the evolving Weather and Climate Information Systems (WCIS) in Pakistan over the last six years, and the support provided over the Asia Regional Resilience to a Changing Climate (ARRCC) supported projects in Pakistan.[92] It is based on documentation and Key Informant Interviews (KIIs) with stakeholders from the Pakistan Meteorological department (PMD), International Centre for Integrated Mountain Development (ICIMOD), United Kingdom Meteorological Office (UKMO), and UK Foreign and Commonwealth Development Office (FCDO).

Story of Change Summary

ARRCC (2018 – 2022) was an UK FCDO funded £9.6m[93] regional programme designed to strengthen weather and climate information services (WCIS) across South Asia, and supported vulnerable communities prepare for climate-related shocks. It was delivered by the UKMO and the World Bank. ARRCC funded two significant projects in Pakistan (Impact Based Forecasting and Climate Grids), delivered with the PMD and supported by UKMO. This work has resulted in sustained success with evidence of institutional strengthening and improved weather and climate services.

Prior to ARRCC support, Pakistan's climate data infrastructure had limitations, including data coverage and modelling, which limited the ability to provide precise weather forecasts and early warnings, and to run simulations. Forecasts were also typically threshold based, and observational and climate data was rarely used.

Through dedicated training to PMD Weather Climate Information (WCI) officials, and a working in partnership with UKMO - much has been achieved and been scaled up. Improvements include: an Impact Based Forecasting (IBF) pilot, the use of historical data to develop climate gridded datasets, and developing networks and partnerships across WCIS value chain in Pakistan and regionally.

WCIS have been enhanced in Pakistan through ARRCC investments. Following the end of ARRCC support, PMD has continued developing the processes and tools UKMO supported them with and are now piloting IBF in new regions of Pakistan, as well as having stronger data systems for climate modelling.

"IBF gave us a new perspective… instead of working on thresholds we should be focusing more on the impacts on the different sectors" – **PMD Senior Official**

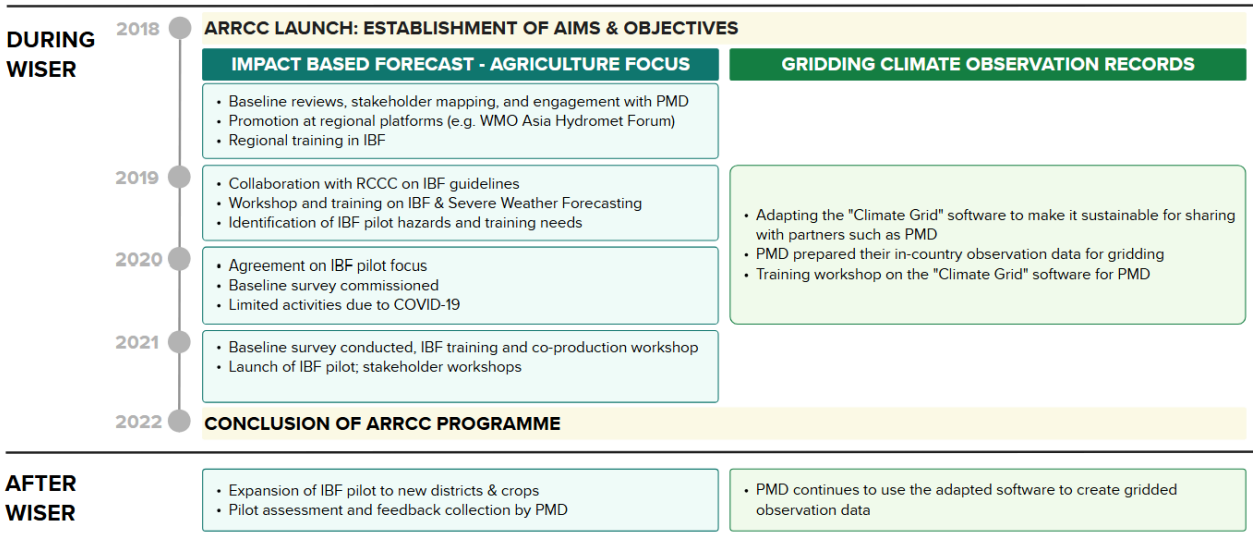
[92] Programming in Asia is known as Asia Regional Resilience to a Changing Climate (ARRCC). For the purposes of this evaluation, 'WISER' style investments cover all Weather and Climate Information Services work supported by FCDO and led by UK Meteorological Office. ARRCC and WISER terms may be used synonymously in this report. This report does not cover all ARRCC investments in Pakistan and is based on selected interviews and literature review.

[93] ARRCC Programme Completion Report. August 2022, p.1. This was the projected budget in July 2022 for the end of programme in August 2022.

WCIS in Pakistan: before, during and after ARRCC

Figure 1 summarises the ARRCC supported WCIS journey in Pakistan.

Figure 12: ARRCC activities to enhance Weather Climate Information Services in Pakistan



Source: Elaborated by the Evaluation Team with information extracted from WP1 IBF Pakistan country report and Thematic Evaluation KIIs.

The WCI problem addressed:

Historically and prior to ARRCC/WISER support, Pakistan's climate data infrastructure, had significant gaps, particularly in spatial resolution and accuracy. Pakistan is highly impacted by climate change – particularly heatwaves and extreme rain events. Yet, the country's meteorological systems struggled with infrastructure limitations, data coverage and modelling, which limited the ability to provide precise weather forecasts and early warnings, and to run simulations.[94]

Impact Based Forecasting (IBF)

Forecasts in Pakistan had historically focused on what the weather was (i.e. by providing a basic temperature, threshold-based forecasts) rather than what the impact of that forecast could be for key stakeholders. Forecasts did not reflect the potential impacts of impending events – farmers, as key end users of WCI could not take informed decisions regarding preparedness for extreme weather events and more generally. As a Senior Government stakeholder commented, *'there was a dire need for PMD's farmer related products to be based on various impacts from season to season and crop to crop'.*[95]

Climate Grids

To enable better decision making and disaster preparedness, there was also a need for modernised, robust climate grids that could offer detailed insights into local climate trends and predict extreme

[94] ARRCC Case Study on Understanding capacity gaps in NMHS, OPM. August 2020
[95] Ibid.

weather events. Observational weather and climate records in Pakistan were under-utilised in modelling because the data are not easily comparable to gridded data (which contains spatial characteristics).

What WISER did and what changed as a result:

Although slowed by the impact of COVID-19 at a regional and national level, ARRCC was delivered as four work packages: IBF, Strengthening Climate Information Partnerships in South Asia (SCIPSA); Climate Analysis for Risk Information and Services in South Asia (CARISSA) and Valuing the Socio-economic Benefits of Weather and Climate Information Services (VALUE). PMD received training activities related to WCIS use, production, and dissemination. Key stakeholders interviewed noted the impact of the training - *'wide-ranging training provision for both forecasters (technical training) and stakeholders (IBF awareness), up-skilling the forecasting team [enabled end-users] the users to gain more from PMD's outputs'*.

In Pakistan, two significant projects delivered with PMD have resulted in sustained success with evidence of institutional strengthening and improved WCIS, in particular for farming communities. The two projects were:

- IBF project, begun in 2018 with the collaboration of the PMD and UKMO under the umbrella ARRCC programme.
- Gridding climate observation records in Pakistan, which was a collaboration of PMD and UKMO under the Climate Analysis for Risk Information & Services in South Asia (CARISSA) project of ARRCC.

Impact based forecasting

The IBF pilot in Pakistan was designed to support resilient agriculture in Pakistan by enabling farmers to better plan their farming activities (including planting and harvesting). In turn it was hoped that this would result in increased crop yields, leading to increased food security.[96] Prior to ARRCC, PMD were not familiar with IBF and used threshold-based forecasts. Through a range of interactive workshops and seminars with UKMO and ICIMOD[97] PMD's interest in IBF grew. An in-country workshop, sharing core information about IBF and its usefulness was undertaken in July 2019 which engaged PMD, disaster management agencies, and other selected regional bodies. A later 2019 consultation workshop was undertaken on IBF and other online workshops were undertaken to underscore this. This was followed by an ICIMOD led baseline survey (in 2021), which evaluated the then current provision of WCIS – across 300 households in Potohar – and highlighting WCI uptake challenges.

PMD then decided to pilot IBF in two districts of the Potohar region. Work on IBF in Pakistan instigated changes in PMD forecasts and advisories from *'what the weather will be' to 'what the weather will do'*.[98] Although initial feedback from stakeholders was limited, the PMD was able to engage with *'regional level government departments to stress the importance of this process',* which resulted in buy-in and good responses going forward from other stakeholders. This had the effect of improving

[96] The future of forecasts: Impact-based forecasting for Early Action! IBF Project Assessment Report, February 2024. National Agromet Centre, Pakistan Meteorological Department, Islamabad.
[97] As well as research led by Leeds University.
[98] Ibid.

'the two-way communication with the farming community and agriculture extension network' through the work of regional stakeholder National Agromet Centre (NAMC).

'they guided us through the products.. instead of giving us a tailormade thing, we developed it ourselves in collaboration with UKMO…It's here to stay.'

PMD Senior Official

A strong working relationship (which continues to this day) developed between UKMO and PMD staff, leading to trust and understanding between the two Met Services. PMD noted that rather than being led by UKMO, they were able to lead processes and own them, seeking and receiving feedback from UKMO when needed.

PMD worked collaboratively with UKMO to develop impact-based forecasting matrices, with hazard forecast information combined with vulnerability and exposure data used to create a risk assessment. The team then used data from the baseline surveys to understand users (farmers) needs and adapted the products accordingly[99]. PMD wrote simple scripts, which were then recorded as audio clips and broadcast via local radio stations. A dedicated website was also created for IBF and advisories were posted there.

IBF services (through the pilot) were launched in 2022, during the kharif monsoon season (June-November) for two Districts (Attock and Chakwal) of Potohar region and was focused on groundnut. Within these areas the agriculture sector is predominantly rain-fed, making it highly sensitive to variations in rainfall,[100] highlighting the importance of the IBF move from what the weather *will be* to what it *will do*. Clear standard operating procedures were developed for all actors involved. Two-way feedback mechanisms were used at the farmer level – whereby extension worker or researchers shared fortnightly updates of field conditions via WhatsApp groups, as well as seeking feedback from farmers on the usefulness of the messages. The Director of the National Forecasting Centre was motivated to share the IBF tool to other regions and a process for scaling to other regions is planned.

Climate Grids

UKMO, through ARRCC, has provided support to Pakistan through the development gridded datasets that cover various climate parameters such as temperature, precipitation, and humidity at a higher spatial resolution than previously used. Converting existing data onto 'climate grids' adds power to options for climate modelling. Under the CARISSA/ARRCC, the UKMO tailored software designed in the UK for use in Pakistan – converting observational data into gridded data.

Through a collaborative process, the UKMO adapted climate gridding software for use in Pakistan. PMD prepared the data and the UKMO delivered training workshops to PMD to use the software effectively. These higher resolution gridded data-sets are crucial for accurate climate forecasting. Without ARRCC's support, PMD would have had to extrapolate the data they had – giving poorer quality results. As a Senior Pakistani Official commented, *'(i)t's important to study climate extremes and the climate grids allow us to study there – there are no previous records. These data sets will serve as a benchmark.'*

After WISER – what is happening now?

[99] A range of teams across PMD were involved - the NAMC is a division of PMD which was set up to transfer meteorological services to the agricultural sector. This is in addition to routine forecasts delivered by the National Weather Forecasting Centre (NWFC).
[100] ARRCC Impact story - Early warnings fit for today and the future - IBF - Met Office

PMD has taken the support provided by UKMO through ARRCC and built on their early successes in IBF and climate grids. The partnership has laid the groundwork for improved forecasting, better early warning systems, and more informed decision-making in the face of growing climate challenges in Pakistan.

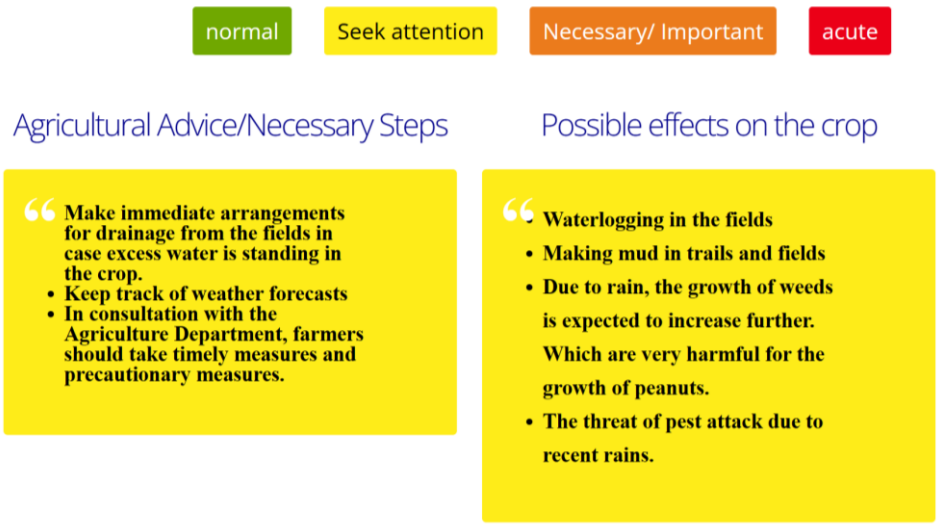
Impact based forecasting

Following the ARRCC supported pilot, PMD are now leading and implementing IBF for groundnut and wheat across four districts of Potohar, with plans to scale up in the south of Pakistan and into a wider number of crops. This second phase was not delivered under ARRCC and was led by PMD. It was designed to develop mechanisms for IBF for Rabi season crops (wheat as a major crop). Learning the importance of gathering user feedback to help shape their work, a technical survey was undertaken by PMD in February 2023 across the Potohar region. This gathered information from the farming community in order to tailor the IBF work. This second phase of the project was completed in 2023 and PMD led IBF products for Rabi and Kharif season[101] are now regularly produced and updated on PMD web page (see **Figure 2** below) in local and national languages. These products are also distributed via Agricultural Extension Officers and the farming community through different WhatsApp groups and FM Radio services.

"A linkage has developed between PMD, the Agriculture Department and the Agriculture Extension Officers… a kind of loop has developed and they gave us feedback. PMD issues the forecast, our agriculture section describes the impact and then the advisories are disseminated to different stakeholders."

Senior Pakistan Government Official

Figure 13: IBF forecast for August 2024 on NAMC website



Source: Extracted from PMD website https://namc.pmd.gov.pk/new/ibf/. Accessed 26th August 2024 and translated from Urdu.

During this phase, PMD has continued to develop WCIS relationships with academic institutions e.g. Barani Agriculture Research Institute and farming communities to support feedback processes and further enhance IBF processes in-country. This has been a spring-board for IBF work, with the project

[101] **Rabi crops** are cultivated during the winter months (October to December) and harvested in spring. Examples include wheat and barley. **Kharif crops** are planted with the arrival of the monsoon (June) and harvested from September to October. Examples include rice and maize.

reportedly giving PMD skills and confidence to undertake their own work, highlighting that they are *'now in a position to launch this (IBF) in any part of Pakistan.'*

Climate Grids

PMD now have stronger data systems for climate modelling, which in turn impacts on their disaster preparedness. In the future, the team may take a zoning approach and analyse the data in smaller geographic parcels, although this may only be possible with further support. PMD now use the software to create climate grids, which are then used for climate modelling, results and output verification, forecast validations.

ARRCC support has gone beyond the new tools, processes and training received, with stakeholders commenting that it had taught them how to work collaboratively with other government departments within the WCIS ecosystem in Pakistan and how this has become the norm. Stakeholders highlighted that previously they were unaware how they contact and connect with those at the other end of the WCIS value chain, and adapt tools based on their feedback. But now it was now much easier to contact Agricultural Extension Officers and farmers for this type of engagement. That being said, they recognised that it was a challenge at times to progress this work as it involved working with teams across the PMD and wider Government.

With these successful projects and newly forged WCI networks, - expectations of end users rise. PMD note that users of WCIS at the community level now have higher expectations for the quality of information they receive. Although senior Pakistan officials reported that they were encouraged that these officers take their products seriously (i.e. the new impact tables for maize and cotton crops).

'After 2020 – we had extreme events, rainfall in 2022 and heatwave now – these kind of climate extremes are very important to study and can only be done with these datasets. We need to optimize them, so we can use as a benchmark.

Key Informant Interview

PMD recognises the importance of high-quality weather information for a wider range of uses and stakeholders, and now regularly work with a range of actors, including humanitarian actors. Forecast based financing is growing and important area of work and PMD have been able to share information with e.g. Action Against Hunger[102] and the Red Cross.

This change story has highlighted ARRCC supported success in Pakistan, with clear and sustained changes and scaling of work following the end of programme. That being said, Pakistan continues to face WCIS challenges with the work delivered under ARRCC part of the beginning and not the end of the work to strength systems, capacities, processes and end user engagement. Encouragingly, UK-Pakistan collaboration on climate issues (including early warning) have recently been confirmed [103]

""It has given us the courage to do future development work and take the initiative."

Senior Pakistan Government Official

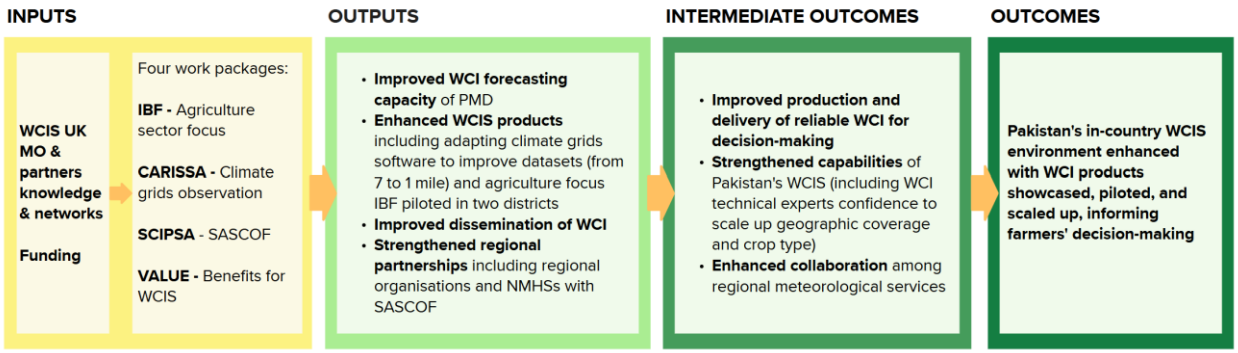
[102] Action Against Hunger were keen to extend IBF to cotton crops but have been stalled by limited finances. They hope to start in 2024.
[103] See, UK to help address climate issue in Pakistan (July 2024) found at https://www.thenews.com.pk/print/1211329-uk-to-help-address-climate-issue-in-pakistan accessed on 27 August 2024

WISER's contribution to change:

WISER, through ARRCC, in Pakistan has supported enhanced WCIS capabilities and has been a spring board or catalyst for Pakistani WCI stakeholders to scale up activities, develop important WCI networks and relationships. Senior Pakistani Government stakeholders interviewed highlighted the importance of UKMO support for IBF and climate gridding advancements made over the last few years.

Figure 3 illustrates WISER's contributions to these change pathways, highlighting the role of other key enabling factors.

Figure 14: WISER's contributions to change pathways



Source: Elaborated by the Evaluation Team with information extracted from documentation review and KIIs

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Evidence sources:

Interviews with key stakeholders including PMD, ICIMOD, FCDO and MO.

ARRCC (2020), Case Study on Understanding capacity gaps in NMHS (OPM)

ARRCC (2022), Programme Completion Report

ARRCC (2022) WP1 IBF Pakistan country report.

ICIMOD_WCIS in Pakistan - Assessing benefits and impacts on key farm outcomes from a user perspective

Met Office (undated) ARRCC Impact Story IBF: Early warnings fit for today and the future

OPM (2020) ARRCC Case Study on Understanding capacity gaps in NMHS

PMD (2024) The future of forecasts: Impact-based forecasting for Early Action! IBF Project Assessment Report, February 2024. National Agromet Centre, Pakistan Meteorological Department, Islamabad.

PMD (undated) Technical report on 'Conversion of Daily Observational PMD Station data into High-Resolution Observed Climate Gridded Data sets'. Malik Rizwan Asghar, Farah Ikram and Shahzada Adnan. UKMO, PMD. Internal draft provided in July 2024.

University of Leeds (2022) Final Report for the Asia Resilience to a changing climate programme. August 2022

Annex 11b3 - WISER Thematic Evaluation Story of Change:

WCIS Governance & Sustainability in Somalia - September 2024

This story of WISER-supported change summarises the evolving Weather and Climate Information Services (WCIS) in Somalia over the last nine years, and the support provided by various WISER regional and nationally focused projects. It is based on documentation and Key Informant Interviews (KIIs) with stakeholders from the World Meteorological Organization (WMO), Intergovernmental Authority on Development in East Africa (IGAD), IGAD Climate Prediction and Applications Centre (ICPAC) and feedback from WISER trained Somali WCIS stakeholders.

Story of Change Summary

WISER 1 & 2's (2015-2022) goals were to deliver transformational change in the quality and accessibility of WCIS and subsequent use at all levels of decision-making. WISER 1 & 2 supported a range of African countries, including Somalia. It was delivered over two phases and supported 17 projects that focused both on regional and national WCIS institutional strengthening, and WCI capacities, generation and uptake at national levels.

Prior to WISER's involvement, the provision of WCI was housed in four different Somali ministries and lacked co-ordination. Under Wiser 2 - Somalia and South Sudan National project (2018-2022) partnerships with regional bodies (such as ICPAC and the WMO) were supported, and the capacity to provide WCI at a national level was enhanced through training and other support. A roadmap for a centralised National Meteorological Agency was developed in partnership with national counterparts. In parallel, other regional projects supported by WISER were being implemented to enhance the capacity of IGAD Member States' NMHS to provide improved WCIS. These projects enhanced regional co-ordination, undertook the digitisation of historical weather data, supported wider regional WCI partnerships and enhanced the development and uptake of seasonal and sub-seasonal forecasts. Critically, by supporting and working through regional WCIS bodies, such as ICPAC, these organisations were able to directly engage with Somali stakeholders, work with them strategically and eventually to lobby the Somali government to streamline their WCI governance structures. Critical to the recognition by the Somali government of the importance of providing cohesive and coherent WCIS was the enabling environment created to facilitate a locally led approach. This was further enhanced by the participation of a recognised and respective regional body such as ICPAC, the support from different components within IGAD, and the involvement of the Permanent Representative to the WMO for Somalia.

"The training under WISER was effective in providing comprehensive knowledge and skills in seasonal forecasting and addressing drought and flood challenges. However, incorporating local knowledge, practical exercises, and providing ongoing support could have further enhanced the program's impact and effectiveness"

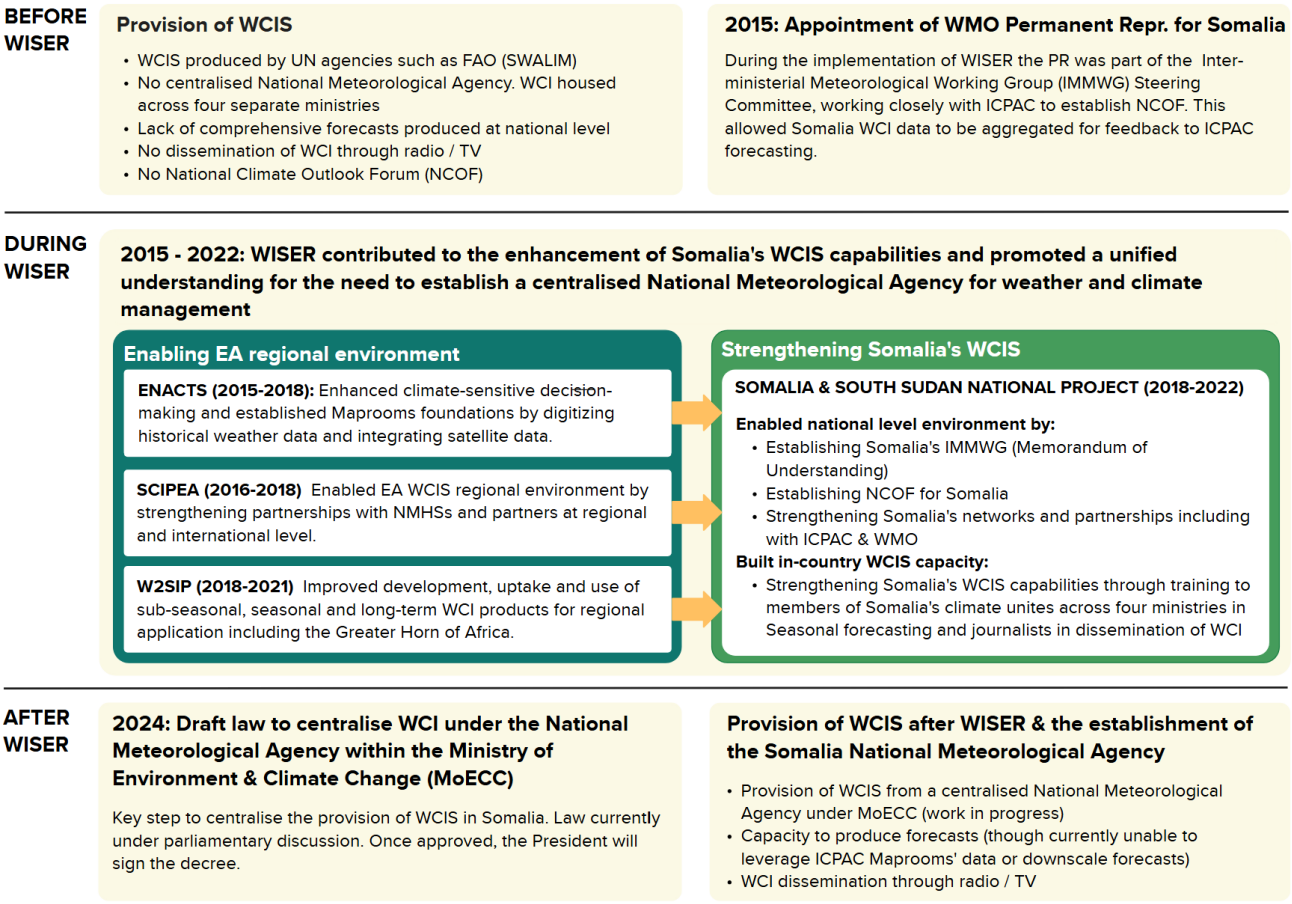
WISER trained Somali forecaster

Today, spurred on by this support, a draft law is under discussion in the Somali Parliament aimed at permanently consolidating all WCIS within one agency, housed under one ministry. Although this seems like a small change, it is a foundational and critical one for WCIS in Somalia. Some infrastructural and technical challenges continue, with most Somali WCI data held by ICPAC, and a lack of ability to downscale weather information to the same degree of other Member States (MS) National Meteorological and Hydrological Services (NMHS). Overcoming these obstacles will require more funding and support at the national level in the future.

WCIS in Somalia: before, during and after WISER

Figure 1 summarizes Somalia's WCIS provision before and after WISER, highlighting WISER's contributions and other key events that enhanced WCIS in Somalia.

Figure 15: Weather Climate Information Services in Somalia before, during and after WISER



Source: Elaborated by the Evaluation Team with information extracted from documentation review and KIIs

The WCI problem addressed:

Prior to 2015 and WISER support, Somalia did not have a centralised National Meteorological Agency managing all is WCI services. Various government departments provided discrete meteorological services, with key stakeholders highlighting how this negatively impacted on WCIS in-country. They emphasised that the absence of a cross-governmental coordinated effort, and the related necessary technology to deliver WCI, hindered the generation, delivery, and effective use of WCI. This environment made it challenging to provide coherent forecasts and accurate WCIS, which in turn made it difficult to meet the needs of different target groups. In addition to the lack of coordination, programmes offering weather broadcasts or WCI in general, was not available on Somali TV or radio, media which often act as critical mechanisms through which weather information can reach the population.

What WISER did and what changed as a result:

From 2015, Somalia received a crucial combination of nationally and regionally focused projects funded by WISER. Between 2015-2018, WISER funded the Enhancing National Climate Services (ENACTS: 2015-2018, £1.37m)[104] project and the Strengthening Climate Information Partnerships in East Africa (SCIPEA - 2016-2018, £1.2m)[105] project. Both projects were fundamental to improving WCIS provision in East Africa and created significant momentum in the region. As ICPAC played a key role in these projects, and by virtue of the relationship of all IGAD MS with regional bodies such as ICPAC, which enabled Somali WCI stakeholders to see firsthand, by understanding how other IGAD MS were able to use better data, tools and WCI products, the potential benefits of the provision of improved WCIS in a Somali context. Key stakeholders interviewed stated that this was critical to delivering improvements to the governance and dissemination of WCI as presently underway.

ENACTS aimed to enhance climate-sensitive decision-making at all levels by digitizing historical weather data (Ethiopia, Kenya, Tanzania, Uganda) and integrating it with new satellite data. Amongst the products which had a significant impact on the improved delivery of WCIS, the project created a detailed 30–50-year climate record accessible online by the IGAD MS NMHS and the International Research Institute (IRI) data library, with tailored applications for sectors such as agriculture and health. It established the foundation for the current Maprooms, which function by using a High Performing Computer (HPC) cluster, the data library, and various data sources to provide NMHS with accurate, up-to-date WCIS and the ability to downscale forecasts. Key stakeholders highlighted how important the Maprooms and data library were to the success of this project.

SCIPEA aimed to enhance early warning capabilities and decision-making by increasing resources for sustainable climate prediction skills. This regional project strengthened climate partnerships by boosting collaboration and data sharing among climate centres, providing training to NMHS (Ethiopia, Kenya, Tanzania Uganda), and co-developing improved seasonal forecast products tailored to user needs. It enhanced links between climate organisations, co-developed prototype services, and created training modules on dynamical seasonal prediction.

Following these projects, and working in parallel to each other, came the nationally focused Somalia and South Sudan National Project (2018-2022[106]) and regionally focused support to ICPAC through WISER support to ICPAC (W2SIP) (2018-2021). This project identified WCI priority users and sectors, established the Inter-ministerial Meteorological Working Group (IMMWG), and provided extensive training to seven members from Somalia's climate units across the four ministries who were then managing WCI (Ministry of Agriculture and Irrigation, Ministry of Energy and Water Resources, Ministry of Humanitarian Assistance and Disaster Management, and Ministry of Transportation and Civil Aviation). In 2020, an ICPAC team went to Somalia to meet with the President to discuss the

"Instrumental to the development of the Act taken to Parliament, is our understanding that the consolidated portfolio for WCIS will sit under one ministry."

Permanent Representative of the WMO to Somalia

[104] Implemented by International Research Institute for Climate and Society of Columbia University (IRI) in partnership with CARE Adaptation learning Programme, KMD, ICPAC, the Tanzania Meteorological Authority (TMA), the Ethiopia National Meteorological Agency (ENMA), and the Uganda National Meteorological Agency (UNMA).

[105] Implemented by UK MO in partnership with UK MO in partnership with IRI, ICPAC, KMD, TMA, UNMA, and the Ethiopia National Meteorological Agency.

[106] The project had an initial budget £852,408 and was implemented by ICPAC in partnership with the UK MO, IRI, CARE International and United Nations Environment Programme.

importance of setting up a dedicated National Meteorological Agency into which ICPAC could channel support. This formalised collaborations with key ministries and organisations and facilitated benchmarking visits which underpinned the signing of a Memorandum of Understanding (MoU) between the ministries represented by the IMMWG to support a centralised national level weather and climate service in Somalia. ICPAC developed a roadmap to guide the Somalia Prime Minister's Office in coordinating and progressing with the centralisation of Somalia's NMHS. The roadmap also aimed to develop a National Framework for Weather, Water, and Climate Services once the National Meteorological Agency is established (still work in progress). In 2021, and supported by the Somalia National Project, Somalia (and South Sudan) implemented their first ever National Climate Outlook Forums (NCOF), bringing together climate producers, users, decision makers and other actors, to increase understanding, interpretation use and uptake of weather and climate information at national level. Additionally, and to enhance delivery of CIS, two Seasonal Media Action Plan (S-MAP) workshops were delivered.

Feedback from those who participated in the training highlighted that:

- As a result of continued use of tools and techniques from WISER-supported training (including historical data analysis, climate patterns etc) had enhanced the generation and communication of WCIS, particularly in seasonal forecasting, drought management, and flood risk assessment.
- The establishment of a centralised NMHS under the Ministry of Energy and Climate Change (MoECC) in Somalia is expected to have a significant positive impact across multiple areas. Respondents anticipate a significant or very significant impact on WCI governance systems, forecasts, improved accuracy and communication, enhanced stakeholder collaboration, and greater public trust in WCIS.

In parallel to the nationally focused project, WISER support to ICPAC (W2SIP)[107] aimed to improve the development, uptake and use of sub-seasonal, seasonal, and long-term timescale products and services for regional applications with focus on ICPAC countries[108]. This regional project improved forecasting for the Greater Horn of Africa (GHA) through the creation of improved seasonal forecasts, enhanced access to climate information, and improved media understanding and reporting of seasonal forecasts. W2SIP supported the IGAD MS to improve forecasting at national and downscaled level, enhanced processing and data analysis, and provided access to tools that MS could utilise.

Box 7: Key WISER projects' achievements, directly or indirectly enhancing WCI in Somalia

ENACTS

- ✓ Enhanced availability, access and use of quality-assured climate information (Kenya & Uganda)
- ✓ Provide a deeper understanding of the impact of the 2015 El Niño
- ✓ Create sustainability of these products (accessible regional historical climate record data and Maprooms) by integrating their use into NMHS

SCIPEA

- ✓ Improved data links and a new platform to decrease lag in issuing of seasonal forecasts from ICPAC and NMHS
- ✓ Enhanced data access for ICPAC and four NMHS from the Global Producing Center and related capacity building
- ✓ Strengthened engagement between stakeholders involved in the generation and use of seasonal forecasts

Somalia and South Sudan National Project

[107] The project had a budget of £2.3m and was implemented by ICPAC in partnership with UK MO, CARE Kenya, IRI, Network of Climate Journalists for the Greater Horn of Africa, KMD, KenGen, the University of Nairobi.
[108] ICPAC countries included IGAD Member States (Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda) plus Burundi, Rwanda, and Tanzania.

- ✓ Enhanced collaboration and strengthened institutional framework by formalising the IMMWG through an MoU between five ministries, establishing the NCOF, and developing roadmaps for the set-up of a centralised National Meteorological Agency in Somalia under one ministry, working closely with ICPAC
- ✓ Enhanced production and communication of seasonal forecasts with the delivery of training in underpinning climate, prediction skills and tailoring of seasonal predictions for user services
- ✓ Development of seasonal forecasting products, guidance for WCIS in Fragile and Conflict-Affected States (FCAS), and an S-MAP

W2SIP

- ✓ ICPAC's objective seasonal forecast system and operationalisation of the HPC Cluster
- ✓ Enhanced regional and national capacity to produce forecasts at appropriate resolutions, harnessing improved data and an array of online climate information products and tools

Source: Extracted from WISER programme PCR, projects PCRs and KIIs

After WISER – what is happening now?

By the end of 2022, significant strides were being made in establishing a unified approach to promote improved WCIS for Somalia. This progress was anchored by a shared understanding among the various ministries, which at that time continued to house various elements of climate and weather information, on the importance of consolidating all aspects of WCI to be able to produce comprehensive services and make use of the resources, data and tools available at regional level (ICPAC, supported by other WISER investments). In order to do this, Somalia, supported by ICPAC, IGAD and the WMO, developed an intra-governmental collaboration and consensus involving the drafting and passing of legislature, a process which required leadership and a concerted and sustained commitment from the Somali government and regional bodies. In 2023, the Federal Republic of Somalia took a significant step with the approval of the National Meteorological Agency Bill by the Somali Cabinet with the Somali MoECC Minister commenting:

"Gratitude to the Cabinet for their approval of the historic bill, paving the way for the establishment of the National Meteorological Agency. This significant stride is dedicated to ensuring the provision of timely early warning data for climate and weather-related threats, in strict alignment with the rigorous standards articulated by the World Meteorological Organisation (WMO). @MoECC_Somalia will diligently nurture and supervise this endeavor, assuring the establishment of an autonomous and resilient agency."

Tweet from the Somali MoECC on approval of National Meteorological Agency Bill (October 2023)

Embedded as a policy statement within the recently updated Somalia National Climate Change Policy, the process to unify WCIS has taken time and the draft law necessary to establish the National Meteorological Agency is currently under discussion in Parliament for approval. Following this, it is expected that the President will sign the Act, which will provide the legislative power in Parliament to ensure that all WCIS is housed under one Agency, and in one Ministry. Following this approval, a Presidential Decree will be issued to formally recognise this Agency. Key stakeholders reflecting back on the process highlighted how important it has been getting the governances structures right and in place, stressing the importance of WISER support to achieve this.

Challenges remain. Resolving (nearly) the governance issues around WCIS in Somalia and building capacities are very big first steps to improving the generation and uptake of WCIS in the country. There is still much to be done. For a number of reasons (i.e., lack of resources and capacities), Somalia still lacks the ability to make use of the data provided by the ICPAC Maprooms and the associated tools, to produce downscaled forecasts. FCAS, such as Somalia, will struggle to downscale and make use of available data and forecasts without further funding and trained meteorological personnel to do this.

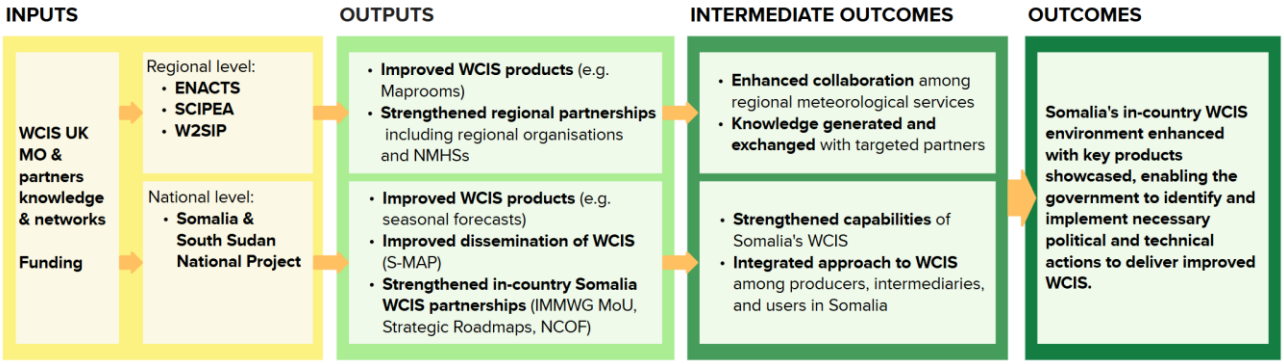
"Once funding is realised and directors of the Somalia Meteorological Authority are appointed, we will have the capacity to downscale forecasting to different regions within Somalia."

Key Informant Interview

WISER's contribution to change:

Through the above-mentioned projects, WISER enhanced the WCIS environment at both the East Africa regional and Somalia national levels while building Somalia's in-country WCIS capabilities. Figure 2 illustrates WISER's contributions to these change pathways, highlighting the role of other key enabling factors. Other factors contributed to this change including the return of the diaspora population and support from regional organisations such as the WMO.

Figure 16: WISER's contributions to change pathways



Source: Elaborated by the Evaluation Team with information extracted from documentation review and KIIs

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Evidence sources:

Interviews with key stakeholders including the PR for WMO to Somalia, and representatives from IGAD, ICPAC, KMD, and CARE UK

Written answers to online survey from WISER trained Somali forecasters (August 2024)

Columbia University (2017) ENACTS, Project Completion Report with Annexes. Version April 2017

Columbia University (2017) ENACTS, Extension review. Version March 2018

ICPAC (2021) W2SIP, Project Completion Report with Annexes. Version December 2020

MOECC (2023) Somali Cabinet Approves Historic Bill for Establishment of the National Meteorological Agency. Published 26th October 2023. Available at: https://moecc.gov.so/2023/10/26/khadija-mohamed-al-makhzoumi/

MOECC (2023) Somali National Climate Change Policy. Published November 2020 and updated February 2023. Available at: https://moecc.gov.so/wp-content/uploads/2024/04/Somalia-National-Climate-Change-Policy-EN.pdf

UK MO (2022) Weather and Climate Information Service for Africa (WISER) – East Africa. Extension Closure Report (July – December 2021 & Further extension to end Feb 2022). Submitted March 2022

UK MO (2021) Project Completion Report of WISER Support to Enhance Delivery of Coproduced Weather and Climate Products and Services for Priority Sectors in Somalia and South Sudan. Submitted March 2021

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UK MO (2017) SCIPEA, Project Completion Report with Logframe. Version April 2017

UK MO (2017) SCIPEA, Project Completion Report Bridging phase. Version January 2018

UK MO (2017) SCIPEA, Extension review. Version March 2018

Annex 11c1 - WISER Thematic Evaluation WICS Political Economy Analysis

Kenya - September 2024

This document comprises a light-touch political economy analysis (PEA) of Weather and Climate Information Services (WCIS) in Kenya, one of the deep-dive countries in the WISER thematic evaluation for data collection and evidence purposes. The PEA covers, in brief: macrostructural issues impacting on the political economy of WCI in Kenya; overview of WCIS investments in Kenya; key stakeholders dynamics; related policies, laws and regulations; and the incentives.

Kenya's macrostructural overview

Kenya's macrostructural context is shaped by a range of demographic, economic, political, and environmental factors.

Demographics: Kenya's demographics comprise a diverse population and significant socio-economic challenges. As of 2023, Kenya's population stands at approximately 55.1 million, with a high proportion of youth contributing to a population growth rate of 2.0% annually (World Bank, 2023). However, the country faces substantial poverty, with 36.1% of the population living below the poverty line of $2.15 per day (2017 purchasing power parities (PPP)) (World Bank, 2023). There is also an increasing elderly population (those 65+ years old), which, according to the Kenya National Bureau of Statistics (2019), has grown to 3.9% of the total population., The increase in the percentage of the elderly population reflects ongoing demographic transition with potential declining fertility rates and improvements in healthcare, contributing to longer life expectancy. Gender disparities are evident, limiting women's full participation in economic and political life. For instance, despite women making up over half of Kenya's population, only 23% of parliamentary seats are occupied by women as of 2023 (World Bank, 2023). Female labour force participation is considerably lower than that of men, and women are more likely to be engaged in informal, less secure, and lower-paying jobs (Kenya National Bureau of Statistics, 2019). This underscores the broader economic inequalities that limit their participation in the workforce. Marginalized communities, including ethnic minorities, persons with disabilities, and those in the informal sector, frequently face barriers to representation and active engagement in decision-making processes (Kenya National Bureau of Statistics, 2019). The census data further indicates that these groups are often underrepresented in formal employment and political roles, highlighting the systemic challenges they face in achieving equal representation.

Economy: Kenya's economy is characterized by a blend of agriculture, industry, and services, with agriculture still accounting for about 34% of gross domestic product (GDP) and employing over 40% of the total workforce (Kenya National Bureau of Statistics, 2023). The country's GDP was estimated at $107.44 billion in 2023, with a per capita GDP of $1,949.9, reflecting moderate economic development levels (World Bank, 2023). The economy grew at an annual rate of 5.4% in 2023 (World Bank, 2023), but this growth is tempered by a relatively high unemployment rate of 5.7% and inflation at 7.7% due to rising consumer prices and global economic pressures (World Bank, 2023). Remittances, which make up 3.9% of GDP, remain a crucial income source for many households, demonstrating Kenya's dependency on its diaspora community (World Bank, 2023). Economic growth is also impeded by infrastructural deficits, bureaucratic inefficiencies, and regional inequalities, which

pose significant challenges to achieving sustained economic progress and improved living standards (Kenya National Bureau of Statistics, 2023; World Bank, 2023).

Political environment: Kenya's political landscape is shaped by its multiparty democracy and the 2010 constitution, which introduced a devolved governance structure to enhance local decision-making and public participation (Kenya National Bureau of Statistics, 2023). While this shift has promoted inclusivity, political stability is often undermined by ethnic rivalries, party factionalism, and occasional electoral violence, which hinder effective governance (Freedom House, 2023). In August 2024, Kenya experienced significant public protests in response to new tax increases implemented by the government, highlighting widespread discontent over escalating economic pressures and perceived inequities. The unrest was particularly fuelled by increases in taxes on essential goods and services, which many Kenyans viewed as disproportionately affecting the lower and middle-income populations (Human Rights Watch, 2024; BBC News, 2024). The government's response to the August 2024 protests and its ability to engage constructively with the opposition and civil society will be key to resolving these tensions and advancing political and economic reforms.

Environment & impact from Climate Change: Kenya is particularly vulnerable to climate change due to its reliance on agriculture and diverse ecological zones, including arid lands and highland forests (United Nations Framework Convention on Climate Change (UNFCCC), 2023). The country faces increasing risks from climate-induced hazards such as prolonged droughts, floods, and unpredictable weather patterns, which threaten food security, water resources, and economic stability (World Bank, 2023). These challenges are most acute in rural areas, where communities rely on rain-fed agriculture and pastoralism, making them highly susceptible to climate variability (Kenya National Bureau of Statistics, 2023). While Kenya's carbon dioxide (CO_2) emissions are low at 0.4 metric tons per capita (2020), deforestation and land degradation, particularly in critical areas like the Mau Forest, continue to pose significant environmental threats (World Bank, 2023; United Nations Environment Programme (UNEP), 2023).

In response to these challenges, the Kenyan government, with international support from organizations like the UNFCCC and the World Bank, has launched several initiatives, such as the National Climate Change Action Plan and the Kenya Climate Smart Agriculture Strategy, aimed at enhancing climate adaptation and mitigation efforts (UNFCCC, 2023; World Bank, 2023). Despite progress, significant infrastructure gaps remain, with only 31% of the population having access to safely managed sanitation services as of 2022, and 76% with access to electricity, primarily from renewable sources (World Bank, 2023). Further efforts are needed to strengthen resilience, particularly for vulnerable and marginalized communities, to ensure sustainable development amid growing climate threats (Kenya National Bureau of Statistics, 2023; UNFCCC, 2023).

WCIS investments in Kenya

The Kenyan government has invested in meteorological services since the 1960s. Initially, these services were managed under the Ministry of Transport and Communications, which later evolved into the Kenya Meteorological Department (KMD) in 1976, which is now housed within the Ministry of Environment, Climate Change and Forestry (MoECCF). The KMD serves as the principal agency responsible for systematic weather observation, forecasting, and providing early warning systems (KMD, 2023).

The development of KMD has been supported by numerous international partnerships, including collaborations with the World Meteorological Organization (WMO), the United Nations Development Programme (UNDP), and Foreign, Commonwealth & Development Office (FCDO), which have

provided technical expertise and funding to enhance the department's capabilities. Investments have focused on upgrading weather stations, installing advanced radar systems, and deploying satellite technology to improve data collection and forecasting accuracy. Despite these advancements, Kenya still faces challenges such as insufficient funding, technological gaps, and the need for improved data infrastructure and human capacity (World Bank, 2023; WMO, 2023). These challenges were confirmed with key stakeholders within Kenya as part of the thematic evaluation.

On-going efforts include further collaboration with international donors and development agencies, such as the World Bank and African Development Bank, to support initiatives aimed at strengthening Kenya's meteorological services. These initiatives also involve enhancing early warning systems (EWS) and integrating climate data into planning and decision-making processes across various sectors, particularly agriculture and water management, to bolster Kenya's resilience against climate change and natural disasters (UNDP, 2023; KMD, 2023).

Box 1 highlights examples of WCIS donor-funded projects in Kenya aimed at enhancing meteorological services, warning systems (EWS), and integrating climate data into planning and decision-making across multiple sectors.

Box 8: Examples of international donor-funded projects investing in Kenya's WCIS

Adaptation to Climate Change in Arid and Semi-Arid Lands (KACCAL) Project (2008-2014): Supported by the Global Environment Facility (GEF) and the World Bank, this project focused on enhancing resilience to climate variability in Kenya's arid and semi-arid regions by improving the capacity of communities to use climate information for planning and managing climate risks (GEF, 2023; World Bank, 2023).

Strengthening Climate Information and Early Warning Systems in Kenya (2013-2018): Funded by the United Nations Development Programme (UNDP) and the GEF, this project aimed to enhance Kenya's ability to provide reliable weather and climate information and develop effective early warning systems for climate-induced hazards.

Building Resilience to Climate Extremes and Disasters (BRACED) Kenya Programme (2015-2022): A collaboration between the UK's Department for International Development (DFID, now FCDO) and several international NGOs, this programme worked to improve the resilience of vulnerable communities to climate extremes by enhancing access to weather information and early warning systems.

Kenya Resilient Arid Lands Partnership for Integrated Development (Kenya RAPID) Program (2015-2020): Supported by USAID and the Swiss Agency for Development and Cooperation (SDC), this programme aimed to improve water resources management and access to weather information in Kenya's arid and semi-arid regions to enhance climate resilience.

Improving Weather and Climate Information for Development and Disaster Risk Reduction in Africa (WISER) - Kenya (2015 - 2020): A partnership between the United Kingdom Meteorological Office (UKMO) and the FCDO, this initiative aimed to strengthen the capacity of the KMD to deliver enhanced weather and climate services to vulnerable communities, including better early warning systems and the integration of climate data into local planning.

Kenya Drought Early Warning System (2017-2022): Funded by the European Union and implemented by the Food and Agriculture Organization (FAO) and Kenya's National Drought Management Authority (NDMA), this project focused on improving early warning systems and drought preparedness, particularly in Kenya's arid and semi-arid regions.

Kenya Climate Smart Agriculture Project (2017-2026): Funded by the World Bank and the Climate Investment Funds, this project aims to increase agricultural productivity and build resilience to climate change by integrating climate information into agricultural practices and improving weather forecasting and early warning systems.

Source: international donor websites

Stakeholders in the Kenya's WCIS ecosystem

The provision of WCIS in Kenya involved multiple stakeholders at different levels. The KMD is the primary body for collecting and disseminating weather and climate data. It works closely with agencies within the Government of Kenya (GoK) such as the National Disaster Operations Centre

(NDOC), the NDMA, and the Ministry of Agriculture to integrate climate data into disaster response and agricultural planning. The Water Resources Authority (WRA) also plays a crucial role in managing hydrological data related to water resources.

At the regional level, county governments and local organizations adapt WCIS strategies to local needs, ensuring that communities receive relevant information to support climate adaptation and risk management. Local and International Non-Governmental Organisations (NGO) and international partners, such as UNDP and the World Bank, provide crucial support in capacity building and technical assistance. Research institutions like the University of Nairobi and Kenya Agricultural and Livestock Research Organization (KALRO) contribute to developing climate models and forecasting tools, enhancing Kenya's resilience to climate impacts.

Table 1 provides an overview of key stakeholders.

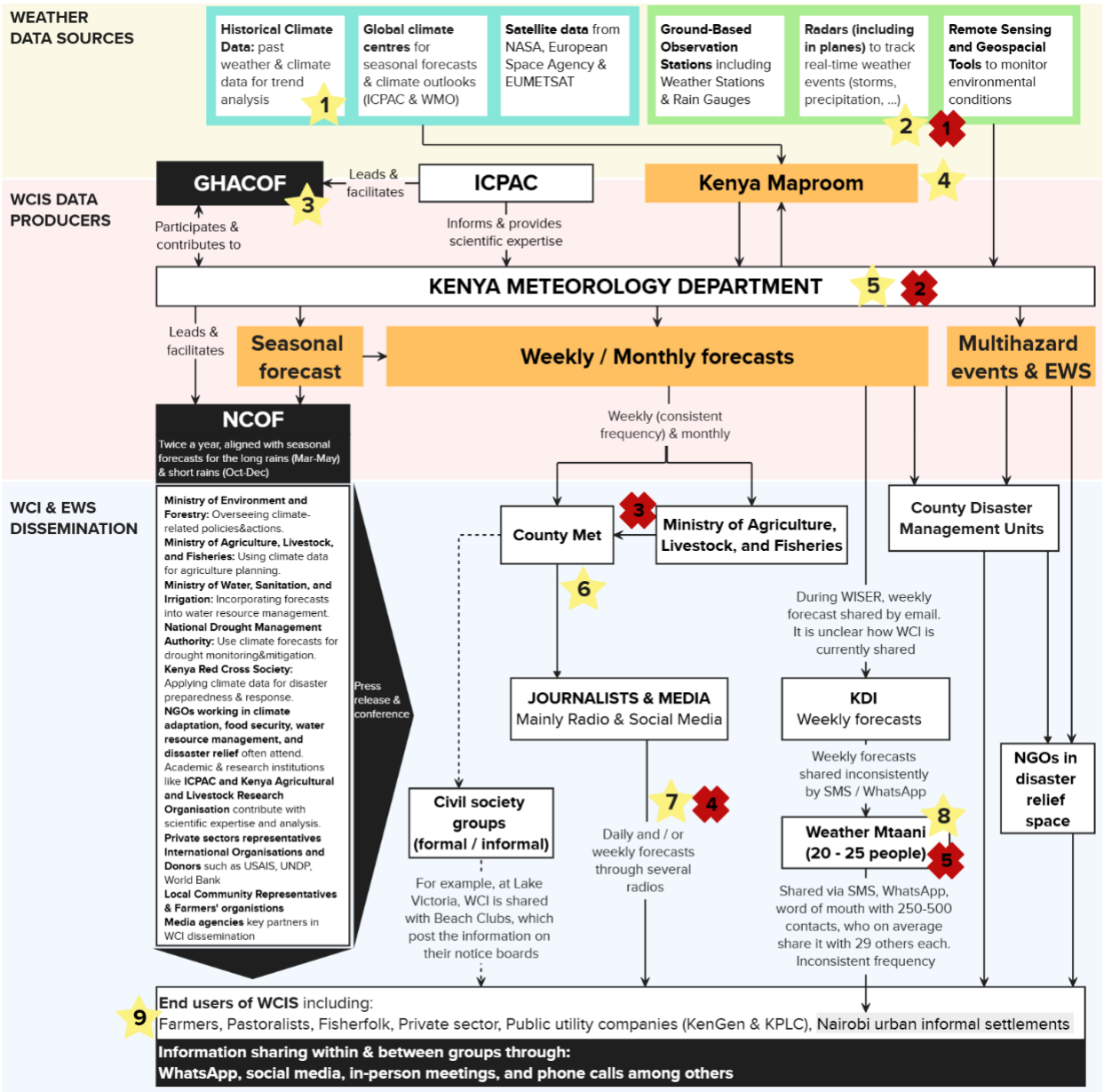
Table 23: Key stakeholders in the Kenya's WCIS ecosystem

Stakeholder	Role
National level	
KMD	Collects, analyzes, and disseminates weather and climate data to support disaster risk reduction and agricultural planning. Provides forecasts and early warnings for natural hazards.
MoECCF	Oversees environmental and climate policies, including the integration of weather and climate data into national planning and disaster management strategies. Collaborates with KMD and NDOC to ensure climate data informs policy-making.
NDOC	Coordinates disaster preparedness and response efforts, working closely with KMD, NDMA, and local governments to ensure timely integration of weather data into emergency planning.
NDMA	Monitors drought conditions and manages drought response efforts. Utilizes weather and climate data from KMD to plan and implement drought risk reduction strategies, particularly in arid and semi-arid regions.
Ministry of Agriculture, Livestock, Fisheries, and Cooperatives	Uses weather data to inform agricultural practices and decision-making. Provides guidance to farmers to ensure food security and improve agricultural productivity. Distributes weather-based advisories and early warnings to agricultural stakeholders.
Sub-national (County) and local administrative level	
County Governments	Implement regional weather and climate information services projects in coordination with national agencies. Adapt national WCIS strategies to local contexts to improve effectiveness.
Local Municipalities	Engage in localized dissemination of weather and climate information. Work with community organizations to ensure timely and accessible information reaches local communities for disaster preparedness and risk reduction.
Community level	
Community Organizations	Facilitate the dissemination of weather and climate information at the community level. Support local adaptation measures by making climate data accessible and practical for farmers, fishermen, and other local stakeholders to plan activities and reduce risks.
Research Centres	
Institute for Climate Change and Adaptation, University of Nairobi	Conducts research and develops localized climate models and forecasting tools. Provides scientific support to national agencies and collaborates on WCIS initiatives to enhance Kenya's resilience to climate impacts.
Kenya Agricultural and Livestock Research Organization (KALRO)	Utilizes climate data to conduct research and develop agricultural strategies that are resilient to changing climate conditions. Shares findings with farmers and policymakers to support climate-smart agriculture.

Source: Secondary data review and KIIs

Figure 1 illustrates the flow of WCI in Kenya, highlighting WISER's contributions (yellow stars) to certain areas while also pointing out persistent challenges (red crosses) identified through KIIs.

Figure 17: Kenya WCI flow



EXAMPLES OF WISER CONTRIBUTION TO KENYA WCI FLOW:

1. Through ENACTS, WISER enhance climate-sensitive decision-making at all levels by digitizing historical weather data (Ethiopia, Kenya, Tanzania, and Uganda) and integrating it with new satellite data.
2. Evidencing ongoing collaboration and partnerships post-WISER, there have been continued annual agreements between WMO, KMD and Kenya Airways (KQ) for the continued operation of the KQ AMDAR system which includes WMO support to the ongoing communications costs for the aircraft.
3. SCIPEA regional project strengthened climate partnerships by boosting collaboration and data sharing among climate centres. For example, partnership between KMD, TMA, NMA to enhance national forecast analysis which benefits stakehodlers such as Base Titanium in the mining sector, or KenGen power generation planning.
4. ENACTS established the foundation for the current Maprooms.
5. Institutional strengthening of KMD through capacity building provided through IMTR project or the enhancement of meteorological observations and EWS in Kenya (particularly around Lake Victoria) through HIGHWAY.
6. Through Western Kenya project, WISER supported KMD's strategy for decentralisation, providing a suite of standardised climate services designed and delivered with end-users at the forefront. Additional, County Met officials participated in Radio shows supported by WeatherWise
7. Improved dissemination of WCI through WeatherWise by enhancing the ability of media (particularly radio) professionals and technical experts (local met offices) to meet WCI needs of communities in Northern Kenya, the Lake Victoria shores, and the coastal areas of Kenya.
8. Weather Mtaani groups created through DARAJA project continue to transmit WCI and do so beyond originally targeted geographies.
9. Interviews with Pastoralists, Farmers, and Fisherfolk highlighted the important of WCI in their live and decision-making for preparing and responding to weather and climate events.

EXAMPLES OF CHALLENGES HIGHLIGHTED IN KIIS AND SURVEYS:

1. KMD is not able to process the data providing from KQ AMDAR system.
2. Limited resources challenge maintenance of WCI infrastructure in Kenya and the ability of Met staff to move across country. without Weather Wise, County Officials are not able to continue their collaboration with Radio stations.
3. County Met officials noted during KIIs that WCI messages continue to be shared in English (instead of local languages). In addition, they highlighted that the Ministry of Agriculture is not providing the advisory that is meant to accompany WCI, again limiting usefulness and impact.
4. Frequency of WCI shows have declined and there is a lack of budget on gathering WCI stories from the field since WISER support ended.
5. Frequency of dissemination and co-production processes to tailor WCI messages shared have been reduced due to lack of budget.

Source: KIIs and a review of secondary data including WISER documents.

WCIS Laws, Policies, and Regulations

Laws, policies, regulations, and strategies related to the use of WCIS in Kenya have been developed to enhance climate resilience, disaster preparedness, and agricultural productivity. These frameworks target various sectors and aim to integrate WCIS into national planning and policy-making. One such law is the Kenya Meteorological Department Act (2019), which established a legal framework that allowed the KMD to decentralize its services to county levels, enhancing operational efficiency and effectiveness. The Act mandates KMD to provide accurate and timely weather and climate information across all regions of Kenya, ensuring coverage even in remote areas. This decentralization aims to improve the delivery of localized weather forecasts and early warning systems, which are essential for disaster preparedness and climate resilience, particularly in regions prone to climate-related hazards. It also facilitates closer collaboration with county governments to offer more tailored meteorological services suited to local needs. (Key informant interviews)

Listed below are some selected laws, policies, and regulations related to the use of WCIS in Kenya:

Kenya National Adaptation Plan (2015-2030): Provides a comprehensive framework for addressing climate adaptation in Kenya, focusing on sectors most vulnerable to climate change, such as agriculture and water resources. The Kenya National Adaptation Plan (NAP) highlights the need for enhanced WCIS to support adaptation efforts and build resilience at the national and community levels (Government of Kenya, 2015).

Kenya Water Act (2016): Regulates the management and use of water resources in Kenya. The Act requires the integration of hydrological data and weather information into water management plans to enhance water resource management and resilience to climate change (Government of Kenya, 2016).

National Drought Management Authority Act (2016): Establishes the NDMA to coordinate and manage drought risk reduction and response activities in Kenya. The Act mandates the integration of weather and climate data into drought preparedness and response strategies to minimize the impacts of drought on vulnerable communities (Government of Kenya, 2016).

Disaster Risk Management Policy (2018): This policy provides a framework for disaster risk reduction and management in Kenya, incorporating WCIS to support decision-making processes across various sectors, including agriculture, water, and infrastructure. The policy emphasizes the importance of using climate and weather information for effective disaster preparedness and response (Government of Kenya, 2017)

National Climate Change Action Plan (NCCAP) (2018-2022): This plan outlines Kenya's strategy for adapting to climate change and mitigating its impacts. It emphasizes the role of WCIS in sectors such as agriculture, water resources, and disaster management to enhance climate resilience. The NCCAP calls for the enhancement of weather forecasting and early warning systems to better prepare for climate-related hazards (Ministry of Environment and Forestry, 2018).

Kenya Meteorological Department Strategic Plan (2019-2023): This plan sets the framework for strengthening meteorological services in Kenya, including the modernization of weather stations, radar systems, and satellite data collection. The strategy aims to enhance the capacity of the KMD to provide accurate and timely weather forecasts and early warning systems (KMD, 2016).

Kenya Climate Smart Agriculture Strategy (2017-2026): which promotes the use of weather and climate information to inform agricultural practices and improve resilience against climate variability. The strategy is supported by international donors, including the World Bank and the UN Food and Agriculture Organization (FAO), and focuses on integrating WCIS into agricultural decision-making, enhancing early warning systems, and improving data sharing between meteorological services and farmers (Ministry of Agriculture, Livestock, and Fisheries, 2017).

These laws, policies, and strategies demonstrate Kenya's commitment to integrating WCIS into its national development framework to address climate risks, enhance resilience, and ensure sustainable development.

Incentives and Interests

The review of secondary data and thematic evaluation interviews highlighted incentives and disincentives that influence the effectiveness of the provision of WCIS across Kenya.

Key positive incentives in Kenya's WCIS ecosystem include: **(i) International funding and partnerships contributing to technological upgrades and the capacity building of WCI systems in Kenya:** International organizations such as the FCDO, World Bank and the UNDP have played significant roles in supporting KMD and enhancing the country's WCI systems. See Box 1 above. **(ii) Enhanced Integrated Stakeholder Collaboration:** The Government of Kenya, often in collaboration with international organizations such as the WMO and UNDP, has developed frameworks to integrate climate data into various sectors. These frameworks include the Kenya Climate Smart Agriculture Strategy (2017-2026) for agriculture, the Disaster Risk Management Policy (2018) for disaster planning, and the Kenya Water Act and NDMA Act (2016) for water management. These initiatives are designed to enhance resilience against climate variability across multiple sectors.

Challenges or limitations within the WCIS ecosystem in Kenya include: **(ii) Funding constraints at the national level:** While international funding has been essential, Kenya faces challenges due to limited

domestic funding. The KMD's operations are often constrained by insufficient budget allocations from the national government, which affects the sustainability of weather services and the maintenance of meteorological infrastructure. In turn local KMD staff often have to leverage their own financial resources when undertaking travel or use of phone for work, which inhibits the scaling and sustainability of their work (KMD, 2019; Key Informant Interviews). **(ii) Technological and infrastructural limitations:** Despite some improvements, Kenya's WCIS infrastructure still faces significant challenges. For example, a substantial number of weather stations are outdated or non-functional, particularly in remote regions. These technological gaps limit the ability of the KMD to provide comprehensive weather coverage across the country, affecting the reliability of forecasts and early warning systems (Key Informant Interviews).

Evidence sources:

Interviews with key stakeholders including IGAD, ICPAC, KMD, BBC Media Action, Resurgence, UK MO, and FCDO.

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Annex 11c2 - WISER Thematic Evaluation WICS Political Economy Analysis

Bangladesh - September 2024

This document comprises a light-touch political economy analysis (PEA) of Weather and Climate Information Services (WCIS) in Bangladesh, one of the deep-dive countries in the WISER thematic evaluation for data collection and evidence purposes. The PEA covers, in brief: macrostructural issues impacting on the political economy of WCI in Bangladesh; WCIS Bangladesh overview and challenges; key stakeholders dynamics; related policies, laws and regulations and the incentives.

Bangladesh's macrostructural overview

Bangladesh's macrostructural context is shaped by a range of demographic, economic, political, and environmental factors.

Demographics: Bangladesh has a population of approximately 172.9 million people (2023), characterized by a young demographic profile with a median age of around 27. The population growth rate is approximately 1%, reflecting high birth rates and declining mortality rates. Bangladesh faces socio-economic challenges, including significant levels of poverty, although the poverty rate has been decreasing over recent decades due to economic growth and social safety net programs, 5% of Bangladesh's population is living below the $2.15 a day poverty line (2017 purchasing power parities (PPP)) (World Bank, 2023)

Although progress has been made over the last decades, gender disparities persist, impacting women's participation in the workforce and decision-making processes. The female labour force participation rate increased to 37% in 2023, up from 29% in 2000, showing a positive trend in women's economic engagement (International Labour Organization, 2024).

Economy: Bangladesh's economy has been growing steadily, with a gross domestic product (GDP) growth rate of 5.8% in 2023, positioning it as one of the fastest-growing economies in Asia. The GDP per capita stands at $2,529.1, reflecting an overall upward economic trend. The economy remains heavily reliant on key sectors such as the textile and garment industry, agriculture, and remittances. Although the unemployment rate is relatively low at 5.1%, the country still faces challenges related to underemployment and a large informal employment sector. Inflationary pressures have intensified, with the consumer price inflation rate rising to 9.9% in 2023, which poses a challenge to maintaining economic stability. Remittances continue to play a crucial role, contributing 5.3% to GDP, highlighting the economy's dependence on migrant workers and its vulnerability to global economic conditions (World Bank, 2023) Despite these economic gains, development is constrained by infrastructure deficits, regulatory challenges, and environmental vulnerabilities. Efforts to address these issues are ongoing, with a focus on enhancing infrastructure and regulatory frameworks to support sustainable growth.

Political environment: Bangladesh's political landscape is marked by on-going challenges related to instability, governance, and political polarization. The country has experienced periods of political unrest and confrontations between major political parties, affecting policy continuity and governance effectiveness. Recent events in August 2024 have brought Bangladesh to a historic turning point, with weeks of anti-government protests leading to the resignation and flight of Prime Minister Sheikh

Hasina after 15 years in power. The protests, which began as student-led demonstrations against civil service job quotas, quickly escalated into a broader movement against Hasina's increasingly autocratic rule. The demonstrations escalated into violence, resulting in over 300 deaths and significant unrest, with looting and chaos in the capital, Dhaka. Hasina, criticized for stifling dissent and engaging in widespread corruption, had her government's crackdown on protests fuel further anger among the population. The departure of Hasina has created a political vacuum, and an interim government is expected to be formed as the country navigates a highly uncertain future (BBC, 2024).

Environment & impact from Climate Change: Bangladesh is one of the most climate-vulnerable countries globally due to its low-lying geography, high population density, and dependence on climate-sensitive sectors like agriculture and fisheries. The country faces frequent climate-induced hazards such as cyclones, floods, riverbank erosion, and sea-level rise, which are exacerbated by climate change. These changes complicate forecasting and require adaptive strategies to manage emerging risks. Updating forecasting models and improving adaptive measures are necessary to address the impacts of climate change (Das & Ali, 2021). According to the Bangladesh's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (2021), these hazards pose significant risks to the economy and livelihoods, particularly for coastal and rural communities. Bangladesh's socio-economic conditions, including poverty and limited adaptive capacity, further heighten its vulnerability to climate impacts. Efforts to mitigate these impacts include developing comprehensive climate adaptation plans, strengthening disaster management frameworks, and promoting resilient infrastructure development.

WCIS Bangladesh overview and key challenges

Driven by the urgent need to enhance disaster preparedness, response, and agricultural productivity, the government of Bangladesh has made significant investments in meteorological services. The Bangladesh Meteorological Department (BMD), established in 1948, has been the primary agency responsible for weather observation and forecasting, and providing meteorological services in the country since its establishment. Over the decades, BMD has evolved, with international support and collaborations, particularly from the World Meteorological Organization (WMO), the Asian Development Bank (ADB), and the United Nations Development Programme (UNDP). These partnerships have been crucial in modernizing BMD's capabilities, including the establishment of new weather stations, radar systems, and satellite data receivers to improve data collection, analysis, and dissemination. Despite these advancements, BMD continues to face challenges such as limited funding, technological gaps, and a need for better integration of climate data into national planning and sectoral policies. On-going international collaborations aim to address these challenges through capacity-building programs and further technical support, enhancing Bangladesh's ability to forecast weather events and manage climate risks.

The infrastructure for weather and climate monitoring in Bangladesh is often inadequate, with the country facing multiple challenges such as a lack of sufficient weather stations, outdated equipment, and limited access to advanced technologies (i.e. satellite imaging and radar systems). This infrastructure deficit affects the quality and timeliness of weather forecasts and warnings (Ahmed & Khatun, 2019). Bangladesh WCIS feature inconsistent data quality, inadequate data collection networks, and challenges in data integration, all of which hinder effective forecasting (Hossain & Ali, 2021)

Funding constraints impact the ability to develop and maintain meteorological services in Bangladesh. Limited financial resources affect the procurement of modern equipment, support for research, and

operational sustainability. Increased investment is necessary to address these resource gaps and to enhance the capabilities of weather and climate services (Sarker & Rahman, 2020). Training and capacity building of meteorological services remain a need. Effective communication and dissemination of weather and climate information are critical for disaster preparedness and risk management in any context. In Bangladesh, challenges to this include reaching rural and remote areas, ensuring the clarity of information, and using multiple communication channels to ensure widespread access (Chowdhury & Rahman, 2020). Institutional co-ordination remains a challenge among various WCIS institutions, including government agencies, research organizations, and non-governmental organisations (NGOs). These include overlapping responsibilities, communication gaps, and inefficiencies in collaboration (Miah & Hossain, 2019).

Box 1 highlights examples of WCIS donor-funded projects in Bangladesh aimed at enhancing meteorological services, early warning systems (EWS), and integrating climate data into planning and decision-making across multiple sectors.

Box 9: Examples of international donor-funded projects investing in Bangladesh's WCIS

Bangladesh Climate Change Resilience Fund (2015-ongoing): Administered by the World Bank, this programme focuses on increasing community resilience to climate change impacts by integrating climate information into infrastructure planning and promoting community-based adaptation efforts, with BMD playing a key role in providing climate data.

Flood Forecasting and Early Warning Capacity Building Project (2018-ongoing): Implemented by the Bangladesh Water Development Board in collaboration with the WMO and the International Federation of Red Cross and Red Crescent Societies (IFRC), this project aims to enhance flood forecasting capabilities and develop effective EWS, using BMD's meteorological data.

Bangladesh Weather and Climate Services Regional Project (2016-2021): Funded by the World Bank, this project aimed to improve the quality and timeliness of WCI through investments in BMD infrastructure, including new weather stations, radar systems, and satellite data receivers, as well as capacity-building for BMD staff.

Strengthening Hydro-Meteorological Services and EWS in Bangladesh (2017-2023): Funded by the World Bank and the Global Facility for Disaster Reduction and Recovery, this project focused on enhancing BMD's capacity to provide accurate weather forecasts and develop robust EWS for climate-induced hazards.

Enhancing Weather and Climate Services in Bangladesh (2022-2027): Jointly funded by the ADB and the World Bank, this initiative seeks to further modernise BMD's technology, upgrading radar and satellite systems to improve the accuracy and timeliness of weather forecasts and EWS.

Weather and Climate Information Services (WISER) (delivered as the Asia Regional Resilience to a Changing Climate (ARRCC) programme) - Support to Bangladesh (2016-2022): A collaboration between the United Kingdom Meteorological Office (UKMO) and the UK Department for International Development (DFID (now FCDO)), this project strengthens the Department of Hydrology and Meteorology (DHM)'s capacity to deliver improved weather and climate services to vulnerable communities.

Source: international donor websites

Stakeholders in the Bangladesh's WCIS ecosystem

The WCIS in Bangladesh brings together essential stakeholders from multiple levels, each contributing significantly to the gathering, sharing, and use of hydrological and meteorological information. At the national level, the Bangladesh Meteorological Department (BMD), operating under the Ministry of Defence, is the primary agency responsible for the collection and dissemination of meteorological data. BMD collaborates closely with the Ministry of Disaster Management and Relief (MoDMR), which oversees disaster preparedness and response, and the Bangladesh Water Development Board (BWDB), which uses meteorological data for flood forecasting and water resource management. The Ministry of Agriculture (MoA) and the Department of Agricultural Extension (DAE) utilise climate information to guide agricultural planning and decision-making, supporting farmers with weather

forecasts and climate-smart agricultural practices. At the regional level, district and upazila administrations implement strategies locally, while union parishads, municipalities, and community-based organisations ensure the data reaches communities, promoting local adaptation and risk reduction measures.

Table 1 provides an overview of key stakeholders.

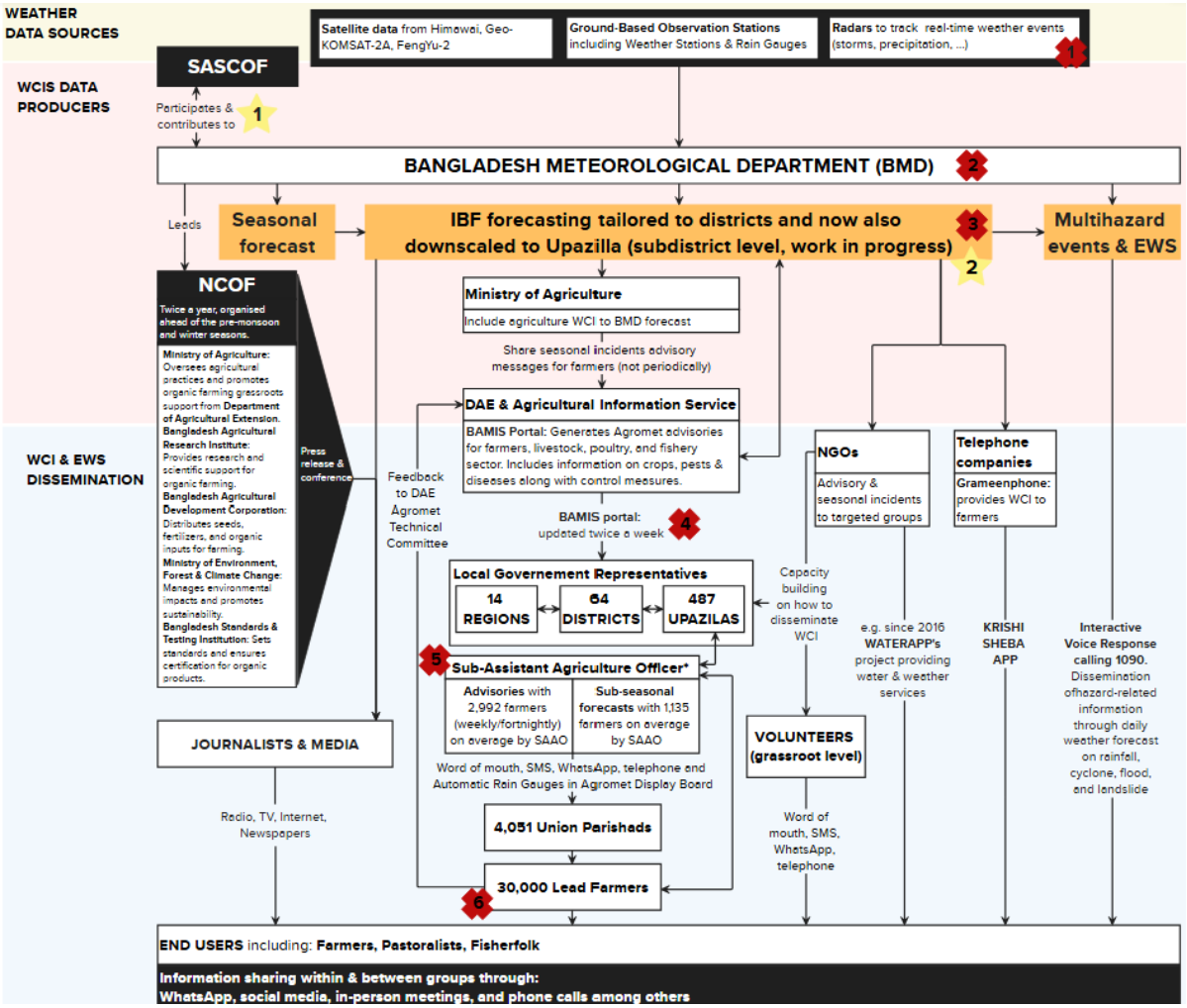
Table 24: Key stakeholders in the Bangladesh's WCIS ecosystem

Stakeholder	Role
National level	
BMD	Collects, analyses, and disseminates weather and climate data for disaster risk reduction and agricultural productivity. Provides weather forecasts, early warnings for natural hazards, and supports climate adaptation strategies. BMD is the primary agency responsible for meteorological services in Bangladesh.
MoDMR	Manages disaster preparedness, response, and recovery efforts. Co-ordinates with BMD and other agencies to integrate hydro-meteorological information into national disaster management plans and strategies.
MoA	Utilises weather data to support agricultural planning and decision-making, providing farmers with timely advice on planting, irrigation, and pest management to enhance food security and agricultural productivity.
DAE	Disseminates WCI to farmers at the grassroots level. Provides extension services that include climate-smart agricultural practices and risk reduction strategies based on BMD's forecasts.
BWDB	Utilises weather and climate data for flood forecasting, water resource management, and planning. Works closely with BMD to improve flood EWS and manage water-related disasters.
Department of Environment	Uses climate data to monitor environmental conditions and implement policies aimed at mitigating climate change impacts. Collaborates with BMD and other agencies to integrate climate data into environmental planning and policy formulation.
Province & Local level	
District & Upazila Administrations	Implement regional hydro-meteorological projects in coordination with national agencies like BMD and BWDB. Tailor national policies to local contexts to ensure effective disaster management and climate adaptation.
Union Parishads & Municipalities	Engage in localised data dissemination, community-based disaster risk reduction, and climate adaptation efforts. Work with district and upazila administrations to ensure WCI reaches all community members, including vulnerable populations.
Community level	
Community-Based Organisations	Disseminate WCI at the community level and support local adaptation measures. Collaborate with local governments and NGOs to ensure that information is accessible, relevant, and actionable for community members, particularly farmers and fishermen.
Non-Governmental Organisations	Work on the ground with communities to enhance disaster preparedness and climate resilience. Implement community-based adaptation projects, provide education and training, and help disseminate WCI through workshops, meetings, and digital platforms.

Source: Secondary data review and KIIs

Figure 1 illustrates the flow of WCI in Bangladesh, highlighting WISER's contributions (yellow star) to certain areas while also pointing out persistent challenges (red cross) identified through KIIs.

Figure 18: Bangladesh WCI flow



EXAMPLES OF ARRCC CONTRIBUTION TO BANGLADESH WCI FLOW INCLUDE:

1. Support to SASCOF between September 2018 and August 2022 by: (i) Co-organising and delivering pre-COF activities through interactive workshops and capability training (including with DHM); (ii) co-organising and facilitating SASCOF and CSUF events held bi-annually (April / September) as well as mini SASCOFs (June / November); and (iii) leading the co-production of the Seasonal Climate Outlook Statement (SCOS) to enhance SASCOF's output.
2. Contributed to enhancing BMD impact based forecasting capabilities with focus on cyclones through technical experts capacity building. Especial focus to weather and climate impact and EWS for wheat rust.

EXAMPLES OF CHALLENGES HIGHLIGHTED BY KIIs:

1. Most BMD radar stations are non-functional or run only a few hours daily, limiting their ability to provide continuous weather data. Challenges include aging equipment, insufficient maintenance, and the need for upgrades. For example: 1) Gazipur Radar Station in an experimental phase with limited operational capacity; 2) Cox's Bazar Radar Station: for monitoring cyclone movements & weather systems along the coastal belt, but it operates restricted hours due to technical & maintenance issues; 3) Khepupara Radar Station: Focused on cyclone tracking & rainfall estimation in the south, but faces similar operational constraints; 4) Moulvibazar Radar Station: Monitors weather systems in northeastern Bangladesh, particularly in Sylhet region, though it is not fully operational; 5) Rangpur Radar Station: helps monitoring rainfall covering north Bangladesh, but operates for only a few hours daily or fully non functional most of the time.
2. Provision of WCIS spread across different government departments / agencies, for example, hydrology and meteorology. Project momentum hindered by senior personnel turnover / retirement.
3. Key barriers to BMD WCI dissemination include challenges in downscaling forecasts to specific locations, the use of technical language, and issues with internet connectivity and general access.
4. According to interviewed SAAO key challenges faced by farmers when using WCIS apps (e.g. BAMIS portal) and IT centres were: too hard to understand (95%), not accessible to them (39%), to expensive (37%), not useful for them (14%), not covering their area (7%)
5. Most SAAO pay for their own travel or phone to share WCIS. Improvements to Advisories and Sub-seasonal forecasting highlighted by interviewed SAAOs are: be more regular (93%), be in simpler language (74%), be more specific to crops farmers are growing (63%), and be easier for them to receive (58%)
6. Advisories received: Interviewed farmers reported challenges around understanding messages (78%), that they could be more regular (78%) and that messaging is not local enough (62%). Overwhelmingly, farmers reported messages as not useful / not useful at all (89%). Only 42% of the interviewed farmers knew about the union IT / digital centres and none of them have ever accesssed them because: it is too far away (47%), information is not useful to me (40%), I get the information from the SAAO in person (42%).

***As part of the evaluation, 43 SAAO and 45 farmers across Pabna, Meherpur, and Rajshahi were interviewed**. Interviewees reported: (i) each SAAO covers an area with at least +1,500 farmers; (ii) received information from other SAAO (86%), SMS / WhatsApp (79%), Ministry of Agricutlure (77%), and BMD (41.9%); (iii) distribute information through Word of mouth (100%), Phone (58%), WhatsApp (35%), SMS (7%). Please note, that as we were not provided with identifying information or geographic coverage about WISER supported projects in Bangladesh, we selected districts in Bangladesh that over the WISER period suffered from wheat rust

Source: KIIs and a review of secondary data including WISER documents.

WCIS Laws, Policies, Regulations, and Strategies

Laws, policies, regulations, and strategies related to the use of WCI in Bangladesh, each targeting different areas, have been identified through a review of secondary data.

A crucial initiative is the Bangladesh Weather and Climate Services Regional Project Environmental Management Plan to enhance weather and climate services in Bangladesh and the region. Primarily funded by the World Bank, with additional support from the Global Facility for Disaster Reduction and Recovery and other partners, the project focuses on modernizing the BMD and related institutions by upgrading key meteorological infrastructure, including weather stations, radar systems, and satellite data receivers. It aims to strengthen the country's meteorological and climate data capabilities while prioritizing environmental sustainability. The project demonstrates the integration of WCIS into national development strategies, addressing environmental, social, and economic dimensions, which are essential for understanding the political economy of climate resilience in Bangladesh (BMD, BWDB, DAE, 2020)

Listed below are selected laws, policies, and regulations related to the use of WCI in Bangladesh.

- National Adaptation Programme of Action (2005): identifies urgent and immediate adaptation needs of Bangladesh in the context of climate change. It emphasises the importance of integrating climate change adaptation into national development planning. The document prioritises the enhancement of weather forecasting and early warning systems to prepare for climate-related hazards (Ministry of Environment and Forest, 2005).
- Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009: is a comprehensive strategy that integrates climate change adaptation and mitigation into national planning. It emphasizes the need for improved WCI services to support sectors vulnerable to climate impacts, such as agriculture, water resources, and disaster management (Ministry of Environment and Forests, 2009).
- Bangladesh Delta Plan 2100 (2018): is a long-term integrated plan than addresses water resources management, climate change adaptation, and disaster risk reduction. It focuses on the sustainable management of water resources, which is closely linked to weather and climate data. The plan emphasises the use of climate models, hydrological forecasting, and weather information systems to anticipate and mitigate the impacts of climate change, especially floods and droughts (Bangladesh Delta Plan website)
- Bangladesh National Agriculture Policy (2018): outlines strategies to enhance agricultural productivity and resilience, including integration of climate-smart agricultural practices and technologies. It promotes the use of WCI to improve crop planning, manage risks, and reduce vulnerabilities to climate variability (MoA, 2018)
- Standing Orders on Disaster (2019): framework for disaster management that includes specific roles for the BMD in providing timely and accurate weather forecasts. The SOD 2019 mandates close coordination between the MoDMR, BMD, and other agencies to ensure the effective dissemination of early warning systems, enhance community awareness, and facilitate prompt disaster preparedness and response actions at all administrative levels (MoDMR, 2019)
- National Plan for Disaster Management (2021-2025): enhances the Bangladesh Meteorological Department's capacity to provide accurate weather forecasts and early warning systems, crucial for disaster preparedness and risk reduction efforts (MoDMR, 2020)

Incentives and Interests

The WCIS ecosystem in Bangladesh is shaped by various incentives and disincentives that influence the effectiveness of WCI services across the country.

Key positive incentives in Bangladesh's WCIS ecosystem include: **(i) International funding and partnerships**, such as those provided by the World Bank, ADB, and UNDP, which have been crucial in modernising the Bangladesh Meteorological Department (BMD) by funding the installation of new weather stations, radar systems, and satellite receivers. These investments have significantly improved the accuracy and timeliness of weather forecasts and early warning systems (World Bank, 2023; ADB, 2023); **(ii) Technological upgrades and capacity building driven by these international collaboration**s, including training programs and technical support that enhance the skills of BMD staff and improve data collection, analysis, and dissemination capabilities (UNDP Bangladesh, 2023); and **(iii) Collaboration among stakeholders**—including government agencies, international donors, and local NGOs—facilitates the integration of climate data into disaster management and agricultural planning, helping to reduce vulnerabilities and improve community resilience (IFRC, 2023).

Negative incentives or disincentives in the WCIS ecosystem in Bangladesh include: **(i) Funding constraints at the national level**, where limited domestic budgets and dependence on international aid restrict long-term sustainability and development of meteorological services (BMD, 2023); **(ii) Technological and infrastructural limitations**, such as insufficient coverage of weather monitoring stations in remote areas and outdated forecasting equipment, which limit the reach and reliability of weather information, particularly in rural and underserved regions (ADB, 2023); *and* **(iii) Fragmented coordination among stakeholders**, with overlapping responsibilities and inadequate data-sharing protocols between national agencies like the BMD, Ministry of Disaster Management and Relief (MoDMR), and local government bodies, leading to inefficiencies and gaps in service delivery, especially during emergencies (BWDB, 2023).

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Annex 11c3 - WISER Thematic Evaluation WICS Political Economy Analysis

Nepal - September 2024

This document comprises a light-touch political economy analysis (PEA) of Weather and Climate Information Services (WCIS) in Nepal, one of the deep-dive countries in the WISER thematic evaluation for data collection and evidence purposes. The PEA covers, in brief: macrostructural issues impacting on the political economy of Weather and Climate Information (WCI) in Nepal; WCIS structure in Nepal and key challenges; key stakeholders dynamics; related policies, laws and regulations; and the incentives.

Nepal's macrostructural overview

Nepal's macrostructural context is shaped by a range of demographic, economic, political, and environmental factors, all of which impact its WCIS.

Demographics: Nepal's demographics are characterised by a diverse population[109] and significant socio-economic challenges. With a total population of approximately 30.9 million (2023), the country has high levels of poverty, with 8.2% of the population living below the poverty line ($2.15 a day, 2017 purchasing power parities (PPP)). The population includes a significant youth demographic, with a growth rate of 1.1% annually (2023), alongside a growing elderly segment. The country also faces substantial gender disparities, limiting women's participation in economic and decision-making processes, with only 33% of national parliament seats held by women. Additionally, marginalised groups, such as ethnic minorities, people with disabilities, and those in the informal economy, often lack representation and engagement in decision-making. (World Bank, 2023)

Economy: Nepal's economy is primarily dependent on agriculture, tourism, and remittances, with a modest gross domestic product (GDP) growth rate of 2.0% in 2023 and a GDP per capita of $1,324.0. The country faces several economic challenges, including high unemployment at 10.7% and inflationary pressures with a consumer price inflation rate of 7.1% (2023). Remittances make up 26.9% of GDP, highlighting a reliance on migrant workers and the vulnerability of economic stability to global conditions (World Bank, 2023). Economic growth is further constrained by inadequate infrastructure, bureaucratic inefficiencies, and political instability, complicating efforts to improve living standards and sustainable development.

Political environment: Nepal's political settlement is characterized by instability and inclusivity challenges. Major influences include political factions, bureaucratic inefficiencies, and regional disparities. Constraints on political stability affect the implementation of policies and reforms. However, since the adoption of a new constitution in 2015, establishing the country as a federal republic, devolution of powers from central government has occurred, with local government and federal structures established until at least 2024. This has included legislative, executive, and judicial powers. However, the implementation has faced challenges, including resource allocation, lack of infrastructure, and capacity-building at the provincial and local levels. Today, in Nepal, debates continue over the balance of power between the federal, provincial, and local governments. Political

[109] Nepal is ethnically diverse, with multiple ethnic groups and religions, including Hinduism (81.3%), Buddhism (9%), Islam (4.4%), and Christianity (1.4%). (Central Bureau of Statistics, 2011).

parties are actively discussing ways to improve the federal system to ensure it meets the needs of all Nepalis (Institute for Integrated Development Studies (IIDS), 2023).

Environment & impact from climate change: Nepal's geography and topography is diverse, from the lowland Terai to the rugged Himalayas, resulting in significant variation in climate and weather patterns across short distances. This topographic complexity complicates the development of uniform forecasting models. Accurate weather predictions require high-resolution spatial data and localized modelling to address the microclimatic variations present in different regions of Nepal. (Bhandari & Chaudhary, 2019). According to Nepal's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (2021), Nepal is considered one of the most vulnerable countries to climate change due to its fragile mountainous ecosystems, high dependence on climate-sensitive sectors like agriculture, and limited resources for adaptation. The country faces multiple climate-induced hazards, such as glacial lake outburst floods, landslides, floods, and droughts, which are exacerbated by changing climate patterns. Nepal's socio-economic conditions, including high poverty levels and inadequate infrastructure, further increase its vulnerability, particularly for marginalized and rural communities that have limited capacity to cope with and adapt to climate impacts.

WCIS structures in Nepal & key challenges

Informed by the need to improve disaster preparedness, response, and agricultural productivity, the Government of Nepal has invested in meteorological services since 1962. Initially, these activities were managed as a section under the Department of Electricity and later transferred to the Ministry of Energy, Water Resources, and Irrigation (MoEWRI), which, in 1988, established the Department of Hydrology and Meteorology (DHM) as the primary agency for systematic weather observation and forecasting. The development of DHM was significantly supported by international collaborations, particularly with the World Meteorological Organization (WMO) and the United Nations Development Programme (UNDP), which provided technical guidance and funding to enhance its capabilities. Investments have focused on upgrading infrastructure such as weather stations, radars, and satellite receivers, essential for improving data collection and forecasting systems. Despite these efforts, challenges such as inadequate funding, technological gaps, and the need for enhanced data infrastructure remain. On-going initiatives include further international collaborations and capacity-building programs to bolster Nepal's meteorological capabilities (DHM, 2023)

Despite this, there continue to be significant meteorological infrastructure limitations across Nepal especially in remote and mountainous areas, which seriously impact the ability to gather real-time data. The limited number of weather stations, radar systems, and satellite coverage means that data collection is sparse and uneven. Upgrading infrastructure is critical for improving the accuracy and timeliness of weather forecasts and early warnings (Gurung, & Bhattarai, 2021). WCI data and data collection in Nepal is also inconsistent or incomplete from a quality and coverage perspective. There are also constraints in managing and integrating data from various sources. Effective weather forecasting relies on continuous, accurate, and comprehensive data, which is often hampered by logistical and technical challenges. Improving data collection methods and developing robust data management systems are essential for enhancing forecasting capabilities (Adhikari & Shrestha, 2020). Budget constraints significantly impact on the development and maintenance of meteorological services in Nepal, insufficiently trained personal and/or resources for research and development (Subedi, N., & Bhattarai, 2022).

International donor investments in WCIS through programmes and projects play a crucial role in enhancing Nepal's resilience to climate change and improving disaster preparedness. Box 1 highlights examples of WCIS donor-funded projects in Nepal aimed at enhancing meteorological services, early warning systems (EWS), and integrating climate data into planning and decision-making across multiple sectors.

Box 10: Examples of international donor-funded projects investing in Nepal's WCIS

Building Resilience to Climate-Related Hazards Project (2013-2020): Funded by the World Bank and the Global Facility for Disaster Reduction and Recovery, this project supported the DHM in improving weather forecasts and enhancing EWS to better prepare for disasters.

Climate Investment Funds - Pilot Program for Climate Resilience (2010-ongoing): Administered by the World Bank, this program aims to increase the resilience of vulnerable communities by integrating climate information into infrastructure planning and community-based resilience-building efforts.

Enhancing Climate Resilience of Endangered Species Project (2016-2021): Supported by UNDP and the Global Environment Facility, this project focuses on improving climate data availability and integrating it into natural resource management, thereby strengthening ecosystem and community resilience.

Strengthening Climate Information and EWS in Nepal (2017-2022): Funded by UNDP and the Green Climate Fund, this initiative enhances DHM's capacity to provide reliable climate information and establish EWS for various climate-induced hazards.

Support to Climate Change Adaptation in Nepal (2014-2018): Funded by the Danish International Development Agency (DANIDA), this program aimed to enhance climate resilience in rural areas by integrating weather and climate information into agricultural and water resource management.

Nepal Flood Resilience Program (2015-2021): Funded by the Swiss Agency for Development and Cooperation, this project focuses on community resilience to flood risks through improved EWS and better utilization of climate data in local planning.

Weather and Climate Information Services (WISER) (delivered as the Asia Regional Resilience to a Changing Climate (ARRCC) programme) - Support to Nepal (2016-2022): A collaboration between the United Kingdom Meteorological Office (UKMO) and the UK Department for International Development (DFID (now FCDO)), this project strengthens DHM's capacity to deliver improved weather and climate services to vulnerable communities.

Source: international donor websites

Stakeholders in the Nepal's WCIS ecosystem

Today WCIS in Nepal involves key stakeholders across different levels, each playing a crucial role in the collection, dissemination and application of hydrological and meteorological data. At the national level and operating under the Ministry of Energy, Water Resources, and Irrigation (MoEWRI), the DHM is responsible for collecting and disseminating weather and climate data, collaborating with the Ministry of Home Affairs (MoHA), the National Disaster Risk Reduction and Management Authority (NDRRMA), the Ministry of Agriculture and Livestock Development (MoALD), and the National Agriculture Research Centre (NARC). Provincial and local governments implement strategies regionally, while non-governmental organisations (NGOs) (local, national and international) and community organisations and municipalities ensure the information reaches local communities, supporting adaptation and risk reduction efforts.

Effectiveness of WCIS is often constrained by a lack of trained, skilled personnel, with technical expertise in data analysis, weather forecasting, and climate modelling essential for delivering accurate and reliable WCI. Ongoing training and capacity-building programs are necessary to ensure that personnel are up-to-date with the latest technologies and methodologies (Koirala & Neupane, 2021)

Table 1 provides an overview of the roles that these stakeholders have within the WCIS ecosystem together with provincial / local and community level roles.

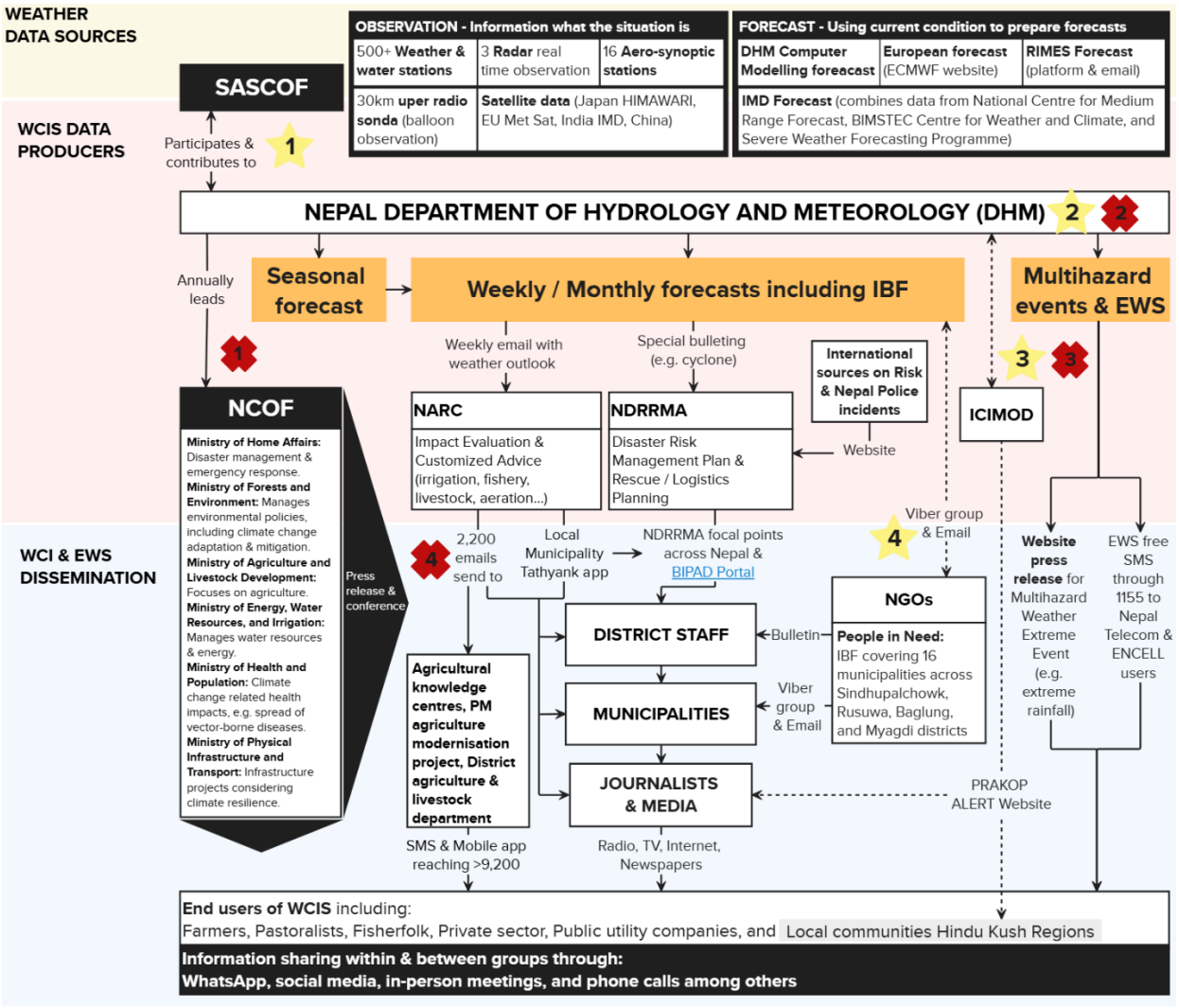
Table 25: Key stakeholders in the Nepal's WCIS ecosystem

Stakeholder	Role
National level	
DHM	Collects, analyses, and disseminates weather and climate data for disaster risk reduction. Systematically observes and monitors climate parameters to provide forecasts and issue early warnings for natural hazards.
MoHA	Manages disaster preparedness and response. It coordinates with DHM, NDRRMA, and local governments to ensure that hydro-meteorological information is integrated into national disaster management plan.
NDRRMA	Oversees disaster risk reduction and management efforts, working closely with DHM, MoHA, and local governments, to use hydro-meteorological data for planning and implementing risk reduction strategies.
MoALD	Utilises weather data to support agricultural planning and decision-making, providing advice to farmers, ensuring food security, and enhancing agricultural productivity.
NARC	Generates weekly weather advice for agriculture and livestock based on DHM's outlook, covering irrigation, fisheries, and livestock needs. NARC shares this with over 2,200 recipients by email, including local governments and agricultural bodies, and further distributes it to over 9,200 users via mobile apps, SMS, social media, and audio-visual media.
Province & Local level	
Provincial & Local Governments	Implement regional hydro-meteorological projects in coordination with national agencies and local governments. They tailor national policies and strategies to local contexts to ensure effective implementation.
Municipalities & Rural Municipalities	Engage in localised data dissemination and community-based disaster risk reduction, collaborating with provincial governments and community organisations to ensure that hydro-meteorological information reaches local communities.
Community level	
Community-Based Organisations & Non-Governmental Organisations	Disseminate hydro-meteorological information at the community level and support local adaptation measures, ensuring it is accessible and useful. Farmers and fishermen, often in cooperatives, rely on this data to plan activities, maximise yields, and minimise weather-related risks.

Source: Secondary data review and KIIs

As part of the thematic evaluation, we mapped out these roles and their relationships in Figure 1 below. We have highlighted where we have found evidence of WISER's contributions (yellow star) to certain areas while also pointing out persistent challenges (red cross) identified. The figure highlights how many actors are involved within the system and their interdependencies.

Figure 19: Nepal WCI flow



EXAMPLES OF ARRCC CONTRIBUTION TO NEPAL WCI FLOW:

1 SASCOF support (Sep 18 - Aug 22); 2 support to DHM attendance a recent COP; 3 Enhanced ICIMOD training capacity (funding & human resources); 4 Viber group established through the IBF Pilot in Nepal is used by DHM & People in Need as two way WCI communication channel.

EXAMPLES OF CHALLENGES HIGHLIGHTED BY KIIS:

1 There is a need for greater awareness about climate change impacts on agriculture and adaptation plans; 2 Talent and knowledge retention hindered by shortage of WCI technical experts and high turnover rates; 3 Limited river observation coverage and data quality impacting hydropower plants planning and optimal operation; 4 Whilst WCI is shared with key stakeholders, the impact of messages remains unclear.

Source: KIIs and a review of secondary data including WISER documents.

Whilst all the stakeholders play a role in sharing WCI, NGOs and local government bodies are instrumental to reach climate vulnerable communities, especially in remote areas. Through evidence collected as part of the evaluation, we know that in some districts WCI to climate-vulnerable communities is delivered through a combination of digital and traditional channels, including mass SMS, phone apps, local meetings, and media broadcasters and word of mouth. In addition, the Community Disaster Management Committee operates at ward and municipality level to plan for the disaster risk reduction as well as for the humanitarian response. However, it is unknown if this is the case in all districts.

Local knowledge can offer valuable insights into weather patterns and climate trends that complement scientific data and highlight what WCI is needed at the household / farmer etc level. However, integrating this knowledge with WCIS can be complex. Successful integration requires collaboration between scientists and local communities to ensure that traditional knowledge is respected and used effectively in conjunction with scientific data (Poudal et al, 2019).

Additionally, and as seen in Box 1, international donors too are critical for funding this work, as well as often setting its direction.

As can be seen in Figure 1 above, the integration of WCI data in Nepal involve a complex network of stakeholders, from national to community levels, working together to enhance climate resilience and disaster preparedness across the country. However, interviews conducted for the evaluation highlighted some persistent challenges:

- Observation coverage and data quality: DHM has limited river observation coverage, which has an impact on hydropower plants planning and optimal operation.

High turnover of staff and retention challenges hinder institutional WCI understanding and knowledge: Nepal has a shortage of WCI technical experts, which in addition to the high turnover rates of staff across government departments hinders WCI knowledge continuity.

- Use of WCI shared: Although WCI is shared with key stakeholders (e.g. by email), the impact of messages remains unclear as it is unknown how many recipients actually read them, how they interpret the information, and / or if any actions are taken as a result.

WCIS Laws, Policies, and Regulations

Laws, policies, regulations, and strategies related to the use of WCI by various stakeholders in Nepal, each targeting different areas, have been identified through a review of secondary data. Table 2 provides a summary of some of these and evidence from a range of reports across different stakeholders highlighting successes and failures.

Table 26: Key laws, policies, regulations, and strategies of stakeholders in the Nepal's WCIS ecosystem

Stakeholder	Policies	Reflections from WCIS ecosystem actors
DHM	**National Climate Change Policy (2019):** Enhance the capacity of DHM to provide accurate and timely weather forecasts and climate service. (Government of Nepal, 2019)	**Success**: Improved early warning systems contributed to effective disaster preparedness (Practical Action, 2019). **Critique**: Inadequate dissemination to remote areas during the 2017 floods (IFRC, 2017).
MoHA	**Disaster Risk Reduction and Management Act (2017):** MoHA shall coordinate with DHM to ensure effective dissemination of early warning systems and weather forecasts for disaster preparedness. (Government of Nepal, 2017)	**Success**: Effective coordination during the 2015 earthquake (IFRC, 2017). **Failure**: Delays in communication and resource mobilization during the 2017 floods, impacting response effectiveness (Oxfam, 2018).
NDRRMA	**National Disaster Risk Reduction Policy (2018):** Integrate climate and weather information into risk assessment models and disaster preparedness plans to enhance resilience. (Government of Nepal, 2018)	**Success:** Improved integration of climate data into risk assessments (World Bank, 2019). **Critique:** Need for better implementation at local levels, with inadequate resources and training (Mercy Corps, 2017).
MoEWRI	**Water Resources Strategy (2002):** Utilise meteorological and hydrological data for effective water resource planning and management (Government of Nepal, 2002)	**Success:** Effective flood forecasting systems implementation praised (Asian Development Bank, 2018). **Critique:** Inefficiency in maintenance and updating of irrigation infrastructure (USAID, 2019).

Stakeholder	Policies	Reflections from WCIS ecosystem actors
MoALD	**Agriculture Development Strategy (2015-2035):** Promote climate-smart agriculture practices and the use of weather forecasts for crop planning and management. (Government of Nepal, 2015)	**Success:** Pilot projects in climate-smart agriculture showed positive results (FAO, 2018). **Critique:** Lack of scalability and insufficient institutional support hindered broader implementation (CARE, 2017).
Department of Forests and Environment	**Forestry Sector Strategy (2016-2025):** Integrate climate information into forest management plans to enhance forest health and resilience (Government of Nepal, 2016)	**Success:** Use of climate data for forest conservation was commended (WWF Nepal, 2018). **Critique:** Challenges in data accessibility and inter-agency coordination were noted, impacting effective implementation (International Centre for Integrated Mountain Development (ICIMOD), 2019).

Source: Various secondary data sources listed at the end of the report under 'Evidence sources' section.

Incentives and Interests

Key positive incentives in the WCIS ecosystem in Nepal include (i) **financial support from international organisations** and partnerships, which provide essential investments; (ii) **technological advancements** that improve forecasting and data collection capabilities.

Negative incentives or disincentives in the WCIS ecosystem in Nepal include (i) **funding constraints**, such as limited budgets and a lack of multi-year funding, which restrict the ability to plan long-term improvements; (ii) **infrastructure issues**, including inadequate technology and data collection facilities, further hinder the effectiveness of WCIS; (iii) while there is some level of **collaboration** among stakeholders, **inefficiencies** arise when data and products are not effectively utilised by all parties, leading to additional time and financial costs.

Evidence sources:

Interviews with key stakeholders over May – August 2024 including DHM, ICIMOD, NDRRMA, NARC, UKMO, and FCDO representatives

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Annex 11d1 - UK MO focused recommendations & next steps – slide deck

Headline Methods Overview

Theory-based evaluation focused on learning from the closed WISER programmes – outcome harvesting, strengths of evidence and contribution analysis

Document review & narrative analysis: **62 documents** analysed & coded thematically

KIIs: **88 KIIs** covering a range of stakeholders: Regional organisations (7), Government agencies at national level (3) and sub-national level (13), NMHS (22), County level Met (5), WISER IPs (16), WISER MEL partners (2), UK MO (11), and FCDO (9). Themes discussed included: results, delivery model, lessons learned, sustainability, and co-production.

Deep-dive data collection:
Nepal: KIIs with NMHS, and NDRRMA national / province level
Bangladesh: **Survey with Farmer (n = 45), SAAO (n =43) & Rohingya (n = 110)**
Kenya:

- DARAJA: **12 KIIs with Mtaanis, and survey with 134 Weather Mtaani contacts**
- BBC MA WeatherWise: **293 (119 male/174 female)** people surveyed around Kenya Bay, **12 KIIs with journalists, 20 FGDs with farmers, pastoralists, and fisherfolk** (male, female and mixed groups)

Three stories of change: **Pakistan (Scaling), Somalia (governance), Kenya (end user/country)**
Observation: members of the evaluation team also **observed both the GHACOF and SASCOF forums**.

 2

DRAFT FINDINGS

EQ1: Which approaches have been more effective in co-producing useful, relevant, and accessible WCIS across contexts?

1 **The WISER approach of utilising existing regional organisations/bodies is effective** and has strengthened local ownership and the strategic implementation of activities, but sustained capacity building and financial resources are needed to continue enhanced WCIS activities.

2 **Showcasing comparative value-added approaches provides incentive for NMHS' to develop their capacity** to take advantage of data and tools for provision of enhanced WCIS available at regional level (especially for FCAS).

3 **Co-production processes (at all levels) are widely recognised as a valuable technique** to support the development of useful and accessible WCIS and for sustainability. However, stakeholders across contexts confirmed that c**o-production processes were not synonymous with co-design** and required significant time and financial resources to sensitise stakeholders to the value of the process.

4 **WISER support has enabled NMHS' to better understand their own WCIS flows** within government and develop broader relationships with these teams; this has brought added value to co-production.

EQ2: What were the key operational and delivery lessons learnt from implementing the WISER model across differing contexts for future programming?

5 **UKMO viewed as a very respected partner across stakeholder groups**, with training and support consistently reported as valuable across NMHS' in Asia and Africa.

6 There is **evidence that working with IPs who have proven track records and a good reputation, produced good results**, and also increased the potential for both attracting other credible partners and future funding.

7 **IPs found it difficult to both focus on high quality technical activities and the production of materials demonstrating their success** (communications and marketing activities).

8 **Historic MEL approaches, including independent evaluations, were limited and did not focus sufficiently on end-users and consider GESI**.

9 **WISER has produced/supported WCIS for some FCAS and/or humanitarian settings** and there is scope to enhance this offer.

EQ3: To what extent, and in what ways, were improved WCIS effective in informing decision making at the producer, intermediary and user levels?

10 **UKMO introduced innovative tools and systems to NMHS'** which in general were well-received, although sustained use of these tools is not universal.

11 **Provision of high-resolution, downscaled forecasts and WCI specifically tailored to the needs of end-users** allowed preventive action to be taken to mitigate the effects of extreme weather events.

12 **WCIS on their own are not completely effective in enhancing user-level resilience, without other supporting activities.**

EQ4: Which factors, internal or external to the programmes, may have limited or accelerated the application of improved WICS in decision-making for producers, intermediaries and users? What lessons can be learnt for delivery, in general and specifically in an FCAS context?

13 **NMHS' not sufficiently involved at early stage of WISER project design to enable them to make provision for the sustainability of WISER activities, after funding ends**.

14 **More evidence (i.e. investment/business case studies) needs to be produced to demonstrate the value of WCIS** in other sectors such as Health, Urban Planning, Agriculture, etc., to enable NMHS' to make the case at national level for greater investment in the provision of timely and accurate WCIS.

15 **Both external (COVID and budget issues) and internal (UKMO structural constraints) factors had an impact on delivery timelines and the effectiveness of WISER.**

16 **Short- and long-term delivery constraints were perhaps not always considered when designed NMHS support packages**, which has had an impact on sustained effectiveness. There was also little evidence of UKMO/FCDO mapping of WISER to other donor investments in WCIS; this could ensure UK investment adds value and could also increase its sustainability.

EQ5: Following the closure of the WISER 1&2 and ARRCC programmes, what programme results have been sustained, in what ways, for whom? And why?

17 **Closed WISER programmes do not appear to have been fully designed with a view to ensuring the sustainability of results**, across the entire WCIS value chain, at the outset.

18 **The 'readiness' of NMHS' and their ongoing ability to take up or support improved WCIS assets, systems and processes was not always understood, and limited sustainability**.

19 **Years after WISER programmes have ended, results and the mechanisms through which they have been delivered have been partially sustained for some users** (i.e. producers, intermediaries and end-users). There remain **significant sustainability challenges** (financial and technical) and without ongoing support, these results are likely to taper off.

DRAFT RECOMMENDATIONS

BUILDING COHERENCE, LEVERAGING IMPACT		
1	**Within FCDO, opportunities to align other thematically related FCDO investments with WISER projects could be capitalized upon** to build cohesive and coherent programming. FCDO should work towards this by improving internal communications across its departments to build a coherent plan for the use of WISER data and evidence (to inform current and future programmes).	FCDO
2	**NMHS's can amplify their impact by working in partnership with intermediaries** – however, attracting, vetting and coordinating potential partners requires significant funding and support. **Budget to be allocated to support NMHS during programme implementation by assisting them to identify potential credible partners**. This will not only enhance opportunities for better results during implementation, but also improve future funding prospects.	FCDO UKMO
3	**Communication of change stories, showcasing of results:** budgetary provision needs to be made in the WISER programme to include a dedicated learning and strategic communications component, the responsibility of which is to package and disseminate stories of success and the results that the WISER projects have achieved.	FCDO UKMO

DESIGNING FOR SUSTAINABILITY

4	**Enhancing strategic programming and capacity building - UKMO to FCDO secondments** should be continued and also operate in reverse. FCDO secondments to UKMO could help accelerate UKMO capability building on 'delivering development'.	**UKMO FCDO**
5	**NMHS need to be involved at the early stage of project design and development,** to enable them to make provision in their national and sub-national budgets for the maintenance, protection and sustained use of assets and outputs achieved under WISER.	**UKMO**
6	**WISER programmes need to be designed and managed with post-WISER partners in mind, to ensure appropriate and sustained results**. For example, the necessity for strategic changes in livelihood activities brought upon by the effects of climate change was clearly acknowledged by many end-users.	**FCDO**

TAKING A POLITICALLY-INFORMED APPROACH TO DESIGN

7	**Programming be informed by PEA and be aligned with national WCIS policies, plans and commitments (e.g., NDCs, NAPs)**. Future interventions could: • Be integrated into the wider donor landscape and the enabling environment, i.e., which other donor current investments could be enhanced by WISER, which investments in the future could have greater impact due to provision of WCIS. • Reflect national demand but also consider the capacity of NMHS to take up WCIS interventions. If they require additional support, budgetary provision should be ensured. • Ensure that the value of WCIS to all stakeholders (producers, intermediaries, and end-users) is understood. • Be co-designed by relevant stakeholders who understand the added value of their involvement. • Include in the design and budget continuous feedback loops between service providers and users, and scope for adjustment of activities, should feedback illustrate the need.	**UKMO FCDO**
8	**GESI needs to be integrated from the needs assessment stage to ensure that climate services address the diverse needs of all community members**. FCDO could consider asking UKMO to appoint a specialist gender partner and/or appoint GESI specialist in each region.	**FCDO UKMO**

IMPROVING MEL APPROACHES, USING RESULTS FOR WIDER PURPOSES

9	**Ensure financial provision is sufficient for UKMO to invest in a strengthened approach to MEL** – particularly: • establishing robust baselines and consistent monitoring and evaluation systems - crucial for accurately assessing the impact of climate services. • Improving monitoring at intermediary and user levels (if user level change is still expected) – including more robust baselines and independent evaluations.	**UKMO FCDO**
10	**Investment in end-user decision making / resilience** - Ensure that sufficient budget and technical capacity is available for UKMO to both design and implement activities aimed at enhancing resilience at end-user level, and critically, that the skills necessary to both measure and report increased resilience are considered and appropriately resourced. Or invest in partners with greater existing resilience capacities to deliver these activities.	**FCDO UKMO**
11	**FCDO to review results measurement approaches with WISER style programming**, with a focus on capturing outcomes, change stories and where possible gather data from end users on how.	**FCDO**
12	**FCDO could consider adopting a set of core indicators across WCIS programming** which could also be reported to global initiatives e.g., Early Warning for All Initiatives and/or Climate Risk and Early Warning Systems indicators, and indicators which are aligned to the SDGs and the Global Europe Results Framework (GERF) of the European Union.	**FCDO**

Questions for UKMO to think about:

- What do these findings & recommendations mean for the role of UK MO moving forward re WISER?
- Do different partners need to be brought in to deliver WISER as it works in new contexts or thematic areas? Or do certain areas need to be further capacitated within MO (i.e. social protection, resilience, humanitarian, MEL, GESI etc.)
- What role should UK MO play in ensuring that its WISER investments are strategically aligned to promote cohesive and coherent programming?

Annex 11d2 – ARRCC/WISER – A thematic evaluation across three regions (Asia, Africa, Mena) – Validation Workshop Asia call 14th August 2024 – slide deck

TROPICAL HEALTH

GFA CONSULTING GROUP

ARRCC/WISER. A thematic evaluation across three regions (Asia, Africa, MENA)

Validation workshop – call with stakeholders interviewed in Asia

14 Aug 24

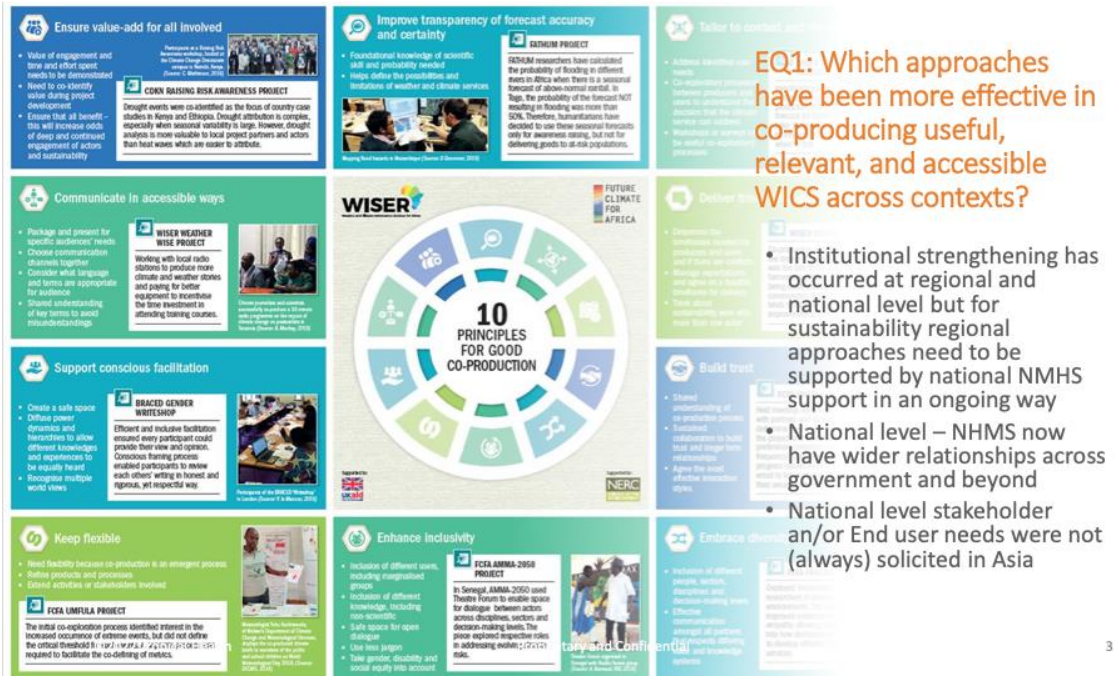
Caveat – findings still evolving, this meeting is to share some early thoughts and hear your views. This evaluation looked at **closed** programmes.

Reminder of the purpose of the thematic evaluation

1. To understand what approaches have worked for whom and why – so that future WISER style investments can learn from previous programmes
2. To evidence what results have been sustained in what ways, for whom? And why?

Sources of evidence

- Over 60 Interviews
- Review of over 150 documents
- SASCOF observation
- Primary data collection at the household level (Africa. Asia tbc)



Strong evidence of useful, relevant, accessible weather and climate information services

TROPICAL HEALTH

- EWS Wheat rust Bangladesh
- EWS Wheat rust Nepal
- Impact based forecasting - Pakistan
- Pakistan Agromet advisories
- SASCOF user forums

EQ2: What were the key operational and delivery lessons learnt from implementing the WISER model?

ARRCC stakeholders valued the technical credibility of UK Met Office	Capacity building could stretch further than technical WCIS subject matter	Strong regional bodies which have pre-existing frameworks / SOPs / ways of working – contributed to success – and were more sustainable
Evidence of strong results where ARRCC funded pre-existing interventions / established partners	Coordinating donors is time/resource intensive (rare examples of donors funding nationally determined projects and pipelines)	Misalignment of funding windows/ funding cuts were challenging (as was COVID)
High appetites for learning across themes and countries (e.g. IBF)	Improved resilience at the household level was challenging to measure	GESI impacts were rarely captured

EQ3: To what extent, and in what ways, were improved WCIS effective in informing decision making at the producer, intermediary and user levels?

WCIS are important but not effective in enhancing user level resilience without other supporting activities

IBF's have (in general) increased community trust and resulted in proactive safety measures

EQ4: What factors, internal or external to the programmes, may have limited or accelerated the application of improved WICS in decision-making for producers, intermediaries and users?

Need for deeper understanding the political landscape / enabling environment (and/or use of local partners who could help tailor interventions)

Many interventions were 'projectized' and a more holistic approach may yield better results

More robust evidence on the importance of WCIS for thematic sectors is needed for NHMSs to make the case for greater investment

EQ5: Following the closure of the WISER 1&2 and ARRCC programmes, what programme results have been sustained, in what ways, for whom? And why?

Closed WISER programmes do not appear to have been designed for sustainability across the WCIS value chain at the outset.

The 'readiness' of NMHS and their on-going ability to support improved WCIS assets, systems and processes was not always fully understood limiting sustainability

Some interventions have attracted significant follow-on funding (non-UK) or been scaled up by national partners (Pakistan)

While regional structures, such as SASCOF, have been supported there are concerns over how it will be funded in the longer term

Draft recommendations

I'll share these by evaluation question and then you'll have an opportunity to:

- Vote for your top 3
- Share any further ideas in a quick form

Potential recommendations linked to evaluation question 1 (Which approaches have been more effective in co-producing useful, relevant, and accessible WICS across contexts?)

a) **Designing for sustainable results across FCDO programming-** As the next (regional) phase of WISER is established in Asia – FCDO should maximise opportunities for, or engagement with, 'WISER friendly' bilateral or regional programming to build cohesive action and longer term VFM for FCDO investments. Regional approaches alone are necessary but not sufficient to build and sustain national NMHS capacities.

b) **National alignment, commitments and feedback** - In future co-production style interventions at the national level should ensure that:
   - Work is aligned to national priorities
   - All partners have made clear commitments to participate (using formal MOUs if necessary)
   - Continuous feedback loops between service providers and users are designed in and resourced

Potential recommendations linked to evaluation question 2 (What were the key operational and delivery lessons learnt from implementing the WISER model?)

a) **Holistic capacity development** - Future NMHS capacity development should be holistic, covering not just scientific and technical aspects but also communication skills, project management, and stakeholder engagement. (EQ 4 link)

b) **Be results realistic: shorten the supported WCIS value chain (or adapt programme to deliver this)** - FCDO should consider amendments to the theory of change – 'shortening' the WCIS value chain for WISER style interventions to what is within their sphere of influence– i.e. programmes strengthen WCIS capacities and processes at the regional or national level but not expect to deliver results at the user (household) level. (EQ3 link)

c) **Embedding GESI** - Gender and social inclusion (GESI) should be integrated from the needs assessment stage to ensure that climate services address the diverse needs of all community members

d) **Getting MEL basics right** - Establishing robust baselines and consistent monitoring and evaluation (M&E) systems is crucial for accurately assessing the impact of climate services along the NMHS value chain and ensuring programme activities remain fit for purpose

Potential recommendations linked to evaluation question 3 (To what extent, and in what ways, were improved WCIS effective in informing decision making at the producer, intermediary and user levels?)

a) **Strengthening and resourcing MEL at differing levels** - Strengthened approach to MEL required at intermediary and user levels (if user level change is still expected) – including more robust baselines and independent evaluations

Potential recommendations linked to evaluation question 4 (What factors, internal or external to the programmes, may have limited or accelerated the application of improved WICS in decision-making for producers, intermediaries and users?)

a) **Enhance understanding of the wider enabling environment** - FCDO and UK Met office should regularly review the political economy of interventions and particularly as part of early stage needs assessments, and as an ongoing process – adjusting the programme and related interventions as required to maximise impact. Particular attention is needed when WISER is promoting cross bilateral government working: no assumptions should be made about how partner governments operate along the WCIS value chain

b) **Building the evidence base** - FCDO should use research funding opportunities and WISER evidence/networks to create simple products, which make a clear 'business case' for WCIS and:
   - Health
   - Urban planning
   - Humanitarian action etc.

Potential recommendations linked to evaluation question 5 (Following the closure of the WISER 1&2 and ARRCC programmes, what programme results have been sustained, in what ways, for whom? And why?)

a) **Ensure that true consultation and co-production is included from the design phase with national counterparts and is an on-going process.** This means understanding their national priorities in line with what is appropriate and realistic to achieve over the project life cycle (i.e. what they could support and sustain based on their WCIS assets, skills etc.) and beyond. This is fundamental to ensuring sustainability of results and VFM for FCDO investments.

b) **Co-ordinate across other WCIS donors and work with WISER supported NMHS to** attract funding when FCDO support ends - UK supported technical assistance should involve an element of donor coordination. This involves setting out how UK support adds (not duplicates) other donor activity and supports nationally (or regionally) identified priorities.

c) **If FCDO choose to continue to expect to see changes at the end user level (household / farmer etc) – significant adjustments will be required to deliver and validate this.**

Any other ideas?
https://forms.office.com/e/uQJZG06p8r

NEPAL WCIS FLOW CHART