CREWS PROJECT STATUS REPORT
January – December 2024

Section 1. General Project Information

1.	Project title	**West Africa** - Seamless operational forecast systems and technical assistance for capacity building	2.	Project reference	CREWS/RProj/02/West Africa CREWS/RProj/03/AdditionalFinancing/West Africa
3.	**Lead Implementing Partner**	WMO	4.	**Other Implementing Partners involved in the project**	World Bank
5.	**Operational Partners involved in the project**	ANACIM (RSMC Dakar), EAMAC (RTC), DGM Morocco (GISC and RWC), AGRHYMET, SMHI, HRC	6.	**Project Duration/Timeframe (from year – to year)**	Jan 2018 – Dec 2027 Phase 3 proposal (2025-2027) will be submitted in Q1 2025
7.	**Current year of implementation**	7th	8.	**Total Funding Approved by Steering Committee (in US dollars), including fees**	5,300,000 USD
9.	**Reporting focal point(s) from Implementing Partners**	WMO: Jean-Baptiste Migraine – jbmigraine@wmo.int WB: Cécile Lorillou - clorillou@worldbank.org			

Section 2. Overall rating

	Rating	Comments on delays
Rate of delivery	🟢	The project started the expansion of the flash flood forecasting, and improvements to flood forecasting, over the entire region.
Rate of expenditure	🟢	WMO: USD 3,535,042 (88%) WB: USD 1,178,637 (93%)

Section 3. Project Performance Progress

10.	Progress summary	What has been achieved <u>during this reporting period</u>? – Please <u>list by</u> project <u>outcome in bullet points</u>: progress and main achievements. **WMO** During 2024, capacity building support was provided in various areas, a summary is provided below: At regional level: • The progress of individual countries in relation with leveraging additional financing under the ECOWAS Hydromet Initiative was monitored for Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo. As a follow-up, several countries have opted to submit requests for support under CREWS ASW (Guinea

Bissau, Senegal). In parallel, CREWS West Africa has contributed to the appraisal of new investments for Hydromet services leveraged through the Development, Resilience and Valorization of Transboundary Water for West Africa project (DREVE). As a follow-up, the meeting of Directors of NMHSs will provide for an opportunity to identify opportunities for financing, in addition to the existing projects ClimaGui (AFD 6 million EUR, Guinea) ,VigiClimm (AFD 28 million EUR, Côte d'Ivoire), Hydromet (GCF-IDA 31 million USD in Burkina Faso, GCF-IDA 31 million USD in Mali), West Africa Food System Resilience Program (FSRP), West Africa Coastal Areas Resilience (WACA), UNDP EW4All (GCF 15 million USD) in Chad, BOAD (GCF 27 million USD in Togo), etc.. As a follow-up, a meeting with Directors of West African NMS is planned in Abuja on 8-10 April 2025.

- A training on the development and use of crop calendars was organised on 22-26 Jan 2024, supported by Universitat Rovira i Virgili Foundation (FURV). Agrometeorologists from Burkina Faso, Chad, Mali, Niger, and AGRHYMET were sponsored by the project (see report).

- The Sand and Dust Storm Warning Advisory System (AEMET, BSC) was further improved, with the installation of sensors in several countries to compare modelled concentrations of particle matters with in-situ measurements.

- The hosting of ClimWeb, CAP-composer and WIS2box started to be supported in Guinea Bissau and Togo, out of 8 West African countries having adopted this open-source suite of software by the end of 2024, namely: Benin, Burkina Faso, The Gambia, Ghana, Guinea Bissau, Mali, Niger and Togo.

- A workshop on WMO Integrated Global Observing System (WIGOS) Centres (RWC) functions and tools, for West and Central Africa on 28 – 31 May 2024, Abuja, Nigeria. It allowed to designate Abuja as new RWC to support West Africa region on performance monitoring (data availability and quality) of the national observing networks (see concept note and draft implementation plan) and to train the WIGOS focal points from LDCs and SIDS (Burkina Faso, Cabo Verde, Gambia, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Sierra Leone, Togo) on optimal use of the WIGOS and WIS (see training report).

- A training workshop on WIS2 was held in Casablanca, Morocco, on 11-15 November 2024. The project supported the participation of IT staff and WIS focal points from Benin, Guinea, Mali, Mauritania, Niger and Senegal, trained on the national implementation of WIS 2 node for data sharing with global systems to improve global weather forecasting.

- The extension of the Flash Flood Guidance System (FFGS) to the entire West Africa region (beyond Burkina Faso, Mali and Niger supported under phase 1) was initiated, the watershed delineations were developed in Oct 2024 (see report).

- A training on Hydrological Data Exchange, Standardization, and Interoperability (WHOS) on 25 to 27 November 2024 Cape Town, South Africa (Hydrid). It allowed 4 central Africa participants to deepen on the hydrological data standards required for services development and the tools to facilitate data access/sharing. It is intended to rely on those participants for WHOS implementation in the region.

- Training plan on the EUMETSAT Nowcasting as part of the Central Africa SWFP and Satellite-based hydrometeorological monitoring were developed. The courses will start from 2025.

- WMO signed a tripartite partnership agreement with AGRHYMET and SMHI for further improvements to the riverine flood forecasting (FANFAR) system in West Africa (Concept note).

- WMO started an analysis of the CREWS West Africa's contribution to supporting youth, gender and inclusion in LDCs and SIDS.

At national level in pilot countries

- **Burkina Faso (see country project)**: A FFGS national training workshop was organized in April 2024 to ensure national forecasters (meteorologists and hydrologists) are equipped with appropriate expertise and knowledge to ensure optimal use of the system for forecasting and warning. See training report. This complements a wide package of support provided by WMO and funded by GCF and IDA under Strengthening Climate Resilience in Burkina Faso.

- **Côte d'Ivoire (non-LDC, see WMO technical assistance funded by AFD)**:

- **Guinea (see ASW):** CREWS ASW was approved on 19 March 2024, 3 months after the tragic explosion of 17 Dec 2023 which affected the premises of the NMS. The project is supporting the temporary housing of the NMS, while the Government is building new premises in parallel. In addition, CREWS ASW supports the development of a strategy for the newly created national meteorological agency (ANM), with 2 consultants from Guinea hired for this purpose (1 institutional, 1 legal). Starting in 2025, support will also be provided towards certification according to ISO 9001:2015.

- **Mali (see country project):** A FFGS national training workshop was organized in April 2024 to ensure national forecasters (meteorologists and hydrologists) are equipped with appropriate expertise and knowledge to ensure optimal use of the system for forecasting and warning. See training report.

- **Niger (see country project phase 1 and phase 2):** The EW4All workshop was organized on 2-4 Dec 2024, as a way to take stock of the capacities and launch the CREWS Niger phase 2. The draft roadmap is expected to be finalized in March 2025.

- **Senegal (see WISER):** A training was organized for observers at the synoptic stations, as a way to resolve some gaps identified during the last audit, and comply with processes as per ISO 9001:2015 quality management system.

- **Sierra Leone (standalone):** a mission was organized by WMO in Feb 2024 to launch address infrastructure priorities (including real-time data exchange for surface observations) and support the initiation of cost-recovery for aeronautical services provided by SLMET at the Airport. See mission report.

11.   Rating of progress towards achieving CREWS Indicators

Complete the following for the selected CREWS indicators in the project logical framework, at both outcome and output level. Use the unit of measure and disaggregation level defined for each indicator[1] and provide a progress summary justification of the indicator. This summary should state the evidence on the indicator's progress and describe in detail what has been achieved and performed focusing on results.

CREWS Outcome 1: National and local multi-hazard early warning systems prioritized and funded						
Indicator	**Baseline level**	**End-of project target level**	**Target for reporting period**	**Progress by Dec 2024 (Set as a percentage)**	**Progress summary justification**	**Progress rating[2]**
# of LDCs and SIDS with national investment plans and budgets prioritizing multi-hazard early warning programmes	0	15	15	100%	The ECOWAS Hydromet Initiative, adopted in 2021, identifies priorities for all 15 countries (supported by EU ACP-EU NDRR program). During 2024, the progress of Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo was monitored. A few countries have initiated new projects, including Guinea, Niger and Togo.	🟢
Output 1.1 A country and/or region has developed or strengthened legislative and/or institutional frameworks to support and sustain multi-hazard early warning systems						

---

[1] CREWS Results Framework.

[2] Use scale system provided in Annex X of this document.

# of national plans, strategies and legislations on early warnings approved and/or implemented	0	2	0	20%	EW4All roadmaps were initiated in Liberia and Niger.	🟢
# of coordination mechanisms strengthened or established to enhance collaboration on early warning among national or regional institutions	0	2	0	20%	EW4All coordination mechanisms were initiated in Liberia and Niger.	🟢
Output 1.2 Multi-hazard needs, gaps and priority assessments, analyses and related investment plans for early warning systems in a country or region are driven by CREWS financing						
# of multi-hazard assessments, analyses and other mapping of needs, gaps priorities that inform investment requirements on early warning	0	0	0	n/a	Multi-hazard assessments are not expected to be conducted at regional level	🟢
Output 1.3. Partnerships and cooperation frameworks developed for financing and scaling up support to multi-hazard early warning systems						
Total volume of funds leveraged by national institutions and development partners (in USD) through CREWS investments	0	100 million	176 million	Over 100%	DREVE (2025): 50 million FSRP (2021): 50 million ACP-EU NDRR (2016-2021): 4 million Other projects for LDCs and SIDS: Burkina Faso (GCF IDA 33 million), Guinea (AFD 6 million), Mali (GCF IDA 33 million) , Mauritania (WISER 50k), Senegal (WISER 50k) New CREWS projects (not included as leveraging): Guinea, Niger	🟢
# of LDCs and SIDS benefiting from GCF resources through the GCF-SAP CREWS Scaling Up Framework	2	5	2	40%	Burkina Faso and Mali (WB) approved in 2016 and 2017, still ongoing. Togo expected to be approved in Feb 2025. Cabo Verde, Gambia and Liberia under preparation (some are planning to request ASW support).	🟢

CREWS Outcome 2: Improved early warning service delivery and accessibility by national and regional institutions

Indicator	Baseline level	End-of project target level	Target for reporting period	Progress by Dec 2024 (Set as a percentage)	Progress summary justification as of ____	Progress rating
EW Maturity Index	n/a	n/a	n/a	n/a	n/a	🟢
# of hazards which pose a risk of life and economic loss for which forecasting and warning services are in place in LDCs and SIDS through CREWS support	1 (drought)	6	6	80%	severe weather 2019, flash floods 2023, riverine floods 2022, intra-seasonal variations 2020, sand & dust storms 2020. Forecasting for all hazards in place, however flash flood is available only in 3/19 countries.	🟢
Output 2.1 Risk information and tools generated by countries to enable the delivery of impact-based early warnings						
# of risk data tools developed or strengthened to generate early warning products and/or support impact-based warnings.	n/a	n/a	n/a	n/a	No risk data tools at regional level. This is only targeted at national level.	🟢
Output 2.2. Monitoring, analysis and forecasting of hazards that threaten the country/region are improved and sustained by the countries						
# of functioning monitoring and observation systems established or strengthened per hazard	n/a	n/a	n/a	n/a	No monitoring system at regional level. This is only targeted at national level.	🟢
# of hazards monitoring, analysis and forecasting processes developed or improved	n/a	n/a	n/a	n/a	No monitoring system at regional level. This is only targeted at national level.	🟢
# of forecasting and prediction products developed and/or accessed from WMO Global Prediction Centers (GPCs), Regional Specialized Meteorological Centers (RSMCs) and NMHSs.	1 (drought)	6	6	100%	severe weather 2019, flash floods 2023, riverine floods 2022, intra-seasonal variations 2020, sand & dust storms 2020.	🟢

Output 2.3 Warnings are communicated by the countries based on common alerting protocols under agreed standard operational procedures (SOPs)						
# of warnings issued in CAP format	0	100	50	100% (exceeded)	Country / 2023 / 2024 — Benin 1 131; Burkina Faso 4 8; Chad 1 100; Mali 2 26; Togo 0 27; Guinea Bissau 0 1; Gambia 0 1	🟢
# of updated LDCs and SIDS entries in the WMO register of alerting authorities	0	19	7	40%	Benin, Burkina Faso, Chad, Mali, Togo, Guinea Bissau, Gambia	🟢
# of communication channels through which warnings are disseminated in the area covered by a prediction service for a given hazard(s)	0	19	7	40%	CAP composers available in Benin, Burkina Faso, Chad, Mali, Togo, Guinea Bissau, Gambia	🟢
Output 2.4 Warnings are received, understood, and acted upon based on co-produced preparedness and response plans by the countries						
# of preparedness and anticipatory action plans or Standard Operating Procedures (SOPs) that are operational and linked to prediction and warning services	TBD	n/a	n/a	n/a	n/a	n/a
# of risk maps, advisory and other warning products that are available and adapted to the user group/development sector needs	n/a	n/a	n/a	n/a	n/a	n/a

CREWS Outcome 3: Early warning programmes are driven by people-centered and gender-responsive principles and promote private sector engagement

Indicator	Baseline level	End-of project target level	Target for reporting period	Progress by Dec 2024 (Set as a percentage)	Progress summary justification	Progress rating
Level of integration of people centered and gender responsive approaches[3]	TBD	n/a	n/a	n/a	n/a	n/a
Level of users' engagement satisfaction in the people-centered and gender-responsive approaches/activities[4]	TBD	n/a	n/a	n/a	n/a	n/a
Output 3.1 People of different backgrounds, gender, youth, older persons, people with disability, poor, marginalized, displaced, and non-native, as well as related institutions have co-produced climate and weather information products tailored to their needs						
# of climate and weather information co-designed to users' needs by group representing vulnerable segments of exposed populations	TBD	n/a	n/a	n/a	n/a	n/a
# of women and men trained through X # of capacity building programmes provided by CREWS	TBD	n/a	n/a	n/a	n/a	n/a
# of CREWS projects that have included gender equality in early warning as an objective or outcome	0	1	1	100%	CREWS West Africa	🟢
# of targeted outputs and activities towards gender implemented	TBD	n/a	n/a	n/a	n/a	n/a
Output 3.2 Private sector is engaged to foster innovation and sustainability in delivery of early warning services						

---

[3] Please grade your project based on the following criteria: **Low**- The project did not perform consultations, activities to promote gender quality, and activities /developed products with a people-centered approach. **Medium**- There is evidence of the project performing at least one consultation, one activity to promote gender equality, and one activity/product developed with a people-centered approach. **High**- There is evidence the project performed more than one consultation, activities to promote gender equality, and activities/products developer with a people-centered approach.

[4] This indicator will only be completed when the survey is performed. Please provide the overall result of your survey result based on the following criteria: **Low**- Users do not feel the project considered their opinion, context and experience when developing or strengthening early warning systems. **Medium**- Users feel the project somewhat considered their opinion, context and experience when developing or strengthening early warning systems. **High**- Users feel the project considerably considered their opinion, context and experience when developing or strengthening early warning systems.

# of agreements with private sector to co-finance or co-implement EWS initiatives	0	2	2	100%	WeatherForce, SEPIA	🟢

12. Risk Status

Insert ALL the risks identified at project proposal, those from previous/current project status reports, and the new risk identified for the current reporting period. If a risk has been mitigated or is no longer a risk, please specify it in the "current situation" column.

Description of risk *What is the cumulative risk status of the project in comparison to what was identified in the project proposal?*	Risk management actions. *What mitigation measures have been developed to address the risk status?* *In bullet points*	Current situation *If mitigation measures have been undertaken, what is the current status of the risk? If a risk has been mitigated or is no longer a risk, please specify it here.*
Additional risks have evolved been identified, in relation with: → the undergoing enlargement of AGRHYMET mandate to take over the Regional Climate Center function from ACMAD in the near future; the number of partners involved (HRC, KNMI, AEMET, BSC, DGM Morrocco, ANACIM, IRD, SEPIA, INRAE), requiring additional coordination efforts among partners; → Guinea, Guinea Bissau, Mauritania, Senegal joining as additional CREWS beneficiary countries (on top of Burkina Faso, Chad, Mali, Niger, Togo), resulting in a need to expand the coverage of regional services to additional countries.	The risks are being addressed with : - regular consultations and close communication with stakeholders (see project steering committee meeting 15 June 2022 as an example); - transfer of knowledge to regional centres; - frontloading activities that can be implemented remotely. Due consideration is given not to compromise the quality of outputs in reprioritizing activities.	The risk level remains at **moderate**.

13. Knowledge management and social media

Provide a list of knowledge activities / products (when applicable) produced during this reporting period only. Include any links to press releases, videos or communication items and/or social media. Please attach with this report any supporting files, including photos, videos, stories, and other documents.

14. Partnerships & stakeholder engagement

Optional: If the project worked with any of the following partners in this reporting period, please provide a summary of the partnership activities.

Civil Society Organisations and/or NGOs	

Academic Institutions, regional centers, NMHSs	ANACIM (RSMC Dakar), EAMAC (RTC), DGM Morocco (GISC and RWC), AGRHYMET, SMHI, HRC
Private Sector	

15. Impact stories

Provide a brief summary of any especially interesting and impactful project result that is considered to be worth sharing in the annual report to the Steering Committee, with concrete examples of the contributions to CREWS value propositions (gender-responsive, multiplier, people-centered, promote coherence, solution-oriented, unique) (max 500 words).

- In 2024, CREWS West Africa supported the installation of sand and dust sensor in 4 countries, to enable calibration of the sand and dust storm warning advisory system in relation with field observations. It also started to support the hosting (either physical or cloud, depending upon the local context) of NMHS websites, CAP composer and WIS2box (see), thus enabling the NMHSs to publish warnings in the CAP format, and the overlay of hazard forecasts together with exposure and vulnerability information.

16. Financial management

Total financing approved (in <u>approved project proposal</u>):	USD 5,300,000 WMO – USD 4,034,555 WB – USD 1,265,445
Cumulative amount for the reporting period *(how much has been used, actual expenditure)*:	WMO – USD 3,535,042 WB – USD 1,178,637
Percentage used as of *(state end date of reporting period):*	WMO – 88% WB – 93%

17. Supporting documents

List and annex to the report any documents providing details on project activities <u>conducted during the reporting period</u> such as reports of training sessions, assessment reports, online solutions and tools, manuals, summaries of high-level discussions etc.

- WMO: This have been included in relation in the summary points to facilitate the tracking of documents.

18. Certification on Use of Resources

Each Implementing Partner to provide a certification of the use of resources signed by their authorized representative.

19. Annex. Progress rating

Overall

Interpretation of color coding		
High	🟢	The project is having good implementation progress. End-of project targets achievement or cumulative financial delivery are fully on track.

Medium	🟠	The project is having moderate progress. Implementation is facing issues. End-of project targets achievement or cumulative financial delivery are off track. Adaptive management should be undertaken immediately.
Low	🔴	The project is having less than moderate or poor progress. Implementation is not proceeding as planned facing major issues. End-of project targets achievement or cumulative financial delivery are severely off track. Requires remedial attention where restructuring may be necessary.

Indicators

Interpretation of color coding		
Achieved	🟢	The indicator has achieved its end-of-project target.
Partially achieved	🟠	The indicator is on track to achieve its end-of-project target.
Not achieved	🔴	The indicator has not had any advancement towards achieving its end-of-project target.

Annex : key deliverables produced by the project before 2024

→ **Partnership Agreements**: [DWD](#), [IRI](#), [UK Reading University](#), [HRC](#) [INRAE](#), [SEPIA](#), [IRD, KNMI](#), [RSMC Dakar](#), [BSC](#), [DGM Morrocco](#) are closed; [AEMET](#) is progressing well.

→ **Trainings: (i)** [SWFP training (including severe weather forecasting, sand and dust storms, common alerting protocol and impact-based forecasting)](#) for West and Central Africa took place on 23-27 May 2022, with 29 forecasters from 16 West and Central African countries; **(ii)** the FFGS training was delivered, in part in Niamey ([July 2022](#)) and in San Diego ([Nov 2022](#), [Jan 2023](#)), with participation of Burkina Faso, Mali and Niger; **(iii)** the marine services course was delivered ([Aug to Nov 2022](#) and later [March to June 2023](#)), with participants from Benin, Cameroon, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Senegal, Sierra Leone and Togo; **(iv)** trainings on strategic planning, NFCS and quality management systems was organized for French speaking NMHSs ([31 May and 1st June 2022](#)) and English speaking NMHS ([14-15 June 2023](#)), with presentations from Benin, Burkina Faso, [Cameroon](#), [Cape Verde](#), Chad, Central African Republic, Côte d'Ivoire, Guinea, [Mauritania](#), [Niger](#), Senegal, [Togo](#).

In addition, **in Sierra Leone,** The CREWS project supported technical training for staff of the Met Service (SLMet) and the National Water Resources Management Agency (NWRMA) to improve their ability in understanding and forecasting heavy rain and flood events. This training drew on expertise from others in the region, specifically Ghana Met.

→ **Tools: (i)** SEPIA delivered a [methodology for urban flood forecasting](#); **(ii)** INRAE delivered [recommendations for scaling-up flash flood forecasting](#); **(iii)** IRD delivered an [analysis of flood forecasting systems](#); **(iv)** Météo France further updated the [MISVA website](#) with a complete set of guidance to assist forecasters with anticipation of extreme weather events based upon sub seasonal forecasting; **(v)** HRC delivered the WA Flash Flood Guidance System; **(v)** FURV proposed a novel method of anticipating cropping seasons (see [article](#)); **(vi)** the Barcelona Dust Center has put in place, and [evaluated](#), its sand and dust storm warning advisory system ([SDS-WAS](#)) covering 7 countries in West Africa. Since Dec 2023, the tool is connected to the [website of ANAM Burkina Faso](#) to ensure semi-automatic conversion to warnings in CAP format; **(vii)** a [monitoring tool](#) for the [ECOWAS Hydromet Initiative](#) was put in place in Nov 2023, taking stock about country progress on [GFCS / NSP implementation](#). This is currently being followed-upon with a country-by-country analysis of progress; **(viii)** the consultancy team from JBA Associates, working with the WB experts, developed a Flood Risk Guidance Tool for Freetown which provided guidance on the flood risk in the upcoming days. This is a pilot project and the aim is to assess the usefulness of this approach and to attempt to improve on it over the next few years.

→ **Investments**: The phase 1 and phase 2 of the regional **Food System Resilience Program** were approved by the WB board in November 2021, and July 2022, respectively, with a substantive hydromet component to support the agriculture and food security sector in West Africa at the regional Level as well as in Burkina Faso, Mali, Niger and Togo for FSRP phase 1 countries, Chad, Sierra Leone, Ghana for phase 2.

The CREWS project supported the improvement of operational hydromet and multi-hazard forecast systems (severe weather, floods and climate extremes) in the West Africa region through the support provided to the Agrhymet center, ensuring (i) access to and optimal use of global outputs at regional level, (ii) access to and optimal use of regional outputs in participating countries and (iii) through a feedback mechanism, access to better local

observation by global models. The activities facilitates support to a cooperation framework to strengthen the capacity of national hydrological and meteorological services and their partnerships with the private sector ([ARWE Current Private Sector Landscape_disclosed.pdf](#) / [Institutional diagnostics and regional strategies.docx](#))