

CREWS PROJECT FINAL REPORT (31 October 2025)

Section 1. General Project Information

1. Project title	Reinforcing the capacities of meteorological and hydrological services and enhancing the early warning systems in Cambodia and Lao People's Democratic Republic (PDR) (CREWS Cambodia and Lao PDR)	2. Project reference	CREWS/RProj/08/South-East Asia
3. Lead Implementing Partner of the project	World Meteorological Organization (WMO)	4. Other Implementing Partners involved in the project	World Bank (WB) United Nations Office for Disaster Risk Reduction (UNDRR)
5. Operational Partners involved in the project	WFP, RIMES, ADPC, KICT, UniSQ, CIMA, GWP, PIN, PADEK, HRC, BMKG	6. Expected Project duration/timeframe (from year – to year)	2021-2025
7. Actual Project duration/timeframe (if no-cost extensions were approved)	July 2021 – July 2025	8. Total funding approved by Steering Committee (in US dollars), including fees	5,540,000
9. Total funding executed in actual duration	5,540,000	10. Reporting focal point(s) from Implementing Partners	WMO: Jason Watkins jtwatkins@wmo.int, Nakul Prasad nprasad@wmo.int WB: Vica Rosario Bogaerts vbogaerts@worldbank.org and Hemang Karella hkarella@worldbank.org UNDRR: Chinatsu Endo chinatsu.endo@un.org, Sanjay Pariyar Sanjay.Pariyar@un.org and Stefanie Dannenmann-Di Palma dannenmann@un.org
11. Total funding leveraged by organization and what it was used for	Completed projects - Building Resilience to High-Impact Hydro-meteorological Events through Strengthening MHEWS) in Small Island Developing States (SIDS) and Southeast Asia (SEA) ("Canada-CREWS") (WMO) – CAD 10m - Applying seasonal climate forecasting and innovative insurance solutions to climate risk management in the agriculture sector in Southeast Asia (also known as DeRisk SeA) (WMO) – EUR 7.9m - Lao PDR Southeast Asia Disaster Risk Management Project (WB) – USD 50m - Mekong Integrated Water Resources Management Project (WB) – 48.5m - Strengthening Agro-climatic Monitoring and Information Systems (SAMIS) to Improve Adaptation to Climate Change and Food Security in Lao PDR (FAO) – USD 5.5m		

	The project built on the projects and programmes which preceded it, demonstrating strong technical and political alignment. Upcoming projects / under development ● Cambodia: UNDP-led GCF Multi-Country Project Advancing Early Warning for All (EW4All) - USD 7m ● Cambodia: WFP-led GCF SAP on Scaling Up Multi-Hazard Early Warning Systems in Cambodia (SAP & EW4All) - USD 25m ● Laos: Strengthening climate resilience for the Local Communities in southern region of Lao PDR through Enhanced Climate Risk Assessment and Multi-Hazard Early Warning Systems (MHEWS) - USD 23m ● SOFF in both countries - USD 14m (approx, still tbd) The project has had a significant influence on the design of several planned projects and programmes. Through close collaboration among CREWS Implementing Partners, government entities, and development partners, these future initiatives have been designed to build on the achievements of CREWS Cambodia and Lao PDR Phase 1. The technical design and thematic focus of the upcoming projects have been shaped by the outcomes, lessons, and knowledge generated under the CREWS initiative. Moreover, the project provided a strong justification for how new investments can further strengthen early warning systems in both Cambodia and Lao PDR. Looking ahead to Phase 2, CREWS will remain closely aligned with these emerging initiatives to ensure complementarity and sustained impact.
12. Report Certified Accurate by (with signature):	

Section 2. Overall Project Performance

13. Summary of outcomes and outputs	<i>Outcome 1: Strengthened governance and enabling environment</i> EW4All Roadmaps Catalyse New Investments in Cambodia and Lao PDR Lao PDR: From 2022 to 2025, Lao PDR built a solid governance foundation for multi-hazard early warnings. Early in the project, DRR platforms and consultations supported the Sendai Framework Mid-Term Review, aligning national and sectoral priorities. With CREWS support, the country successfully formulated and endorsed its EW4All National Roadmap 2024–2027. In just sixteen months, Lao PDR turned its early warning ambitions into action. With support from the CREWS Initiative, the country developed and officially endorsed its EW4All National Roadmap 2024–2027, charting a clear path toward universal early warning coverage. The process brought together global and national expertise, strengthened leadership across the Ministry of Agriculture and Environment (MoAE, formerly known as the Ministry of Natural Resources and Environment, MoAE) and Ministry of Labor and Social Welfare (MoLSW), and built strong ownership among ministries and development partners. Implementation of the EW4All roadmap in Lao PDR has already commenced through the mobilization of existing resources through multiple partners. To date, a total of US\$6.85 million including committed funds has been mobilized out of an estimated total budget of US\$27.7 million required to implement the roadmap activities by the end of 2027. Today, the roadmap's priorities are reflected in national socio-economic development and climate plans, ensuring that early warning enhancement is part of the country's long-term agenda. Roadmap priorities are now embedded in the newly developed National DRR Action Plan 2025–2030, and Nationally Determined Contribution (NDC 3.0) ensuring that early warning governance is institutionalized across sectors. Building on this momentum, MoAE and the Ministry of Planning and Investment have prepared a GCF concept note for a CREWS scale-up project, aiming to sustain investment in multi-hazard early warning systems. Additional support from SOFF (approximately US \$7.2 million) will further strengthen observation networks. Additionally, the Embassy of the Philippines provided
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	additional contributions to support enhancement of Risk Information to support digitization of LaoDi data collection form. Lao PDR's experience has drawn regional attention. It has shared its lessons at APMCDRR 2024, COP 29, COP 30, and with more than 30 countries, positioning the country as a regional leader in operationalizing EW4All. The Department of Meteorology and Hydrology (DMH) through National EW4All focal point and UNFCCC focal point has submitted a proposal to the UN Climate Technology and Network (CTCN) equivalent to 300,000 USD to implement the EW4All roadmap activities under pillar 2 with the support from ITU. Cambodia: Cambodia's policy environment evolved from groundwork to endorsement. In 2022, multi-stakeholder consultations fed into the Sendai Framework MTR Voluntary Report, highlighting early warning gaps. The project successfully redirected support toward developing the EW4All National Roadmap 2025–2028, officially endorsed by the Prime Minister in August 2025. Supported by the CREWS Initiative, the roadmap process united NCDM, MoWRAM, and other key ministries, creating a shared vision for early warning reform that is now embedded in national disaster risk management and climate resilience frameworks. The roadmap has also opened new doors for financing. GCF has approved US \$5 million to kick-start implementation, complemented by SOFF support (US \$7.5 million) to improve hydrometeorological observations and data integration. Cambodia is now preparing a CREWS scale-up GCF proposal to sustain this momentum. Its progress has been recognized across the region, with lessons shared through ASEAN (where Cambodia served as the Chair of ASEAN Committee for Disaster Management, ACDM in 2025) and global forums, encouraging other countries to follow its example. Together, Cambodia and Lao PDR demonstrated how the EW4All roadmap process transforms planning into tangible investment. By aligning national priorities, strengthening institutional leadership, and unlocking financing from GCF, SOFF, and CREWS, both countries are building inclusive and sustainable multi-hazard early warning systems that leave no one behind. Integrated Water Resource Development Plans and Drought Management Plans Developed Roadmaps Developed: The development of drought action plans in both countries was led by the respective ministries (MoAE in Lao PDR and MOWRAM in Cambodia) with support from their Country Water Partnerships, national drought consultants, and the project coordinator/manager. These plans were based on data from desk assessments, studies, and inputs gathered from line ministries and key stakeholders, and were aligned with the National Drought Management Policy Guidelines. Their structure followed the three pillars of the Integrated Drought Management Programme (IDMP) and was shaped through a participatory process. To ensure early endorsement and inclusivity, the scope and outline of the plans were shared during stakeholder consultations, fostering a sense of shared ownership. The development of IWRM strategy/action plan is led by SDG 6.5.1 country focal point in MOWRAM and MoAE and supported by their respective Country Water Partnerships and national IWRM consultants and project coordinator/manager. These plans were based on data collected through the SDG 6.5.1 monitoring and aligned with the SDG Support Programme guidelines for development of the IWRM action plan. The draft of the action plan was prepared based on the drought desk assessment, desk study, and data/information collected from the relevant line ministries and multi-stakeholders. A participatory approach was used in the development of these action plans. The scope and outline of the action plan was proposed to the stakeholder during the stakeholder consultation, to ensure endorsement and inclusivity since the early stage of the action plan development. The Community of Practice for the Southeast Asia region was integrated into the existing UNCCD Community of Learning and Practice for Asia for drought-related topics. For Integrated Water Resources Management (IWRM), the regional Community of Practice was integrated into the SDG 6 IWRM Community. Project funds were located to develop and disseminate communication materials showcasing CREWS project implementation in Lao PDR and Cambodia. These included a Podcast Interview Series for both drought management and IWRM and country profiles on drought for both countries, which were shared within the Community of Practice platforms. Additionally, the project fund was also dedicated to introducing the Communities of Practice during the Regional Learning Exchange Workshop in Bangkok. This session highlighted how to join the Communities of Practice and was presented to representatives from the line ministries of Cambodia and Lao PDR, as well as regional development partners and UN agencies based in Bangkok (e.g., FAO RAP, UNEP, IUCN, ADPC, among others). Cambodia: https://unepdhi.org/wp-content/uploads/sites/2/2025/07/cambodia-climate-resilient-and-integrated-water-resources-management-iwrn-action-plan-2026-2030.pdf
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Laos: https://www.gwp.org/globalassets/global/gwp-sea_files/the-preliminary-integrated-water-resources-management-action-plan-2026-2030-for-the-lao-pdr.pdf

Hydromet investment plans in Cambodia and Lao PDR

The investment plans for hydromet networks were developed in close collaboration with government agencies as a basis for a strategy in investing and maintaining the observation networks in both countries. These are critically important as there are a significant number of development agencies (such as JICA, KOICA, WFP, FAO and etc) and funding opportunities (such as SOFF) that are willing to provide capital investment to support the hydromet agencies in Cambodia and Lao PDR. Existing hydromet assessments were reviewed to understand current situations and NHMS's needs on hydromet network strengthening. The investment plans were developed considering the gaps and needs from various assessments with in depth consultations with NHMS in both countries.

The Investment Plans also highlighted the ongoing costs required to sustain the different elements of the observing system as many previous capital investment projects have failed to deliver sustainable systems.

Outcome 2 & 3: Enhanced NMHS capacity for forecasts and warnings and NMHS's Information and communication technology strengthened

Risk Information - Building Stronger Foundations for Disaster Data and Analysis

In Lao PDR, progress was made toward improving the use of disaster data for decision-making. Following Typhoon Yagi in 2024, Typhoon WIPHA in 2025; the government deployed post-disaster assessment tools to support 72-hour rapid and early recovery assessments, helping authorities coordinate more efficiently across national and provincial levels. The Lao Disaster Information (LaoDi) database has also been restored and made publicly accessible, compiling disaster data from 1990 to 2023. It is now being used to track the disaster losses and damages after major disasters such as recent tropical cyclones of 2024 namely Prapiroon, Yagi, and Soulik, and Wutip, Wipha, Kajiki, Bualoi, Matmo from 2025 demonstrating growing efforts to apply data for preparedness and recovery planning. While still in early stages, these steps mark important progress toward more consistent and evidence-informed disaster management, paving the way for stronger risk knowledge under the EW4All framework.

Cambodia: Since 2022, Cambodia has progressively strengthened its risk information systems. In 2023, the country updated national flood and drought vulnerability maps using IDPoor and satellite data, which were validated through national consultations. NCDM has also advanced efforts to enhance CamDi, the national system for tracking disaster losses and damages.

In 2025, an in-depth assessment examined how CamDi is currently used and how losses and damages are recorded across socio-economic sectors. The study found that while CamDi holds strong potential as a national platform, it remains underutilized. Many ministries collect post-disaster data, but the absence of standardized methodologies, clearly defined roles, and consistent reporting limits the system's effectiveness. Data on economic losses are still largely missing, and limited technical capacity and human resource constraints within NCDM further slow data processing and analysis. Despite these challenges, Cambodia benefits from a good legal framework, growing institutional awareness, and increasing interest among ministries to directly input data into CamDi. The assessment, structured around a data maturity framework covering data demand, governance, and supply, also served as an effective coordination mechanism, bringing together ministries and the National Institute of Statistics to establish a shared understanding of the current system and identify priority gaps. This collaborative groundwork now sets the stage for improving methodologies for sectoral disaster loss and damage accounting and upgrading CamDi into a reliable national tool for tracking disaster impacts and informing future policy decisions. Funding for these next steps has been secured through the new phase of the CREWS project in Cambodia and the GCF multi-country project "Advancing Early Warnings for All."

Comprehensive assessment of Department of Hydrology and River Works and Department of Meteorology Cambodia and Department of Meteorology and Hydrology Lao PDR: Supported by RIMES, the core achievement was conducting a comprehensive assessment of the National

	Meteorological and Hydrological Services (NMHSs) in both countries This assessment focused on several key areas: institutional framework, infrastructure, service delivery, IT infrastructure, and human resource capabilities. The process involved background research, primary data gathering through guided interviews and focus groups with NMHS staff and sectoral stakeholders (agriculture, health, energy, etc.), and the drafting and validation of the assessment reports. Key deliverables included the assessment reports on Early Warning System (EWS) capacities and raw data from consultations. Crucially, the final reports proposed short-term, medium-term, and long-term actions to address the identified gaps and requirements. Support for the Southeast Asia Flash Flood Guidance System: In 2023, WMO with support of FFGS certified trainers from India, Thailand and Viet Nam organized refresher operational training for forecasters from both Cambodia and Lao PDR. The training utilized the FFGS simulator to recreate recent flash flood events, enabling participants to better understand the concepts and processes involved in flash flood forecasting and warning. The sessions were further enriched through role-playing exercises, which reinforced practical application of the learned concepts. Severe Weather Forecasting: At the start of the project, the Department of Meteorology (DoM) only provided short-range forecasts covering up to three days. Due to capacity limitations, medium-range (MR) or weekly forecasts have not yet been routinely issued to the public or user institutions. Following the in-country training workshop on medium-range forecasting held from 23 October to 3 November 2023 (supported by experts from Regional Support Forecast Centre Vietnam and Hong Kong Observatory), a Roadmap for MR Forecasting was developed and endorsed by DoM. As part of this roadmap, DoM established an Ad hoc Working Group dedicated to developing and operationalizing MR (weekly) forecasts. The group utilizes numerical weather prediction (NWP) ensemble and probabilistic products, including EPSgrams, and is also responsible for forecast verification. Since 30 April 2024, the Ad hoc Group has begun producing experimental weekly forecasts for four provinces, currently for internal testing and evaluation. The initiative is planned to expand progressively to all 25 provinces of Cambodia, as confirmed by the Permanent Representative (PR). The PR herself has joined the working group as a focal point and contributes by developing the forecast for one of the four pilot provinces. The group has been sharing its experimental MR forecasts daily with Dr. Hoang Lam (RFSC Hanoi) and WMO experts for technical review and feedback. Following successful internal evaluation, DoM intends to pilot the dissemination of weekly forecasts to selected stakeholders and end users during Q4 2025 / Q1 2026 to gather feedback. Impact-Based Forecasting and Warning Services: An operational flood forecasting and early warning system was launched in Sept 2024 in five pilot basins in Cambodia and Lao PDR. The system delivers five-day impact forecasts (covering populations, infrastructure, crops, and services) updated twice daily, and generates standardized bulletins for rapid dissemination. This marks a shift from hazard-based to impact-based forecasting, strengthening preparedness in line with Sendai and EW4All. Development of Impact-based Flood Forecasting System: CIMA Foundation successfully supported the project, delivering risk profiling, impact-based forecasting, and the operational myDEWETRA platform in both countries. Despite delays in data sharing, all technical outputs were completed within the extended timeline. Comprehensive flood and drought risk profiles were produced for Cambodia and Lao PDR, including national maps, probabilistic assessments, and policy recommendations linking hazard exposure with poverty and adaptation needs. Over 35 technicians from national agencies were trained in risk mapping, hydrology, and forecasting through workshops and e-learning modules. The project calibrated and tested hydrological models in five of six pilot basins, implemented FloodPROOFS forecasting chains, and integrated multiple forecast models (GFS, ICON, ECMWF, WRF) to generate five-day impact-based forecasts on population, crops, and infrastructure. Real-time data and hazard products were incorporated into myDEWETRA.world, which was customized with Khmer and Lao interfaces and equipped with flood bulletins and risk visualization tools.
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	Collaboration among WMO, CIMA, VU Amsterdam, MOWRAM (Cambodia), and DMH (Lao PDR) strengthened institutional capacity in risk modelling, hydrology, and early warning operations. While limited hydrological data and incomplete basin rating curves (particularly for Namhoung in Laos) caused some delays, the project delivered two operational, country-tailored early warning platforms and established the foundation for national and regional integration under CREWS Phase II. Implementation of Dynamic Water Resource Assessment Tool: Korean Institute of Civil Technology (KICT) successfully enhanced the hydrological capabilities of Cambodia and Lao PDR by focusing on the DWAT (Dynamic Water Resource Assessment Tool). The core activities included collecting and analyzing hydrological data from two pilot basins in each country, conducting field surveys to establish test beds, and then constructing, calibrating, and validating DWAT models for these basins. Furthermore, the project provided capacity building through two face-to-face national workshops in each country, offering hands-on training for local experts on DWAT. A significant and necessary additional achievement was the development and distribution of the DWAT manual in both the Khmer and Lao languages, ensuring local ownership and sustainability of the tool's usage. Capacity building and strengthening of climate services: These activities were supported by RIMES and University of Southern Queensland. RIMES, in collaboration with the University of Southern Queensland, delivered two phases of training for operational forecasters in both countries. • Phase 1 (April/May 2024) covered the Forecast Customization System (FOCUS) Tool for generating rainfall and temperature outlooks, including the application of the Receiver Operating Characteristic (ROC) evaluation method. • Phase 2 (October/November 2024) introduced the Python Climate Predictability Tool and X-Cast to enhance understanding of probabilistic and ensemble forecasting methods. RIMES provided technical assistance for forecast generation, verification, and interpretation during multiple NCOFs in Cambodia and Lao PDR. • A significant achievement was the revival of Cambodia's Monsoon Forum after a five-year hiatus, conducting the 9th and 10th forums. • The forums included a simple risk matrix workshop where stakeholders assessed potential risks based on seasonal outlooks, reinforcing collaboration between NMHSs and key user sectors. Support for ASEAN Climate Outlook Forums (ASEANCOFs): RIMES provided central logistical and technical support for two key regional events. • ASEANCOF-22 (May 2024, Lao PDR) was the first in-person ASEANCOF in nearly five years, focusing on "Agriculture and Climate Services". • ASEANCOF-24 (April 2025, Cambodia) engaged over 56 participants, including end-users from the health and agriculture sectors, and featured a session on heat-health adaptation. A server and two workstations were provided to MoWRAM for running NWP plug and run tools. Training on this tool was also provided to MoWRAM and DMH Laos by a WMO expert in September 2024. Installation and support for Meteorological, Hydrological and Climatological (MCH) Database Management System and computer hardware: The MCH database management system was installed in the Department of Hydrology and River Works (DHRW) Cambodia and experts from MoWRAM were trained. The system enables NMHSs to digitize, store and process large amounts of data. It is a simple, customizable and license-free solution to store, analyze data and generate reports on large amounts of meteorological, climatological and hydrological data. A server was also installed at DHRW in order to store the data and establish the system. Outcome 4: Enhanced preparedness and response
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	Community-based flood management in Cambodia supported by ADPC • Three pilot communes: ◦ Chiroti 1 (Tboung Khmum Province) ◦ Srae Sdok (Pursat Province) ◦ Sambok (Kratie Province) • Conducted community risk mapping and participatory flood risk assessments. • Installed flood level markers to support real-time monitoring. • Developed and tested flood response and evacuation plans through simulation exercises. • Distributed emergency equipment (radios, megaphones, first-aid kits) to local teams. • Trained community members on the use of Early Warning System 1294 to improve flood response times. • Strengthened collaboration between National Committee for Disaster Management (NCDM) and local Disaster Management Committees (PCDMs, DCDMs, CCDMs). • Partnered with Padek (Partnership for Development in Kampuchea) and the Cambodian Humanitarian Forum (CHF) to mobilize local resources. • Improved coordination between community organizations and government institutions, ensuring a community-driven yet nationally aligned approach Community-based flood management in Lao PDR led by WB and supported by ADPC • Two pilot communes: Thin village in Xay district and Phonsavath village in Houn district, both villages in Oudomxay province • Conducted rapid assessments and data collection in 2 villages for risk assessments • Carried out Training for Trainers for NDMO on CBDRM • Conducted CBDRM trainings focusing on Flood Early Warning at the 2 pilot villages by the trained government staff (training for trainers) • Established Village Disaster Risk Management Committees at the 2 pilot villages • Conducted tabletop exercises and evacuation drills • Developed Community Disaster Risk Management Plans for 2 pilot villages • Enhanced coordination between government agencies, from national to commune level, and community organizations through participatory approaches and bottom-up approaches. Strengthening resilience to floods in the Lower Mekong Basin (Southern Laos) supported by PIN Early Warning System (EWS1294) Development and Adaptation • Adapted and piloted the EWS1294 early warning dissemination system (originally from Cambodia) to the Laos context. • Developed a user-friendly, WordPress-based EWS platform to store and share real-time flood data with government authorities. • Created a front-end dashboard and back-end infrastructure (server, application, database). • Installed 12 sonar-based river sensors across Attapeu, Champasak, and Saravane provinces to monitor water levels. • Established an Interactive Voice Response (IVR)-based dissemination system using <i>Chatterbox</i> for local alerting. • Platform launched and accessible at https://laos-ews.com Technical and Hazard Assessments • Completed a Technical Evaluation Report (May 2023) mapping existing EWS systems, infrastructure, and connectivity. • Conducted a GIS-based hazard, vulnerability, and capacity assessment (HVCA) in three provinces, integrating community-based mapping and government input. • Identified optimal sites for EWS sensor installation and validated flood-risk zones. Institutional Engagement and Capacity Building • Collaborated with the DMH, MoAE, and provincial offices (PoNRE/DoNRE).
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	• Trained 29 government staff (12 from DoNREs, 9 from PoNREs, 5 from DMH, 3 from PoFA) on operating and maintaining the EWS1294 platform. • Developed a Standard Operating Procedures (SOP) manual for EWS operations and maintenance. • Enhanced understanding of monitoring and dissemination systems among national and subnational officials. Community Engagement and Communication • Designed a community engagement strategy and mass-media campaign to raise awareness of EWS1294. • Due to delays in government MoU extensions, field-based (offline) campaigns were postponed; an online outreach campaign was implemented instead, reaching a broad audience. • Planned offline campaigns to be relaunched once MoU extensions are finalized (expected by May 2025). Six Mekong/Tonle Sap provinces updated emergency preparedness plans; national simulation exercises tested contingency planning and systems (PRISM, EWS1294). An Anticipatory Action Plan for floods was developed, with pilot implementation in 2025. A shock-responsive social protection framework was drafted under GS-NSPC, with protocols to scale assistance during floods, reducing impacts on food security and livelihoods. Strengthening Local Preparedness and Linking Early Action with Social Protection Lao PDR: At the local level, 15 community-based DRR plans were developed in Phongsaly and Oudomxay provinces through the Department of Social Welfare (DSW), MoLSW. CBDRM trainings equipped provincial and village committees to interpret and act on early warnings more effectively. A new disaster data-sharing SOP now clarifies stakeholder roles in the loss-and-damage data value chain, improving coordination between MoAE and MoLSW and strengthening the foundation for evidence-based response. Cambodia: In partnership with WFP, Cambodia developed an Anticipatory Action Plan for Floods, defining triggers and thresholds for early action, alongside an operational framework for Shock-Responsive Social Protection (SRSP) led by the National Social Protection Council. Together, these initiatives enhance national readiness and promote stronger integration between disaster risk management and social protection systems, ensuring that early warnings translate into timely, targeted actions to protect lives and livelihoods. Institutionalizing the two-way communication mechanism under Cambodia's EWS1294 proved more complex than anticipated. While the technical design and operational manual were completed, the formal NCDM remained pending at project closure. The process required multiple revisions to address government concerns that the two-way communication system might evolve into a grievance or emergency hotline, rather than its intended purpose of gathering community feedback to improve warning messages. These concerns, combined with internal transitions within NCDM and the withdrawal of external consultants, slowed progress. PIN and NCDM engaged in sustained dialogue to refine the feedback flow, ensure data security, and align the system with institutional mandates. Although a demonstration version of the system was successfully developed and accepted by NCDM, full operationalization, including Khmer voice integration, dry-run testing, and staff training, will continue under the upcoming programs by PIN, for example through the UNDP-led GCF project in 2026 onwards. This experience underscores that integrating participatory communication features into nationally owned early warning systems requires time, administrative buy-in, and sustained donor engagement beyond initial project cycles. Outcome 5: People-centered, inclusive, and gender-responsive systems Lao PDR completed its first national perception survey on weather forecasts and early warning systems, engaging 1,741 households across nine provinces. The survey report is endorsed by the DMH, MOAE. The report provides rich insights into how communities receive, interpret, and act on weather forecasts and early warnings. The findings will guide the design of more inclusive and
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	trusted warning messages, responsive to the diverse needs of women, men, persons with disabilities, youth, and ethnic groups. These results will directly inform the development of Lao PDR's Gender Equality, Disability and Social Inclusion (GEDSI) Framework for Early Warning and the forthcoming EW4All Implementation Roadmap. Based on the findings of the survey, the DMH under the MoAE, in collaboration with WFP, organized a workshop on disability-inclusive early warning messages in July 2025. The event addressed the urgent need to integrate disability inclusion into early warning systems across Lao PDR. The workshop served as a vital platform to disseminate survey findings on weather forecasts and early warning systems, and to align current practices with disability inclusion principles. This effort marks a step forward in the country's transition toward a disability-inclusive, multi-hazard early warning system. The Government of Lao PDR reaffirmed its strong commitment to a people-centred, end-to-end approach through the implementation of the EW4All roadmap. Moving forward, hydromet agencies plan to develop early warning messages tailored to persons with disabilities and other at-risk groups, ensuring that no one is left behind. GEDSI mainstreaming has also advanced within the policy environment. The Ministry of Labour and Social Welfare (MoLSW) integrated a Gender Action Plan into the National Action Plan for Disaster Risk Reduction, ensuring that efforts to strengthen multi-hazard early warning systems are gender-responsive and inclusive by design. Complementary instruments—the GEDSI Integration Framework 2025-2030 and Scorecard, were developed in 2024, while regional consultations in 2024–2025 supported the co-development of a regional GEDSI training module under the EW4All initiative. Cambodia: In Cambodia, progress was made in integrating gender and inclusion across the early warning–early action chain. Under the UNDRR–PIN partnership, trainers from NCDM were capacitated through a two-day Training of Trainers on gender-responsive and inclusive early warning systems. A national guideline on integrating GEDSI into early warning systems was developed, outlining practical steps for embedding inclusion across all four EW4All pillars, from risk knowledge to preparedness. Consultations and validation workshops in early 2025 gathered input from over 35 representatives from government ministries, women's affairs, and civil society, ensuring strong national ownership. These efforts build on Cambodia's growing commitment to inclusivity under the EWS1294 platform, which now started to instill a two-way communication mechanism. (see under Outcome 4) Outcomes and outputs were not realized and why 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: - # of national plans, strategies, and legislations on early warnings approved and/or implemented: This was partially met. The development of national strategic plans and frameworks for weather, water and climate services was not complete. There was a change in government in Cambodia on 22 August 2023, which put the activity on hold in Cambodia. Following this, after discussions held with both NMHSs it was decided that efforts and resources reserved for updating legislation and developing the 5-year strategic plan should be instead used to support the EW4All process, which should be the foundational underpinning of all future national plans and strategies relating to hydromet and early warnings. Unexpected outcomes - The Early Warning for All (EW4All) initiative was an unexpected outcome of the project, including the development and endorsement of national roadmaps for EW4All in both Cambodia and Lao PDR. The project was conceived prior to the launch of the initiative, however given the strategic alignment with CREWS and EW4All and the role CREWS plays in both countries, CREWS was able to support and spearhead the EW4All process in both countries. The second phase of the CREWS project in Cambodia and Lao PDR will focus on implementing many of the priorities identified within the roadmaps and drive the EW4All process.
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14. Rating of CREWS Indicators achievement

Complete the following for the selected CREWS indicators in the project results framework, at both outcome and output level. Use the unit of measure and disaggregation level defined for each indicator¹.

CREWS Outcome 1: National and local multi-hazard early warning systems prioritized and funded					
Indicator	Baseline level	End-of project target level	End-of-project result (Set as a percentage)	If target was not achieved, please summarize the reason. If target was achieved, please summarize main achievements	Progress rating ²
# of LDCs and SIDS with national investment plans and budgets prioritizing multi-hazard early warning programmes	0	2	4 (2 EW4All roadmaps & 2 hydromet investment plans) (100%)	The EW4All roadmap for Lao PDR was endorsed in August 2024. The EW4All roadmap for Cambodia was endorsed by the Prime Minister in August 2025. This activity was not planned at the start of the project but given the importance of the EW4All initiative for Early Warning CREWS was able to support and lead the process in both countries. Hydromet investment plans were also developed, with close involvement with the counterparts, providing the basis for a strategy in investing and maintaining the observation networks in both countries. These are critically important as there are a significant number of development agencies (such as JICA, KOICA, WFP, FAO etc) and funding opportunities (such as SOFF) that are willing to provide capital investment to support the hydromet agencies in Lao and Cambodia, but it is clearly important for these investments to be made in a coordinated fashion if an overall integrated weather and hydro observing system is to be achieved. The Investment Plans also highlighted the ongoing costs required to sustain the different elements of the observing system as many previous capital investment projects have failed to deliver sustainable systems.	
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					
# of national plans, strategies and legislations on early warnings approved	2 - Lao PDR - DMH law existing but requested	6 updated legislation	2 (33.33%)	There was a change in government in Cambodia on 22 August 2023, which put the activity on hold in Cambodia. Following this, after discussions held with both NMHSs it was decided that efforts and resources reserved for updating legislation and developing the 5-year strategic plan should be instead used to support the	

¹ CREWS Results Framework.

² Use scale system provided in the Annex of this document.

and/or implemented	English version, SOP with Typhoon committee needs reviewing and updating			EW4All process, which should be the foundational underpinning of all future national plans and strategies relating to hydromet and early warnings. Supported development of national DRR action plan 2025-2030 to implement national strategy on DRR 2021-2030. Supported the development of the DRR action plan of MoAE to integrate DRR into a five-year sectoral development plan.	
# of coordination mechanisms strengthened or established to enhance collaboration on early warning among national or regional institutions	0	3	3 (100%)	The project supported the following coordination mechanisms: - ASEAN Climate Outlook Forum (ASEANCOF) brought together climate experts from the 10 ASEAN countries along with participants from agriculture sector to produce consensus-based forecasts for (i) June-July-August period for the region - wet season (during ASEANCOF-22 in May 2024) (ii) December-January-February (DJF) period for the region - dry season (during ASEANCOF-23 in Nov. 2024). Lao PDR acted as the host for the ASEANCOF-22 and 23, while ASEANCOF-22 was held in person, ASEANCOF-23 was held virtually. - National Monsoon Fora (bringing together stakeholders to develop tailored climate services) in both Cambodia and Lao PDR, for the wet and dry seasons - Development of Integrated Water Resources Management (IWRM) and Drought Action Plans for both countries. As part	

				of the process, national level technical working groups consisting of the relevant line ministries in each country were formed. The EW4All initiative is an additional mechanism in both countries which was established through CREWS.	
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	4	6 (100%)	As part of the EW4All process a rapid assessment on Early Warning roadmap was developed using the EW4All rapid assessment tool. Furthermore, in collaboration with MoWRAM and MoAE and with the support of the Regional Integrated Multi-Hazard Early Warning System (RIMES) two assessments were completed outlining the capacity needs and recommendations for detection, monitoring and forecasting in both Cambodia and Lao PDR. Hydromet investment plans were also developed providing the basis for a strategy in investing and maintaining the observation networks in both countries. These are critically important as there are a significant number of development agencies and international organizations (such as JICA, KOICA, WFP, FAO etc) and funding opportunities (such as SOFF) that are willing to provide capital investment to support the hydromet agencies in Lao and Cambodia, but it is clearly important for these investments to be made in a coordinated fashion if an overall integrated weather and hydro observing system is to be achieved. The Investment Plans also highlighted the ongoing costs required to sustain the different elements of the observing system as many previous capital investment projects have failed to deliver sustainable systems.	
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	0	0	0 (100%)	- GCF, UNDP EW4All Cambodia Project - GCF project proposal being led by MoAE of Lao PDR could leverage the CREWS-GCF Scalability Framework -	

USD) through CREWS investments				proposed budget of 25 mil USD through the Simplified Approval Process (SAP) • SOFF Cambodia (approx USD 7.4m) • SOFF Laos (approx USD 7.2m) • Adaptation Fund ECR-MEKONG project (amount tbd), WMO led	
# of LDCs and SIDS benefiting from GCF resources through the GCF-SAP CREWS Scaling Up Framework	0	0	0 (100%)	This was not planned in the project although both Cambodia and Laos are seeking GCF financing: The CREWS 2.0 Cambodia writeshop took place in Phnom Penh between 28 – 29 November 2024. A session was dedicated to the WFP GCF-SAP CREWS Scaling up project. The WFP lead consultant is now drafting the proposal and will build upon the current CREWS Cambodia and Lao project as well as complement the second phase. Thus, these initiatives are being planned in coordination. GCF project proposal being led by MoAE of Lao PDR could leverage the CREWS-GCF Scalability Framework - proposed budget of 25 mil USD through the Simplified Approval Process (SAP). The concept note on <i>“Multi-hazard early warning system establishment framework for enhancing climate resilience and disaster response capability of Southern province in Lao PDR”</i> has been re-submitted by the ministry in September 2025.	

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

Indicator	Baseline level	End-of project target level	End-of-project result (Set as a percentage)	If target was not achieved, please summarize the reason. If target was achieved, please summarize main achievements	Progress rating
EW Maturity Index	N/A	N/A	N/A	This was not planned in the project.	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	0	3 (Severe Weather, Floods and Drought)	4 (include landslides) (100%)	The project has achieved: - The development of an impact-based flood forecasting system in both Cambodia and Laos (The basins in Cambodia are the Pursat, Prek Thnot and Sen, whilst the basins in Laos are, Xekong and Xe Don).	

				Unfortunately, there was not enough data in order to calibrate the model in the Nam Houng basin of Laos. - Landslide module added to Southeast Asia FFGS system. Lao PDR and Cambodia had issued multiple flash flood warnings during the rainy season of 2024 by making use of the Southeast Asia Flash Flood Guidance System. - Strengthened capacities on severe weather forecasting through WMO's SWFP programme with support from the WMO Regional Specialized Meteorological Centre (RSMC) experts. Last year both DOM and DHRW issued multiple severe weather warnings.	
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.	0	2	2 (100%)	The Visualisation platform for flood and drought monitoring and warning (incorporating existing information, products and tools) is operational in the MoAE, MoWRAM, MoLSW and NCDM. Training courses in Impact-Based Forecast and Warning Systems were held in Cambodia (Oct 2023) and Lao (November 2024). These workshop-format training events engaged staff from the Hydromet agencies together with representatives from the users and stakeholders, including the media. Pilot projects in IBFWS are planned as the next step (under a planned Phase 2 of the CREWS-funded project) leading, in time, to a nationally based IBFWS approach to the issue of Early Warnings.	
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	0	0	0	Not planned.	N/A

# of hazards monitoring, analysis and forecasting processes developed or improved	0	4	4 (100%)	Same as activity indicator above on # 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	●
# of forecasting and prediction products developed and/or accessed from WMO Global Prediction Centers (GPCs), Regional Specialized Meteorological Centers (RSMCs) and NMHSs.	0	4	6 (100%)	(1) RSMC Hong Kong - for Severe Weather Forecast products (2) RFSC Ha Noi - NWP products (3) SeAFFGS - Access to SCAMPR (global satellite precipitation estimates from NOAA/NESDIS) and also flash flood threat products that are being run through Viet Nam and Thailand (need to verify this with FFGS team to be sure) (4) ECMWF EcChart (5) Singapore - long range forecasts (to develop seasonal outlooks) (6) De-Risk products - from 7 different GPCs (ECMWF, CMCC, NCEP, UKMO, DWD, JMA, MF)	●
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	0	0	MOWRAM Cambodia and MoAE Lao have received training on CAP although as of yet there have been no warnings issued in CAP format.	●
# of updated LDCs and SIDS entries in the WMO register of alerting authorities	0	2	2 (100%)	Completed.	●
# of communication channels through which warnings are disseminated in the area covered by a prediction service for a given hazard(s)	7 Teleph one, fax, email, mobile phone, radio, televisi on, online	7	7 (100%)	Communication channels and quality of information provided is supported and strengthened through the project in various ways, such as new and improved forecast products and warning information. Media representatives were included in IBFWS training events in both countries.	●
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	N/A	2	4 (100%)	The Community-Based Flood Management Manual for Cambodia has been developed by NCDM and ADPC. This has been translated into English from Khmer. Additionally, the SOP for flood which was drafted in 2019 by UNDP Cambodia. This will be updated and used for testing the new impact-based flood forecasting system. MoLSW in Lao PDR has developed disaster data sharing SOP which defines the role for stakeholders in disaster losses and damages data tracking value chain. Community-Based Disaster Risk Management (CBDRM) capacity buildings are being implemented by the DSW under MoLSW, and the DMH under MoAE and ADPC. Trainings on CBDRM with focus on flood early warning systems were provided to the DSW as trainers and to Village District Management Committees at 2 pilot villages in Oudomxay where hydromet monitoring networks were upgraded by various development partners. Village Disaster Risk Management Committees, tabletop exercises and evacuation drills were completed in February 2025. Community-Based Disaster Risk Management Plans and video 'voices from the fields' capturing lessons learned from CBDRM were finalized in August 2025.	
# of risk maps, advisory and other warning products that are available and adapted to the user group/development sector needs	0	4	4 (100%)	National flood and drought risk profiles were developed for both Cambodia and Laos. In Cambodia, vulnerability index maps for floods and droughts were updated with the partnership with NCDM/WFP. In Lao PDR, vulnerability analysis and maps for flood and drought were developed with the partnership with WFP/ADPC.	

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	End-of-project result (Set as a percentage)	If target was not achieved, please summarize the reason. If target was achieved, please summarize main achievements	Progress rating
Level of integration of people centered and	0	2	2 (100%)	In Lao PDR, a national perception survey on weather forecasts and EWS engaged the group of women and persons with disabilities in the survey question design,	

gender responsive approaches ³				and as the interviewees of the survey, to ensure their unique perspectives are well reflected in the survey results. In Cambodia, gender vulnerability analysis of EWS was undertaken to understand the perspectives of vulnerable population recipients of warning messages. A national-level guideline document on mainstreaming gender and most at risk groups in EWS was developed and ready for validation in 2025. Two trainings were also supported in both Cambodia and Lao PDR on strengthening gender mainstreaming in flood early warning systems and risk management, promoting inclusive, data-driven solutions.	
Level of users' engagement satisfaction in the people-centered and gender-responsive approaches/activities ⁴	0	1	1	The first national perception survey on weather forecasts and EWS was conducted in Lao PDR to understand how people from different target groups—such as persons with disabilities, women, older persons, individuals, and children—receive, perceive, and respond to weather forecasts and early warning messages. The initial draft report has been completed which will be validated in 2025.	
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 products co-designed to users' needs by group representing vulnerable segments of exposed populations	0	6	6 (100%)	Training workshops in Impact-Based Forecast and Warning Services were held in both Cambodia (Oct 2023) and Lao (Nov 2024). These were both introductory workshops which engaged staff from the Hydromet agencies together with representatives of the principal stakeholders and users, including media.	

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.

				The project supported the Monsoon fora in both countries for the wet and dry seasons in which the regional climate outlook was produced and tailored to key socio-economic sector needs. The development of the impact-based flood forecasting system was also co-developed with input from Disaster Management and other key socio-economic sectors such as agriculture, planning etc. in both countries In Cambodia, a 2-day training of trainers was provided to six NCDM staff (3 men and 3 women) on the aspects of gender-responsive and sensitive analysis, planning, budgeting, programming, monitoring and evaluation for inclusive EWS. A national training Workshop on <i>Gender Mainstreaming in End-to-End Early Warning System for Flood Forecasting and Integrated Flood Risk Management</i> is planned to take place in both Cambodia and Lao PDR.	
# of women and men trained through X # of capacity building programmes provided by CREWS	0	n/a	100%	Total: 412 Men: 238 Women: 174 Percentage female: 42%	
# of CREWS projects that have included gender equality early warning as an objective or outcome.	0	1	1 (100%)	The project has an Outcome, <i>Outcome 5: Improved integration of gender and disability across the EW-EA value chain.</i>	
# of target outputs and activities on gender early warning (e.g., assessments and capacity building)	0	2	2 (100%)	The project has an Output, <i>Output 5.1: Gender-sensitive and most at risk people inclusive (incl. Persons with disabilities, children, migrants, marginalized minorities, etc.) guidance and capacity building programmes provided</i> and a number of activities supporting this including: • Risk communication plans, early action protocols and response plans developed that are gender-responsive and include recommendations on anticipatory actions and risk	

				communication tailored to marginalized groups. Guidance document on mainstreaming gender and disability in MHEWS developed and tested for gender-transformative EW-EA developed. In Lao PDR, the Gender, Disability, and Social Inclusion (GEDSI) integration tool and GEDSI scorecard on Disaster Risk Reduction (DRR) have been developed in consultation with the MoLSW and the MoAE. These tools have supported the Government of Lao PDR in integrating gender and disability considerations into the early warning and early action value chain. In Cambodia, a gender vulnerability analysis of EWS was undertaken to understand the perspectives of most at risk population recipients of warning messages. A national-level guideline document on mainstreaming gender and vulnerable groups in EWS was developed and ready for validation in 2025. The project supported two national workshops in Cambodia, and Lao People's Democratic Republic between 26 March and 2 April on gender mainstreaming into End-to-End Early Warning Systems in Flood Forecasting (E2E-EWS-FF) and Integrated Flood Management (IFM). The workshop provided an opportunity to utilize a draft training manual for mainstreaming gender into E2E-EWS-FF and IFM developed by the APFM, which has already been tested in the Caribbean, Latin America, and West and South Africa. Based on the experience gained and good practices collected, the training manual will be refined and published online for various users to apply it in their respective countries or regions where gender mainstreaming is a challenge or where there is a need for improved flood management.	
Output 3.2 Private sector is engaged to foster innovation and sustainability in delivery of early warning services					

# of agreements with private sector to co-finance or co-implement Early Warning System initiatives	N/A	N/A	N/A	This was not planned in the project.	N/A
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15. Lessons learned and challenges

Provide important challenges and lessons learned, in bullet points, in terms of what worked well, what did not, what can be improved from the project, including what were the factors that hindered or enabled successful project implementation (200 to 250 words).

Lessons learned and challenges below are taken from the final project evaluation and were reported on by all project stakeholders.

Consider increasing involvement of MoLSW, and disaster management provincial and district levels

NDMO would have liked to have been involved more in the CREWS project. They feel uncomfortable about their lack of awareness of what is going on over the project, particularly when being invited to conferences to talk about it. They appreciated the efforts on the LaoDI data restoration, and on the community-based training in Lao PDR. In future, they would like more of their staff to be involved in training, have more clarity about what is happening across the project (including at MoNRE), and have a separate budget to MoNRE but conduct joint activities.

Select communities carefully

The selection of villages and communes with which to engage should be done carefully and collaboratively. Capacity building, plan and policy development, exercises etc. should be done in parallel with EWS infrastructure installation, maintenance, and other technical aspects. This topic is also briefly discussed under 'recommended next steps'.

There may also be better ways of implementing the project to take a systems approach:

"You need to look at systems [from] an area-based planning development perspective – [you] need electricity for early warning systems, need incentives for people...literacy, there is a real opportunity for a number of agencies to come together to downscale development issues in a location-specific way. [Think] how do we work this out, bring the different strengths of the agencies together." – UN Resident Coordinator Office, Lao PDR

Prioritise local business hours for meetings

In-country beneficiary participants would prefer to be able to have meetings in person, and if online, then during their business hours. Due to some implementing and technical partners being located in other regions (particularly Europe), the time zone differences were problematic at times. In-country beneficiaries were disadvantaged in having to pay for their internet usage at home for evening meetings, held on their mobile phones.

Invest in capacity building thoughtfully

Training initiatives were found to be effective when they are well planned, fairly basic in pitch, and include step-by-step procedures. They should be "really hands-on and contextualised to the needs of the met services" (RIMES). There is a desire for longer and more comprehensive training (noted throughout the interviews, and in project training reports e.g., RIMES, 2024b). However, trainers should be mindful of the capacity of the beneficiaries as well. Some internal improvements in training coordination were also identified by implementing partners as "it was a bit hectic for us at times" (WMO).

To help mitigate the risk of staff turnover after capacity building, work and invest at institution level rather than at the level of individuals. Support institutions to value trained staff to help minimise turnover.

Consider whether expertise for training already exists within the region as these experts will be more familiar with the countries and context.

Take a strategic approach to inclusive engagement

A participant from the Oudomxay community suggested that a strategic approach be taken for inclusive engagement:

“There should be a strategic approach to inclusive engagement, enabling vulnerable groups to participate and take ownership. This would allow them to express their view based on their understanding of the seasonal disaster impacts. In addition to flooding, other types of disasters should also be included to ensure comprehensive support” – Oudomxay community feedback

This highlights that more meaningful activities need to take place for warnings to be more inclusive. To understand diverse people’s needs, and help them to be as self-sufficient as possible, rather than just including them as participants in training (which nonetheless is a good first step). Efforts should be made to make a step change in the way projects can support these activities.

Workshop and training venues should also be accessible to ensure the project is being as inclusive as possible to people with disabilities.

Improve monitoring and evaluation

It was suggested that baseline surveys that are repeated over time with communities, including a control community not involved in project activities, would help to understand the longer-term impacts of interventions.

One participant recognised that the final evaluation of the project was under-resourced, having to be done in a short space of time by just one person. They thought it would benefit future projects if more effort could be done to capture aspects that could be improved.

Project management techniques that enabled successful projects included having discussions with main organisations (WMO, UNDRR, World Bank) to discuss any minor challenges or delays so they could be solved. Gantt charts, and generally planning the project well were also highlighted.

Two-way communication

Institutionalizing the two-way communication feature under Cambodia’s EWS1294 took longer than expected due to concerns that the system could be perceived as a grievance or emergency hotline rather than a feedback tool. Multiple consultations were required to refine its design and secure NCDM’s endorsement. While a demonstration version was completed, full operationalization will continue under the upcoming GCF-funded EW4All project, highlighting that integrating participatory features into national systems demands time, trust, and sustained support.

16. Sustainability and exit strategy

Provide a description of the exit measures undertaken to ensure sustainability of the results attained by the project/programme. The section should also cover key recommendations to guide and/or improve similar interventions in the future. (200 to 250 words).

Lessons learned and challenges below are taken from the final project evaluation and were reported on by all project stakeholders.

It was seen as quite likely that the strengthening of relationships will be sustained beyond the project (noted by ADPC). Having an active UNDRR presence in Lao PDR was seen by WMO and MoNRE as being particularly helpful for this.

There was some concern by MoNRE about the operational maintenance of the monitoring stations, with ongoing support needed. It is noted that the proposed activities under CREWS 2.0 include training for provincial and district-level staff in this area. Provincial and district-level staff need more access to the data (including on mobile devices) in future so that they can warn the communities. More broadly, ongoing training on topics such as impact-based forecasts and warnings and application through pilot projects would help to sustain the outcomes of the CREWS project.

There was seen (by RIMES) to be a high likelihood of the ongoing use of the FOCUS seasonal forecasting tool, for which training was provided by RIMES under the CREWS project. A user guide was developed and updated throughout the project to support the sustainability of its use. A risk in future could be if the RIMES donors stop funding the tool (which

was initially developed in 2015), and this was judged to be a low likelihood.

The community-based disaster risk management activities in Lao PDR led by the WBG applied an in-depth and participatory approach for implementation, which will likely lead to sustainable outcomes. A series of trainings and workshops were organized at national and commune levels to enhance their capacities on disaster risk management at commune level. In addition to train-the-trainer approaches described previously, the development of the community plans that contain information about who the members are, actions to take, standard operating procedures, and plans for the next three to five years, should also help with the sustainability of the project outcomes. Implementing and technical partners advocated throughout the project for the plans to be aligned with other existing social and economic development plans in the provinces/districts to increase the likelihood of them coming to fruition. An example given is:

“In Lao, one village [might] put capacity building into their plan for future, or infrastructure development such as road resurfacing due to flood damage. If they first look at district development plans, they might be able to see entry points relating to budgets and timing and link their village disaster management plan to this. This is a more targeted and sustainable approach.” – ADPC

There was strong feedback from many participants to continue the disaster management work in the provinces, districts, and villages that were part of this CREWS project. A few others indicated a preference to work more widely to translate the findings into other areas nationwide.

The development of the drought action plan and integrated water resource management plan involving MoNRE and the Lao Water Partnership, supported by Global Water Partnership Southeast Asia, will be proposed to government officials, made into national legislation and “formally published next month” (WMO), which will help immensely in sustaining the benefits of the CREWS project on this topic. Technical working groups have been formed at the national level, supported by a monitoring and evaluation framework, and government funds have been put in place.

The endorsement of the EW4All roadmap in Lao PDR will be a significant help in sustaining the benefits of this CREWS project, provided it stays active and is used by all development agencies working in the country. It increases the likelihood that the agencies at national and international level will support the efforts with a common vision through additional resourcing. An example of additional resourcing that will help to sustain the outcomes of the project is from the Swiss Agency for Development and Cooperation through a project that PIN is conducting, continuing their CREWS work. The CREWS project will also minimise the need for additional assessments, as activities can build on previous work towards previously agreed goals. Government ministries/departments will need to ensure that development agencies follow this roadmap to help mitigate the risk of silos and the duplication of efforts, and to continue to sustain the coordination improvements that were seen in the CREWS project.

Phase 2 of the project is being supported and the project will be launched in Nov 2025 in both countries. Therefore, the sustainability strategy is linked to scaling up the work conducted in phase 1. In addition, the occurrence of phase 2 will delay any exit strategy as the work will continue for an additional four years.

17. Knowledge management and social media

Provide a list of knowledge activities / products (when applicable) that were produced and not included in the last status report. 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.

- [Stories of success publication \(WMO\)](#)
- <https://www.gwp.org/en/GWP-South-East-Asia/WE-ACT/programmes/climate-risk-and-early-warning-systems-crews-in-southeast-asia/>
- <https://www.gwp.org/en/GWP-South-East-Asia/WE-ACT/Events/2025/charting-a-resilient-future-lao-pdr-unveils-water-and-drought-management-plans/>
- <https://wmo.int/media/project-update/cambodia-and-lao-pdr-host-national-workshops-gender-mainstreaming-flood-forecasting-and-early>
- Community-based flood management in Cambodia: <https://www.adpc.net/ver25/adpc-news.asp?q=1901>
- Voice from the field :Community-Based Flood Disaster Risk Management in Oudomxay province, Lao PDR. <https://youtu.be/WBQ0cFd3OZY?si=W5GJR32rzoHjAg>

- National Weather Forecasts and Early Warning System Perception Survey Report, Lao PDR: <https://laopdr.un.org/en/296358-national-weather-forecasts-and-early-warning-system-perception-survey-report-lao-pdr>
- The Early Warning for All (EW4All) Roadmap 2024-2027, Lao PDR: <https://laopdr.un.org/en/282223-early-warning-all-ew4all-roadmap-2024-2027>
- EW4All dashboard Laos - <https://app.powerbi.com/view?r=eyJrIjojMGUwNGU0ZGMtYmQyMy00OTU1LTg5MzItMzQ2NmJmMzdmMjhjliwidCI6IjkyZTRkODIxLTQ0ZGYtNGFkYS04MGI1LWQyZjFkYzliMWZINSIsImMiOiI9>

18. Partnerships & stakeholder engagement

Optional: If the project worked with any of the following partners that were not included in the last status report, please provide a summary of the partnership activities.

Civil Society Organisations and/or NGOs	
Academic Institutions	
Private Sector	

19. Financial management

Total financing approved (in approved project proposal):	US\$ 5,540,000
Cumulative amount by end-of-project (<i>how much has been used, actual expenditure</i>):	US\$ 5,540,000
Percentage used by end-of-project:	100%

20. Supporting documents

List and annex to the report any documents providing details on project activities that were NOT reported in the final status report such as reports of training sessions, assessment reports, online solutions and tools, manuals, summaries of high-level discussions etc.

1. Annex. Progress rating

Interpretation of color coding		
Achieved		The indicator achieved its end-of-project target.
Partially achieved		The indicator's end-of-project target was only partially achieved.
Not achieved		The indicator's end-of-project target was not achieved, and no progress was made during implementation.