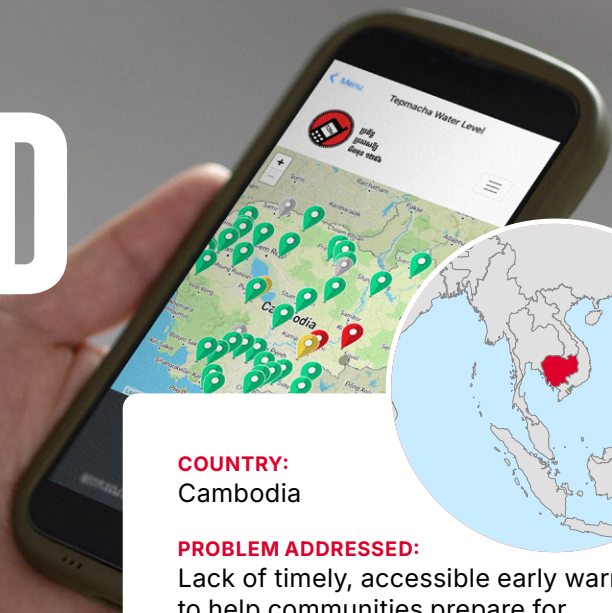


CASE STUDY

# ACTIONAID

Strengthening Cambodia's national early warning system, EWS 1294



**COUNTRY:**  
Cambodia

**PROBLEM ADDRESSED:**  
Lack of timely, accessible early warnings to help communities prepare for climate hazards

**TECHNOLOGY USED:**  
Internet of Things (IoT) and connected sensors, mobile and web-based platforms, IVR, SMS

**KEY PARTNERS:**  
Government, local authorities, national ministries and disaster management committees

**BUSINESS MODEL:**  
Primarily donor-funded, with plans to transfer system management to the Cambodian government

**FIND OUT MORE:** [cambodia.actionaid.org](http://cambodia.actionaid.org)

The GSMA Innovation Fund for Anticipatory Humanitarian Action supported ActionAid Cambodia to enhance the national early warning system, EWS 1294, and strengthen community preparedness in the face of climate hazards. By upgrading and expanding groundwater monitoring sensors, creating more inclusive communication channels and improving coordination with government agencies, the project delivered more reliable and actionable early warnings to communities at risk.

## GSMA Innovation Fund for Anticipatory Humanitarian Action

ActionAid Project Outcomes October 2023 – March 2025



**700k+**

People reached with life-saving messages and preparedness tips through radio, social media and local engagement campaigns



**2,3k**

Community members reached through 47 awareness-raising sessions in 47 locations

**63k**

New users onboarded to the EWS 1294 platform



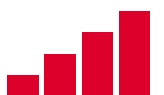
**32**

Groundwater sensors installed (12) or upgraded (20)



**82**

Stakeholders engaged from national and subnational bodies





**act:onaid**

## About ActionAid

ActionAid is a global federation present in 45 countries around the world, working to achieve social justice, gender equality and poverty eradication. ActionAid works to strengthen the capacity and active agency of people living in poverty, their communities, organisations and movements. This includes challenging the exclusion of women, minorities and vulnerable persons from asserting and claiming their rights.

ActionAid Cambodia works with the poorest and most excluded men, women and children in Cambodia, making long-term commitments to advance their human rights and transform the world in which their children grow up. ActionAid Cambodia's approach to change puts human rights front and centre, prioritising empowerment, solidarity and campaigning.

### The GSMA Innovation Fund

ActionAid was one of the organisations supported by the [GSMA Innovation Fund for Anticipatory Humanitarian Action](#), launched in 2022. This initiative was funded by the UK Foreign, Commonwealth & Development Office (FCDO) and was supported by the GSMA and its members.

The Fund backed solutions that leverage mobile digital technology to help anticipate potential humanitarian impacts and enable effective early response. By focusing on the important theme of anticipatory action, the Fund contributes towards the minimisation of humanitarian impacts and the improvement of preparedness in the face of sudden-onset crises.

# The project

## Strengthening anticipatory action in Cambodia through a more inclusive early warning system

Cambodia is one of the most disaster-prone countries in Southeast Asia and regularly experiences flooding and drought. Limited adaptive capacity, infrastructure gaps and uneven service provision have contributed to Cambodia's vulnerability to climate variability and change.<sup>1</sup> Droughts, coupled with poor management of water sources, have severely affected communities and their food security.

Early warning systems (EWS) are in operation in Cambodia but have not had the desired impact. This includes EWS 1294, a national system that provides a vital service to several communities across rural Cambodia. Developed in partnership with People in Need (PIN) and Cambodia's National Committee for Disaster Management (NCDM), it is community led, with strong buy-in from government authorities and cooperation with the private sector. EWS 1294 is available to all mobile phone users on every mobile network in Cambodia. The original version of the EWS focused on flood monitoring.

Under the GSMA Innovation Fund grant, ActionAid Cambodia sought to strengthen humanitarian anticipatory action in Cambodia by upgrading and expanding the capabilities and reach of EWS 1294 to address the impacts of drought. It aimed to achieve this by improving groundwater monitoring sensors to transmit real-time data on water levels to the national EWS broadcasting platform. The project was delivered in close collaboration with the National Disaster Management Authority (NDMA) and the Ministry of Rural Development (MRD).

ActionAid focused on increasing the number of users of the EWS 1294 software by raising public awareness of the service and explaining how to register. This included promoting its interactive voice response (IVR) feature – designed for people with low digital literacy levels – to be more inclusive and reach more people with messaging. At the same time, ActionAid worked to increase coordination among government ministries to improve disaster preparedness and response, particularly through the promotion of EWS like 1294. This included adding a function to the 1294 service for users to report losses and damages, which would assist subnational disaster management teams in their rapid assessments of disasters and response efforts.

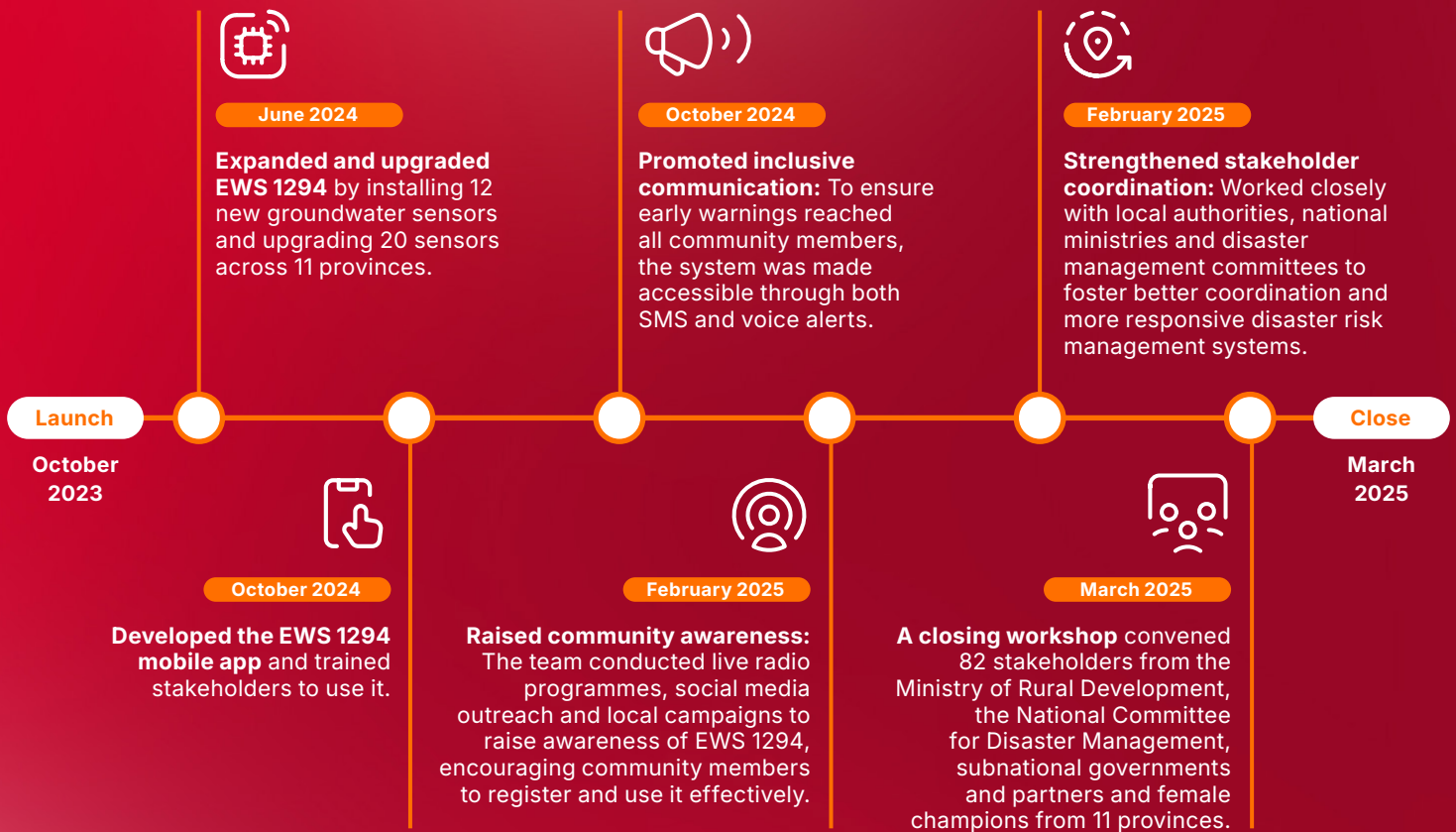
1. <https://climateknowledgeportal.worldbank.org/country/cambodia/vulnerability>



**“Early warning systems help communities, organisations, and people reduce the potential effect of disasters by informing them ahead of time of potential hazards and enabling them to take appropriate action. Planning and implementing preparedness initiatives and programmes can benefit from the usage of early warning systems – it provides alerts and information that enable relevant stakeholders to discuss, come up with alternatives, and mobilise resources to respond to disasters and prevent damage.”**

**– Chantara Kimsan, Interim Country Director, ActionAid Cambodia**

## Key project activities



## Project activities

### Expanding and upgrading EWS 1294:

The project enhanced the existing system by installing 12 new real-time groundwater sensors and upgrading 20 sensors across 11 provinces of Cambodia. These upgrades improved the speed and accuracy of alerts for climate-related hazards such as droughts and floods. Continuous monitoring provided critical data that enabled access to safe drinking water, maintenance of sanitation infrastructure, and proactive water conservation. These efforts help to reduce public health risks from water scarcity and support long-term water sustainability in vulnerable rural communities.

### EWS 1294 mobile app and stakeholder training:

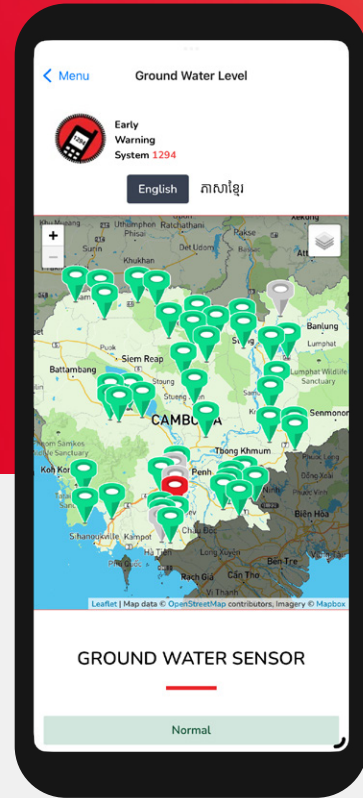
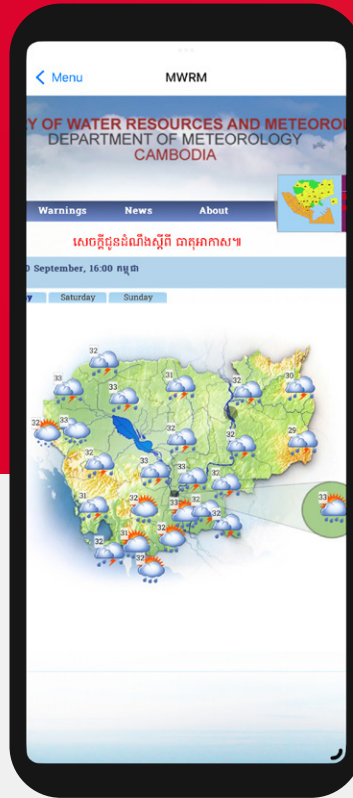
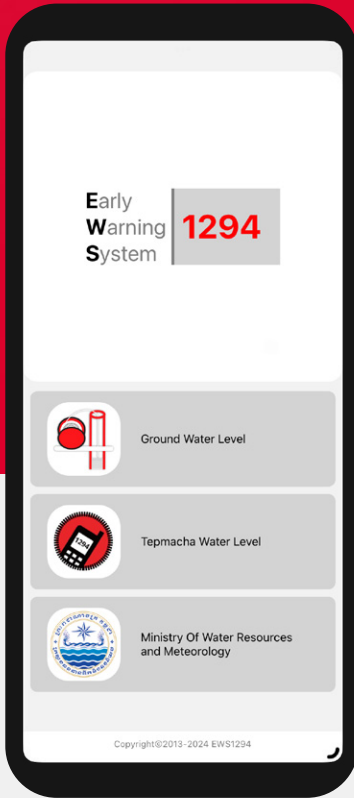
The EWS-KH<sup>2</sup> app was developed in October 2024, for iOS and Android devices. The mobile app allows key stakeholders at national and subnational levels to access real-time groundwater data on drought and flood conditions in Cambodia, as well as weather forecasts from the Ministry of Water Resources and Meteorology. The aim is to update the mobile app to be more user-friendly for local authorities with features like dashboards and QR codes. ActionAid is also exploring whether this app could be useful at the community level.

### Raising community awareness:

A total of 47 awareness-raising sessions were conducted in 47 target communities across 11 provinces, reaching 2,339 local community members. Visually engaging banners were also hung in each community to increase awareness and understanding of drought and floods and how to register for EWS 1294. ActionAid also broadcast 12 live online radio shows, reaching 749,796 social media users nationwide. One lesson from the project was that effective awareness-raising requires a multi-channel approach that combines increased outreach through popular social media platforms alongside direct engagement at the community level, leveraging the capacity of local authorities and strengthening existing communication mechanisms.

2. KH denotes "Khmer", the Cambodian language.

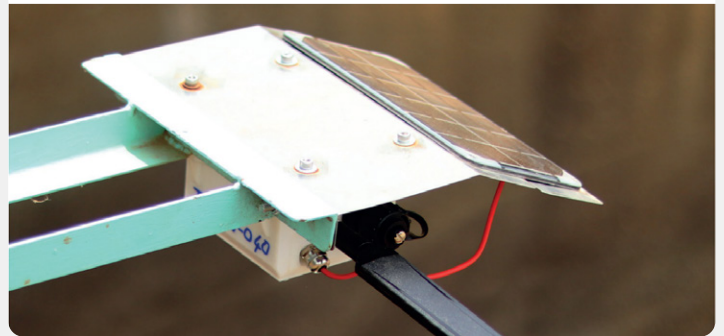
# How the solution works



Groundwater monitoring sensors transmit real-time data to the national EWS broadcasting platform.



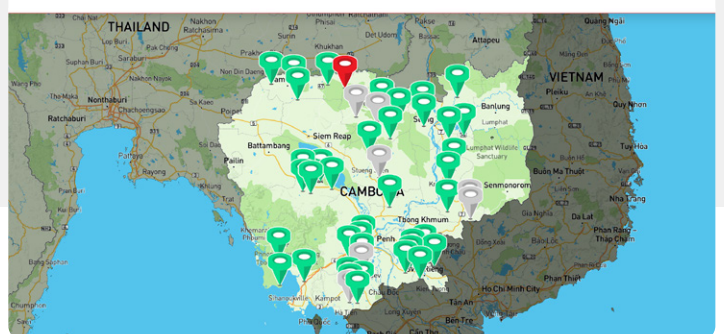
Solar powered automatic water gauges monitor surface levels for flood alerts and relays information back to 1294.



Multi-channel awareness campaigns onboard EWS 1294 users.



The website translates real-time data into alerts - triggering messages when levels indicate risk of drought or flood.



# The impact

## **Outcome 1:** **Successful outreach campaigns extended the reach of EWS 1294 across Cambodia**

The project successfully onboarded more than 63,000 new users to the 1294 platform, significantly increasing the user base and extending the reach of early warning communications across Cambodia. The success of the onboarding can be largely attributed to the multi-channel outreach approach, using social media, radio and direct community engagement to encourage registration and effective use of the service.

Facebook emerged as the most popular social media channel among target communities and was used to promote EWS 1294. Twelve live radio shows were also broadcast in target provinces – including Oddar Meanchey, Preah Vihear, Kampong Speu, Kampot, Pursat, Prey Veng, Kampong Thom and Koh Kong –reaching an estimated 700,000 people. These shows featured government representatives and community members, particularly women champions, who highlighted the benefits of the upgraded sensors and the 1294 platform for building engagement and trust.



## **Lesson 1:** **Strengthening community outreach is vital to boost awareness of EWS**

The project extended the reach of EWS 1294 nationally, but awareness and registration remain relatively low, particularly at the community level. Local authorities and their agencies play the biggest role in disseminating early warning messages and expanding the user base. Strengthening their capacity and building on their existing communication channels is central to increasing awareness and uptake.

One recommendation to emerge from the project was to develop tailored EWS communication materials for local authorities and local leaders to incorporate in their regular community meetings. This would help raise awareness and support residents to register for the service.

The ActionAid team also noted that many users lose access to the EWS when they change their mobile number, often after losing or replacing their phone. Raising awareness of the need to re-register with a new number is therefore key to sustaining engagement with the system.

## Lesson 2:

### Tailored, trusted and multi-channel approaches improve early warning access for marginalised groups

Marginalised groups – including women, youth, persons with disabilities and those with low literacy and digital literacy levels – face additional barriers to accessing and understanding early warning messages. To address this, the project delivered messages via both SMS and IVR. However, interviews with community members and key informants revealed the need for more tailored communication strategies to meet specific needs. Given the high number of spam messages received by mobile phone users in Cambodia, trusted and credible information sources are important.

People living with a disability can struggle with mobility, vision or cognitive challenges that hinder access to timely disaster information. Many rely on local leaders for updates and were unaware of Cambodia's EWS 1294, despite its critical role in disaster alerts. As one research participant noted, "I only receive information when the village chief comes to tell me." Another explained, "I need someone I can trust to explain things to me."

These insights highlight the importance of inclusive, accessible communication strategies and tailored outreach for persons with disabilities. Connecting individuals with disabilities to trusted community members and involving them directly in early warning initiatives can help build a more inclusive and resilient disaster response ecosystem.

For those with low literacy and digital literacy, voice messages and visual aids were particularly effective. Research participants recommended using images, short videos and social media platforms like Facebook and TikTok to improve understanding. Others highlighted the value of public address systems, community radio and phone-based voice messages to ensure everyone is informed before and during climate shocks.

## Outcome 2:

### Community members were more prepared for climate shocks because of the enhanced EWS 1294

An endline survey<sup>3</sup> found that the majority (88%) of those who received messages from EWS 1294 about floods, droughts and storms reported improving their climate-related preparedness or response actions as a result. At baseline, none of these individuals had been aware of EWS 1294. Reported preparedness activities included securing homes, preparing emergency supplies and documentation and monitoring breaking news. While this suggests positive behaviour change, the number of people in the sample who had received early warning messages was low. This is likely because many were new to the service and had not yet experienced an extreme weather event in their communities. Follow-up monitoring and evaluation will be needed to assess longer-term trends in climate-related preparedness and response.

3. Endline surveys were conducted with 138 households out of an initial baseline sample of 148. Key informant interviews were also conducted with nine individuals across seven provinces. Of the 138 survey respondents, 23 registered for EWS 1294, eight out of 23 received early warning messages and seven out of eight took precautions based on the messages. As such, the results should be read as indicative only due to the smaller sample size of users surveyed.



"EWS 1294 system is very effective because the people who use it are informed in advance of extreme weather so that they can take precautions and protect themselves."

– Female Deputy Commune Chief, Oddar Meanchey Province

"When I get these alerts, I take immediate action to secure my property. I trimmed trees, secure outdoor items, and reinforce doors and windows to protect my home and family."

– Male community member, Oddar Meanchey Province

## Outcome 3:

### Stakeholder knowledge and capacity on early warning systems were improved through effective collaboration with government entities

Throughout the project, ActionAid leveraged their strong relationships with the Government of Cambodia, working closely with national and subnational authorities from the planning and implementation phases to monitoring and evaluation of the project. ActionAid had two Memoranda of Understanding (MoU) with the MRD and NCDM – partnerships that drove the project and ensured it was successful.

Two training sessions were held for 103 subnational government stakeholders to support the effective operation and maintenance of monitoring stations.

These sessions covered climate change and EWS, as well as how to use the technology to monitor groundwater and the data to create early warning messages for communities. Attendees included representatives from the NCDM, MRD, the Provincial Committee for Disaster Management (PCDM) and the Provincial Department of Rural Development (PDRD), as well as local NGOs and women champion networks. Based on pre- and post-tests completed during the training workshops, 83% of respondents<sup>4</sup> demonstrated an increased understanding of EWS topics.



### Lesson 3:

#### Additional training is needed for commune heads to use groundwater sensors effectively

Although initial training was provided to commune heads on using and monitoring the groundwater sensors, some reported during the evaluation that additional capacity building was needed to help them read and interpret the data for more efficient responses. Strengthening their technical skills and confidence in using the sensors is essential to ensure timely, informed decisions and maximise the impact of EWS at the community level. The ActionAid team plans to conduct more community awareness to boost registrations in the system.

## Outcome 4:

### Installation and upgrades of groundwater sensors enabled accurate and timely flood and drought alerts, triggering cash assistance for affected populations

Between March and June 2024, 12 new groundwater sensors were installed and 20 existing sensors were upgraded. These provided critical data to inform adaptive strategies and resource management, strengthening resilience to climate variability across 11 provinces in Cambodia. ActionAid Cambodia leveraged EWS 1294 data to conduct rapid drought assessments in the hardest-hit areas. These assessments guided government and humanitarian responses, underscoring the importance of real-time climate data in coordinating effective, localised interventions.

EWS data also enabled timely mobilisation of drought response funds, demonstrating how early action can mitigate climate impacts. The data received from the sensors informed the provision of emergency cash assistance to 1,615 families across four provinces,<sup>5</sup> providing immediate relief and highlighting the practicality of groundwater monitoring for triggering timely aid.

4. 86 out of 103 workshop participants.

5. This humanitarian funding was provided by ActionAid International via their Disaster Preparedness and Response Fund (DPRF), an internal fund to provide immediate support to emergencies across the ActionAid federation.

“The funds I received were used to purchase seeds and protective nets to prevent animals from destroying my crops. Through this activity, I can earn a daily income ranging from 5,000 to 15,000 riels [\$1.25 to \$3.75]. Additionally, the remaining funds were used to buy materials to set up a stall for selling noodle soup in front of my house.”

– Male recipient with a disability, cash grant beneficiary

# What's next for ActionAid?

## Scaling anticipatory action services

ActionAid Cambodia is planning to expand groundwater monitoring stations in more provinces to enhance EWS 1294. This was driven by requests from stakeholders at both national and subnational government levels, who emphasised the need for timely and accurate data in disaster preparedness and management – particularly in areas most vulnerable to climate hazards.

ActionAid Cambodia plans to leverage their strong relationships with national and subnational authorities to identify priority regions for new installations – focusing on provinces most susceptible to water-related challenges – and provide training and resources to subnational government personnel to ensure effective operation and maintenance of the monitoring stations.

The longer-term plan is to hand over the maintenance and operation of the sensors to Cambodia's Ministry of Rural Development, to ensure continued support and sustainability of the project. While the GSMA-funded project focused primarily on droughts, future projects will explore other hazards, such as floods, which many regions of Cambodia are also susceptible to.

There is also an opportunity to expand the project by working more closely with mobile network operators and other stakeholders to disseminate early warning messages to people in affected areas, even if they are not yet registered for EWS 1294. Together with the GSMA and partners, ActionAid is exploring opportunities offered by cell broadcast technology to deliver targeted warnings based on location, avoiding network congestion and ensuring that users are alerted to critical information with audible alerts and onscreen messages.

Discussions on how to scale current solutions and collectively develop systems that reach more people in Cambodia are ongoing. This comes at a time when Cambodia is gaining visibility and support from the United Nations through global initiatives such as Early Warnings for All (EW4All), providing important momentum for ActionAid's work.



This initiative has been funded by UK International Development from the UK government and is supported by the GSMA and its members. The views expressed do not necessarily reflect the UK government's official policies.

