



From  
the People of Japan



# Armenia's Weather Forecasting Revolution:

Navigating Climate Challenges  
with Innovative Technology

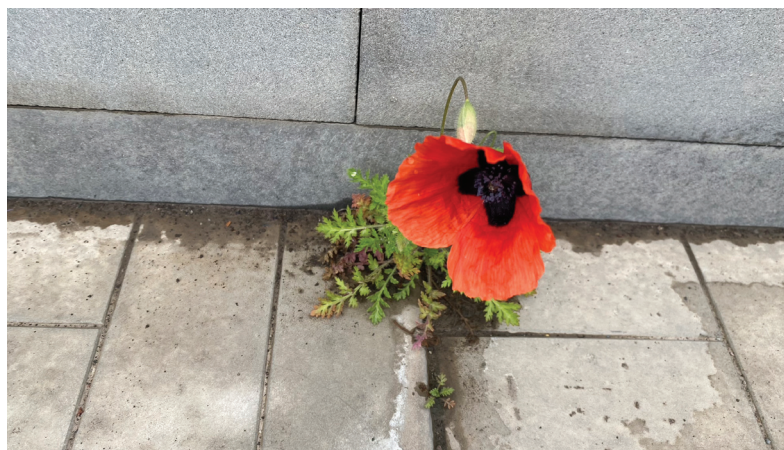
Japan considers that the climate crisis is a threat to all humanity and, in cooperation with UNDP, leads countries to accelerate their climate action.

In 2021, UNDP launched a new phase of Climate Promise – From Pledge to Impact – aimed at translating NDC targets into concrete action. Japan is the largest supporter of this phase and joins longstanding partners such as Germany, Sweden, the European Union, Spain, and Italy and new partners such as the United Kingdom, Belgium, Iceland, and Portugal to accelerate these efforts.

They say there is always sunshine after the storm. However, in today's world, where the climate is changing at an unprecedented pace and weather conditions are becoming increasingly unpredictable, the ability for many to enjoy that 'sunshine' depends entirely on their preparedness for weather extremes. This challenge becomes more pressing when it involves countries with outdated weather forecasting systems, as is the case with Armenia.



A landlocked country with complex mountainous topography, Armenia is prone to many hydro-geomorphological and climatic hazards. The frequency and intensity of climate-driven disasters have been increasing in the face of climate change threatening not only to country's economy but, also its agriculture. So, what's the pivotal first step in preparing for these "storms"? The answer may seem straightforward but is undeniably crucial - having access to accurate and timely weather observation and forecasts.



“For over 30 years, our country’s weather forecasting system and meteorological stations mostly relied on Soviet-era systems and infrastructure,” says Flora Sargsyan, an observer at one of Armhydromet (Armenian Hydrometeorological and Monitoring Service) stations. The system delivered delayed forecasting, particularly hindering agriculture by impeding effective planning for weather-dependent activities. “There have been some efforts of modernization,” says Flora, “but I have to admit that those did not bring any substantial changes.” This inadequacy became evident during times of unpredictable events induced by climate change, highlighting the urgency for a more accurate and advanced weather observation and forecasting system.



“Climate change has completely altered the trajectory of many spheres, especially agriculture,” says Anahit Gharibyan, a young entrepreneur and dried fruit producer. “While 10-15 years ago, farmers more or less knew what to expect in every season and could easily plan when to spray trees or collect crops, or in our case - to plan outside drying activities, today’s unprecedented weather changes introduce uncertainty and pose great risks to the sector.”



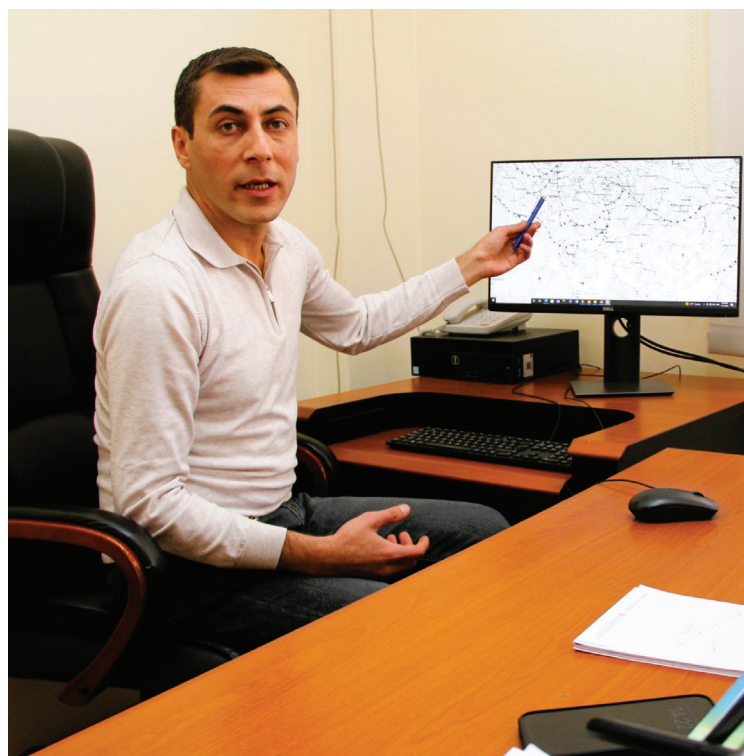
Anahit’s company is one of Armenia’s largest dried fruit producers that also processes products from its own orchards. Until recently, they relied on Armhydromet’s forecasting to plan their activities but limited access to real-time information greatly impacted their operational activities.



“I want to stress the impact of climate change on our terrain, which has undergone substantial transformations, adding complexity to strategic planning in agriculture. Accurate forecasts and crucial meteorological analyses for our region play a pivotal role in minimizing the risks of production losses. This not only aids in planting new orchards based on scientific data but also enhances our preparedness for extreme weather events,” she underscores.



Amidst these challenges posed by unpredictable weather conditions, a turning point emerged in 2022-2023. Initiated by UNDP and financed by the Government of Japan, a fruitful public-private partnership was established with a vital mission to revolutionize and modernize Armenia's hydro-meteorological observation and forecasting system. The initiative is part of the "Supporting Nationally Determined Contributions Towards Climate Risk Resilience in Armenia" Project, aimed to install and modernize automatic hydrometeorological stations across Armenia and develop a unified data management and early warning system for weather forecasts and monitoring.



"The existing system needed modernization," says Gagik Surenyan, the deputy director of Armhydromet, "different stations used different software programs that did not work well together, and there was no unified data management system for meteorological observations and early warning. Also, for some cases, our employees would manually register weather conditions every three hours, code the data, and write it in logbooks. This approach consumed considerable time and resources, posing limitations in terms of accuracy and real-time data availability.



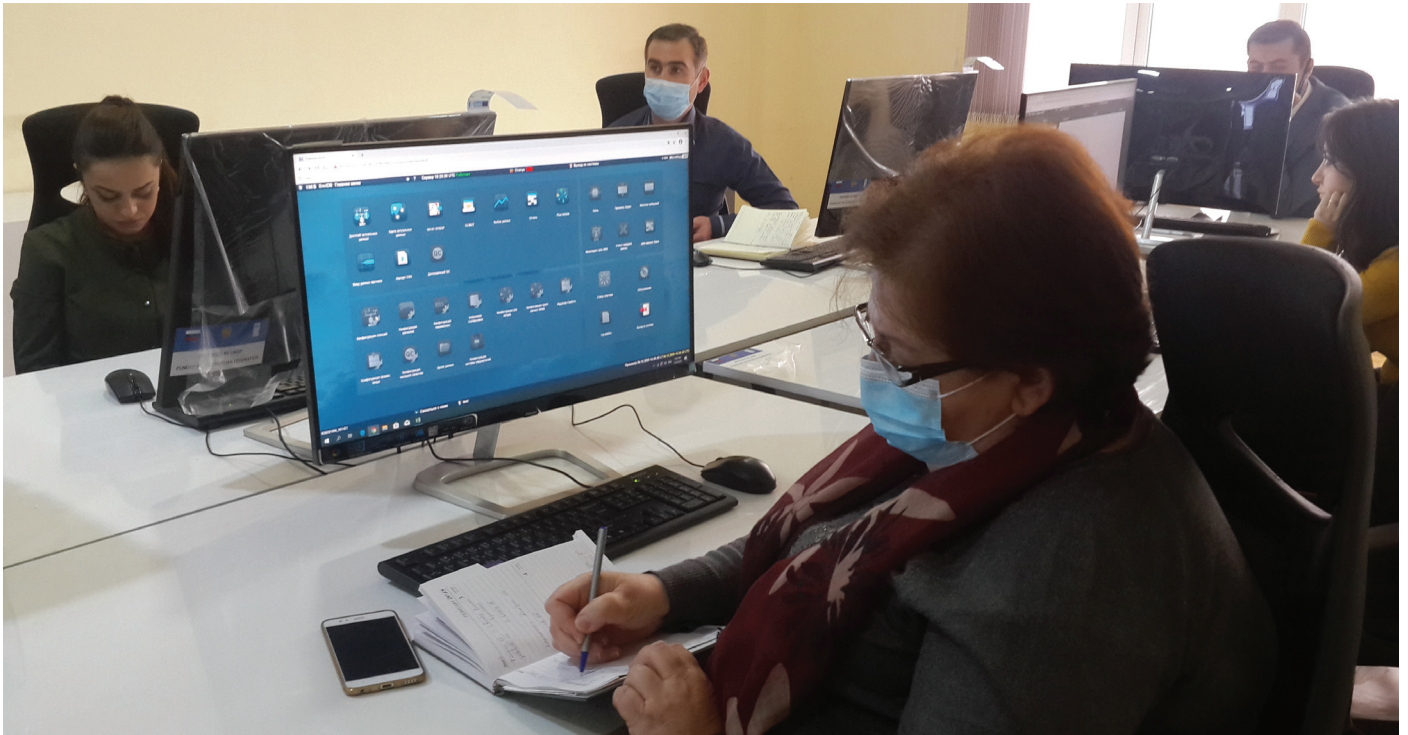
The newly installed automatic stations and the unified data management and early warning system have significantly contributed to Armhydromet. The automated stations deliver information every two seconds, enabling prompt monitoring and response to dynamic weather conditions. This nuanced understanding of meteorological patterns greatly contributes to the daily activities of decision-makers in various sectors, including agriculture, disaster management, and public safety.

“We worked with a local company “Locator” specializing in the development and production of a global centralized control and monitoring system. They assessed our needs and developed a unified data management software and mobile application. I must admit that this was a great collaboration and UNDP’s role was crucial in mediating it”, Says Surenyan.





Having locally developed software significantly streamlines the operations of Armhydromet, providing swift technological support and offering the flexibility to customize and adapt the system according to their specific needs. The new software also drastically reduced inaccuracies in weather forecasting and thanks to its numerous features for meteorological observations will greatly contribute to scientific research and explorations. “Our meteorologists can observe weather conditions at any moment and use various data for scientific purposes,” says Surenyan.



Transition to the modernized system, however, was challenging, especially for employees aged over 50. “It was difficult to adapt them to the new changes; at first, they even thought they might lose their jobs because of the new technologies. Thanks to the unified efforts of our service and the local company, we helped them slowly adapt to the new system and enhance their skills”, Surenyan notes.

Anahit, a direct beneficiary of this modernized system, emphasizes that the changes greatly enhanced their production operations. “Before having access to timely and scientifically accurate weather forecast information, we used to plan our activities based on numerous failures and successes. But now, with the introduction of the system and dedicated mobile application, we not only receive accurate weather forecasts but also timely warnings in case of extreme weather events. This proactive approach allows us to prepare effectively for potential challenges in our operational activities,” she highlights.



The public-private collaboration between the Armenian Hydrometeorological and Monitoring Service, and local technology company mediated by UNDP played a pivotal role in advancing Armenia's meteorological capabilities, underscoring the positive impact that such partnerships can have on modernizing critical infrastructure and addressing climate challenges. This collaboration not only greatly contributed to Armenia's resilience to the impacts of climate change but also stands as a testament to the transformative power of cooperation, trust, and modern technological solutions.



“Securing access to real-time and scientifically accurate weather forecasts is indispensable for local farmers and producers like us, and this journey commences with robust public-private collaboration, trust, and the adoption of cutting-edge technological solutions. The integration of a modernized weather forecasting system not only instills confidence in our Hydrometeorological Service of Armenia but also empowers us to plan our activities grounded not merely in past experiences but guided by scientifically accurate and timely provided data” says Anahit.

