

# Early Warning System Programming and Investment Opportunities in Nepal

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# Policies/roadmap/strategies that prioritize Early Warning System and Climate Information Services in Nepal

- ▷ Constitution of Nepal
- ▷ DRRM Act, 2017
- ▷ Local Government Operation Act, 2017
- ▷ National Policy for Disaster Risk Reduction, 2018
- ▷ National Climate Change Policy, 2019
- ▷ National Water Resources Policy, 2020
- ▷ 16th Plan
- ▷ National Disaster Response Framework (NDRF), 2013 (Revised in 2018)
- ▷ National Strategic Action Plan for DRR (2018–2030)
- ▷ Strategic Action Plan on Gender Equality, Disability, and Social Inclusion in DRRM, 2024
- ▷ National Adaptation Plan
- ▷ EW4ALL roadmap (Draft)
- ▷ NDC-0.3

# Climate Information Services in Nepal: Challenges and lessons

Sector	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
Agriculture, Weather & Water Resources	<p><b>Agriculture:</b></p> <ul style="list-style-type: none"> <li>Weekly agro-meteorological forecasts piloted via DHM</li> <li>Ministry of Agriculture &amp; Livestock is responsible for climate service delivery.</li> </ul> <p><b>Weather &amp; Water Resources:</b></p> <ul style="list-style-type: none"> <li>DHM responsible for observing and monitoring meteorological &amp; hydrological hazards</li> </ul>	<ul style="list-style-type: none"> <li><b>Technical &amp; Infrastructure Gaps</b> <ul style="list-style-type: none"> <li>Inadequate station coverage for landslides, glaciers, and multi-hazard risks.</li> <li>Manual data collection persists (e.g., river gauges read 3×/day).</li> <li>Mobile network failures during disasters hinder timely alerts.</li> </ul> </li> <li><b>Institutional &amp; Coordination Issues</b> <ul style="list-style-type: none"> <li>Overlapping mandates between DHM, NDRRMA, and sectoral ministries.</li> <li>Weak coordination between forecasting agencies and responders.</li> <li>Shortage of experts in forecasting, risk modeling, and inclusive communication.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Develop a <b>multi-hazard early warning system (EWS) framework</b>.</li> <li>Prioritize <b>impact-based forecasting</b>.</li> <li>Automate weather &amp; river monitoring stations.</li> <li>Expand Climate Information Services (CIS) to <b>agriculture, health, aviation, and marginalized communities</b>.</li> <li>Strengthen <b>disaster information systems</b> and <b>Emergency Operations Centers (EOCs)</b>.</li> </ul>

# Climate Information Services in Nepal...

Sector	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
3. Health	<ul style="list-style-type: none"> <li>Early Warning and Reporting System (EWARS) for epidemics- a hospital-based sentinel surveillance system currently established in 118 hospitals covering all 77 districts of Nepal.</li> </ul>	<ul style="list-style-type: none"> <li><b>Accessibility &amp; Inclusivity Barriers</b> <ul style="list-style-type: none"> <li>Warnings not tailored for disabled, elderly, or non-Nepali speakers.</li> <li>SMS-based alerts miss remote areas with poor connectivity.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Focus on <b>modernization, inclusion, and sector-specific application</b> of EWS.</li> <li>Foster <b>regional collaboration</b> to address data and capacity gaps.</li> <li>Pilot projects should be developed in collaboration with development partners.</li> <li>use satellite data to monitor environmental hazards.</li> </ul>
4. Environment & Forestry	<ul style="list-style-type: none"> <li>Environment Department under the Ministry of Forests and Environment monitors air pollution. There are 26 stations across the country.</li> <li>Department of Forests and Soil Conservation has developed satellite-based forest fire detection and monitoring system. The Department has been working with ICIMOD to further enhance the forest fire detection and monitoring system.</li> </ul>		



# ADB's Country Program Strategy (CPS) and projects articulating Climate Information and Early Warning System in Nepal

ADB CPS Priority/ Strategic Objective	ADB Programming Pipeline/ Projects
<b>Enhancing environmental sustainability and climate resilience.</b>	<ul style="list-style-type: none"><li>● Priority River Basins Flood Risk Management Project(2020-2027)</li></ul>
	<ul style="list-style-type: none"><li>● Bagmati River Basin Improvement Project (2013-2027)</li></ul>
	<ul style="list-style-type: none"><li>● Building Adaptation and Resilience in the Hindu Kush Himalayas-Bhutan and Nepal(2023-2028)</li></ul>
	<ul style="list-style-type: none"><li>● Kathmandu Valley Water Supply Improvement Project (Phase 2) (2024-2031)</li></ul>
	<ul style="list-style-type: none"><li>● Scaling Up Clean Air Actions for Better Health and Resilience</li></ul>
	<p>Projects with potential EWS entry point:</p> <ul style="list-style-type: none"><li>● Disaster Resilience of Schools Project(2018-2027)</li><li>● Climate-Resilient Landscapes and Livelihoods Project(2024-2030)</li><li>● Irrigation Modernization Enhancement Project(2024-2031)</li></ul>

# Potential Sectoral Investments in Climate Information and Early Warning Systems for Collaborative Implementation between the Country and ADB

Indicative Project/ Investment Title	Timeframe	Sectors Involved	Implementing Agency
<b>1. Strengthening climate information services &amp; early warning system in Nepal:</b> Establishment of an impact-based multi-hazard early warning system (MHEWS), Enhance capacity for dissemination and communication of climate risk information and early warning messages for disaster risk management (DRM), agriculture, livestock, and transport sectors, enhancement of operational web-based integrated decision support system (DSS) ,Data-sharing protocols between agencies.	2025–2028  (3 years)	<ul style="list-style-type: none"><li>• Agriculture</li><li>• Infrastructur</li><li>• Social Protection</li></ul>	<ul style="list-style-type: none"><li>• National Disaster Risk Reduction &amp; Management Authority</li><li>• Department of Hydrology &amp; Metrology</li><li>• Department of Mines &amp; Geology</li></ul>
<b>2. Enhancing Early Warning Infrastructure and Community Preparedness for Multi-Hazard Risks:</b> Upgrading & strengthening Emergency Operation Centres(EOCs), Building warning towers, Conducting simulations, exercises, public awareness campaigns, National multi-hazard early warning platform linking DHM, NDRRMA, and local governments, Inclusive communication tools (sign language, multiple languages).	2026–2030  (5 years)	<ul style="list-style-type: none"><li>• Infrastructure</li><li>• Cross Cutting</li></ul>	<ul style="list-style-type: none"><li>• NDRRMA</li><li>• DHM</li><li>• Local Governments</li><li>• Local communities</li></ul>
<b>3..Enhancing Tourism Safety and Resilience through Climate Information and Early Warning Systems in Nepal:</b> Develop mountain weather forecasting & avalanche warning systems, Install digital information boards at trekking hubs, Create climate hazard risk maps for tourist sites.	2026–2027  (2 years)	<ul style="list-style-type: none"><li>• Tourism</li></ul>	<ul style="list-style-type: none"><li>• Ministry of Tourism, Culture &amp; Civil Aviation</li><li>• DHM</li><li>• Nepal Tourism Board</li></ul>

# Measures and Reforms Required to Ensure the Sustainability of Identified Climate Information and Early Warning System Investments

Indicative Project/ Investment Title	Institutional Arrangement	Policy Reform	Budget Reform
<b>Strengthening climate information services &amp; early warning system in Nepal</b>	<ul style="list-style-type: none"> <li>• Integrated platform will be developed for accumulating, quality control, and reporting of weather and climate data</li> <li>• Interactive multi-hazard vulnerability, exposure, and risk maps will be developed.</li> <li>• Development of the DHM capacities for IBF of floods in selected river basins.</li> <li>• Development of a national landslide monitoring and forecasting system for landslide hazard assessment.</li> <li>• Forecast Application for Risk Management (FARM) school, a non-formal education and experiential learning process based on local needs, will be established.</li> </ul>	<ul style="list-style-type: none"> <li>• Establish national framework for climate services.</li> <li>• Mainstream climate information service in policies and plans across all priority sectors</li> <li>• Integrate IB-MHEWS in Planning, policy and decision making at all levels..</li> <li>• Develop AA framework and protocols for prioritized hazards.</li> </ul>	<ul style="list-style-type: none"> <li>• Use innovative funding solutions(including blended financing).</li> <li>• Promote funding partnerships with development agencies and private sector for sustainability.</li> <li>• Scale up government budgetary allocation for CIS.</li> </ul>

Thank You