Early Warning System Programming and Investment Opportunities in Bangladesh

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What are the policies/roadmap/strategies that prioritize Early Warning System and Climate Information Services in your country?

In Bangladesh, several **policies, roadmaps, and strategies** prioritize **Early Warning Systems (EWS)** and **Climate Information Services (CIS)**, mainly due to the country's high vulnerability to climate change and disasters. Below are the key ones:

- Bangladesh Climate Change Strategy & Action Plan (BCCSAP,2009)-Highlights disaster risk reduction, forecasting and community preparedness.
- Standing Orders on Disaster (SOD,2019, MoDMR)-Defines institutional responsibilities for issuing and disseminating early warnings.
- National Plan for Disaster Management (NPDM,2021-2025,MoDMR)- guides all ministries, emphasizes " early warning for all", all-hazards approach and links to SOD 2019
- National Adaptation Plan (NAP,2023-2050, MOEFCC)-Roadmap for climate adaptation, includes strengthening multi-hazard EWS and sectoral climate information services(CIS) across agriculture, water, health and cities.
- Bangladesh Delta Plan 2100 (Approved 2018, Planning Commission (GED)) -Long-term plan integrating, monitoring, climate information and EWS investments. Long term water/climate resilience strategy.

Along with the above national policies there are three global agreements relating to climate change have come in to play in Bangladesh's development planning-

1. Sustainable Development Goal (SDGs)
2. Sendai Framework for Disaster Risk Reduction 2015-2030
3. Paris Climate Agreement

Has Climate Information Services been piloted or operationalized for any sector in your country (agriculture, water, energy, transport, tourism, or others)? What challenges did you encounter and lessons learned from these?

- If yes, provide the following-

Yes, in Bangladesh Climate Information Services(CIS) have been piloted and in some cases operationalized in some sectors (some experimentally)-

Sector	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
Agriculture	Agro-meteorological advisories (through DAE, BMD, FAO, BRAC); SMS-based crop/weather advisories to farmers. Use weather and climate forecasts for crop calendar and farming decisions. * Fisheries: Providing information to ensure safer navigation at sea and reduce risks for fishermen.	- Low farmer awareness and trust in forecasts. - Limited localization of data (village-level variability). - Technical jargon not farmer-friendly. - Sustainability issues once donor projects end.	-Farmers need **simple, actionable, local language messages**. - Bundling CIS with input/market support increases uptake. - Community intermediaries (farmer groups, extension agents) strengthen trust.
Water / Flood Management	Flood Forecasting & Warning Centre (FFWC) issues short- and medium-range river flood forecasts; pilots for flash flood early warnings.	-Lead times often too short for flash floods. - Lack of impact-based forecasts (only water levels, not "what will happen"). - Gaps in hydro-meteorological observation networks.	**-Impact-based warnings** (e.g., "water will inundate houses/crops") are more useful. - Investments in local sensors & community river watchers improve accuracy. - Mobile dissemination (SMS, social media) boosts last-mile reach.
Energy	Limited pilots linking CIS with renewable energy planning (e.g., solar radiation mapping, wind assessments).	-Data gaps (solar radiation, wind speed, demand patterns). - Weak integration of CIS into planning and private sector investment.	-Partnerships with private sector & academia needed. - Open data platforms could attract clean energy investors.

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- If yes, provide the following

Sector	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
Transport	No large-scale CIS integration yet; some use of cyclone/monsoon forecasts for port/shipping operations.	- Forecasts not tailored for logistics/transport (e.g., road flooding, river siltation). - Weak institutional uptake beyond emergency responses.	- Requires **sector-specific packaging** of CIS (e.g., road condition maps, shipping hazard alerts).
Tourism	Emerging use of weather information for coastal tourism advisories (Cox's Bazar, Sundarbans).	- Not yet institutionalized; limited coordination between BMD, tourism boards, and local businesses.	- Opportunity to link CIS with **safety + marketing** (seasonal advisories for tourists).
Cross-cutting	EW4ALL, NAP 2023–2050 and CPP mainstream CIS for multiple sectors.	- Coordination gaps between BMD, BWDB, DAE, MoDMR, MoEFCC. - Technical sustainability (O&M of sensors/models). - Equity issues: women, poor, remote groups often excluded.	**-Institutional coordination platforms** needed. - Ensure **inclusive communication** (gender-sensitive, disability-friendly). - Long-term **finance & O&M planning** critical.

Brief Summary:

CIS is **most operationalized in Agriculture and Water sectors**, with early-stage efforts in Energy, Transport, and Tourism.
The main challenges: **localization, sustainability, coordination, and trust**.
Key lessons: CIS must be **impact-based, simple, inclusive, and sustained beyond donor projects**.

Are your country's Climate Information and Early Warning System priorities articulated in ADB's Country Program Strategy (CPS) and programming pipeline/projects in your country?

- If yes, elaborate what strategic priorities/objectives and projects.

Yes- Bangladesh's **Climate Information Services (CIS)** and **Early Warning System (EWS)** priorities are indeed reflected in the Asian Development Bank's (ADB) **Country Partnership Strategy (CPS)** for Bangladesh (2021-2025) and are similarly embedded in the programming pipeline and project portfolio.

ADB CPS Priority/ Strategic Objective	ADB Programming Pipeline/ Projects	CIS/EWS Relevance
Integrate CIS/EWS capabilities into **national planning and project design**. The CPS emphasizes support for climate change adaptation, mitigation and disaster risk management, recognizing Bangladesh's high vulnerability to climate hazards.	"Bangladesh Climate and Disaster Risk Atlas (2022)" (Integrate climate adaptation & disaster risk in operations)	Provides geospatial risk tools for hazard screening, infrastructure planning and disaster proofing to clearly guide CIS/EWS integration. This initiative directly supports CPS goals and indicates knowledge-driven action.
Support water, river & coastal zone management.	"Climate-Resilient Integrated Southwest Water Resources Management Project (2024)" (Incorporates climate resilience measures, nature-based solutions and capacity building)	Strengthens EWS-relevant water systems and community resilience.
Institutionalize climate resilient policy across sectors	" Climate-Resilient Inclusive Development (CRID) Program" -Policy based Financing (This program supports policy and institutional reforms to mainstream climate adaptation and disaster resilience across key sectors-agriculture, water, urban, transport, energy etc.)	Aligns with Bangladesh's National Adaptation Plan (2023-2050) and effectively embedded with CIS/EWS in sectoral policy and institutional framework.
These projects collectively support Bangladesh's effort to strengthen early warning systems, integrate climate-risk information into development planning and build institutional capacity for resilience.		

What potential Climate Information and Early Warning System sectoral investments could your country and ADB work together?

There are several key areas where Bangladesh and the ADB could collaborate on climate information and early warning systems to build resilience and reduce climate-related risks. They may be-

Indicative Project/ Investment Title	Timeframe	Sectors Involved	Implementing Agency
Meteorological & Hydrological Modernization (Upgrade observational Network- Install new Radar, AWS, High resolution and real time modeling and integration with regional platform)	3 to 5 Years	Meteorology and Climate Services	BMD
Agrometeorological Services for Agriculture (Enhance climate resilience in farming/ Weather advisories to farmers)	3 Years	Agriculture	DAE
Hydrological Resilience & Water resource Management	3 Years	Water/ Flood Management	FFWC
Vector born diseases early warning System	2 Years	Health	BMD and DG Health
Climate adaptation in Fisheries and Livestock	3 to 5 Years	Agriculture and Food security	Ministry of Fisheries & Livestock
Renewable Energy (Clean/ green energy) production through wind and solar	3 to 5 Years	Energy Sector	MoPEMR
“Capacity Building and Institutional Strengthening”-Training local institutions and stakeholders to use climate information effectively, as well as establishing data-sharing platforms and coordination mechanisms among government agencies.	3 to 5 Years	Multi discipline	MoEFCC

What measures and reforms are needed to ensure sustainability of the identified Climate Information and Early Warning System investments?

To ensure investments in Climate Information and Early Warning Systems (CIEWS) are sustainable and deliver long-term benefits in Bangladesh, a combination of institutional, technical, financial and policy-level reforms are required.

Indicative Project/ Investment Title	Institutional Arrangement	Policy Reform	Budget Reform
Modernization of Meteorological and Hydrological Forecasting Systems	Strengthen coordination among BMD, BWDB, and DDM; Establish a national CIEWS coordination unit	Integrate climate risk data into national planning frameworks (e.g., NAP, Delta Plan 2100)	Create dedicated budget lines for equipment O&M and training under MoEFCC and MoDMR
Community-based Early Warning and Dissemination System	Empower Union Disaster Management Committees (UDMCs); strengthen LGIs	Mandate use of localized warning protocols in DRM Act	Allocate funds for local early warning activities in annual LGI development budgets
Integrated Climate-Health Surveillance System	Link DGHS with BMD and climate units in Ministry of Health	Update National Health Policy to include climate-sensitive diseases	Allocate contingency funding for climate-induced health emergencies
Climate-Resilient Agricultural Advisory System	Coordinate BARC, DAE, and BMD for Agro-meteorological services	Mainstream climate-smart agriculture in Agricultural Policy	Allocate annual budget for climate-smart extension services and farmer training

Thank you.