Early Warning System Programming and Investment Opportunities in

KAZAKHSTAN

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

- 1. Law of the Republic of Kazakhstan «On Civil Protection»;
- 2. Water Code of the Republic of Kazakhstan;
- 3. Environmental Code of the Republic of Kazakhstan;
- 4. Comprehensive Plan for the Development of the Water Sector of the Republic of Kazakhstan for 2024-2028;
- 5. Roadmap on Ensuring Mudflow, Landslide and Avalanche Safety;
- 6. Regional Development Plans.

Sector (disaster preparedness)	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
Floods, Inundations	RGE «Kazhydromet» provides the development and delivery of short-term and long-term hydrological forecasts. Storm warnings are transmitted in accordance with the approved Interaction Algorithm between the Ministry for Emergency Situations and RGE «Kazhydromet». Hydrometeorological data are transmitted, in accordance with established protocols, to the Ministry for Emergency Situations, the Ministry of Water Resources and Irrigation, regional authorities, and the population. Satellite images are provided by JSC 'NC Kazakhstan Gharysh Sapary'. Public information and alerting are ensured through a set of measures, including the activation of electric sirens and voice siren devices (VSD), interception of TV and radio broadcasting, distribution of SMS messages, the use of mobile applications for smartphones, as well as posting information on websites."	1. Until 2024, there was no automation of flood forecasting and modeling processes. 2. Climatic factor: Increasing frequency of extreme weather events (rapid snowmelt, heavy precipitation)	Until 2024, forecasting and modeling were processed manually, which reduced the speed of response. Thus, following the large-scale flood of 2024, the Government established the flood forecasting and modeling information system "Tasqyn". "Tasqyn" simulates flood scenarios with the identification of potential inundation of settlements in Kazakhstan at high risk of flooding. The automation of processes has improved the accuracy and timeliness of early warning. .
Mudflow	Climatic and hydrometeorological data are provided by the RSE "Kazhydromet" in accordance with the joint order on mutual exchange of hydrometeorological information support. Hydrometeorological data are transmitted, in accordance with established protocols, to the Ministry for Emergency Situations, regional authorities, and the population. Satellite images are provided by JSC 'NC Kazakhstan Gharysh Sapary'. Public information and alerting are ensured through a set of measures, including the activation of electric sirens and voice siren devices (VSD), interception of TV and radio broadcasting, distribution of SMS messages, the use of mobile applications for smartphones, as well as posting information on websites."	Not all rivers posing a mudflow hazard have automated early warning systems.	To enhance forecast accuracy through the integration of climate and geological data, an automated mudflow hazard monitoring system was commissioned in 2021 across four river basins identified as posing significant risks to the city of Almaty

Sector	Institutional Arrangement of Climate Service Delivery	Challenges	Lessons Learned
Landslide	Climatic and hydrometeorological data are provided by the RSE “Kazhydromet” in accordance with the joint order on mutual exchange of hydrometeorological information support. Hydrometeorological data are transmitted, in accordance with established protocols, to the Ministry for Emergency Situations, regional authorities, and the population.	The introduction of automated monitoring systems in landslide-prone regions of Kazakhstan to enhance the surveillance of high-risk areas	In the current year, georadar and geoinformation technologies are being integrated to strengthen the monitoring of landslide-prone slopes in Almaty
Avalanches	Climatic and hydrometeorological data are provided by the RSE “Kazhydromet” in accordance with the joint order on mutual exchange of hydrometeorological information support. Hydrometeorological data are transmitted, in accordance with established protocols, to the Ministry for Emergency Situations, regional authorities, and the population.	The lack of automated monitoring systems in landslide-prone regions of Kazakhstan hampers comprehensive risk assessment and reduces the effectiveness of early warning mechanisms	The initiation of the Automated Avalanche Hazard Monitoring System project in the Kishi and Ulken Almaty river basins has demonstrated the importance of developing advanced technologies to strengthen monitoring and early warning capacities in high-risk mountain areas

ADB CPS Priority/ Strategic Objective	Accelerating Resilient and Sustainable Growth for All
The ADB's Country Program Strategy, as well as the Central Asia Regional Economic Cooperation Corridors 1, 2, and 6 Connector Road (Kyzylorda–Zhezkazgan) Reconstruction Project, reflects the priorities related to the development of climate information and early warning systems. The strategy emphasizes the importance of strengthening resilience to climate change and natural disasters through the integration of climate data into planning and risk management processes. It also supports the modernization of monitoring infrastructure, the digitalization of services, and the enhancement of institutional coordination. Therefore, Kazakhstan's priorities in climate services and early warning are fully aligned with the ADB's program and are embedded in its project portfolio.	

Indicative Project/ Investment Title	Timeframe	Sectors Involved	Implementing Agency
National-level Monitoring and Early Warning System for Hazardous Natural Phenomena (mudflows, landslides, avalanches)	2026-2028	•Disaster Risk Reduction •Environment •Tourism •Urban Development / Housing •Water Resources •Transport and Infrastructure •Forestry •Gender Equality and Social Inclusion	The Ministry for Emergency Situations

Indicative Project/ Investment Title	Institutional Arrangement	Policy Reform	Budget Reform
National-level Monitoring and Early Warning System for Hazardous Natural Phenomena (mudflows, landslides, avalanches)	The digitalization of processes will strengthen coordination between the hydrometeorological service, emergency authorities, local authorities, and sectoral ministries, ensuring prompt response measures and the timely provision of information on hazardous phenomena to the population.	Integration of the system into national programs on climate change adaptation and disaster risk reduction, development of methodologies for the organization and functioning of mudflow, landslide, and avalanche hazard monitoring in vulnerable regions, and the implementation of design and survey works.	Securing stable government funding for the operation and maintenance of the system (monitoring stations, sensors, software, communications, etc.), along with attracting international and private investments