

# TAVUSH AND LORI

## FLOOD RESPONSE



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Learning Initiative Report is prepared with the financial support of the Start Fund.

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## LEARNING INITIATIVE REPORT

YEREVAN, AUGUST, 2025

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### Disclaimer

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### Acknowledgment

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### Note on Sources

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## Abbreviations

<b>ARCS</b>	Armenian Red Cross Society
<b>ARNAP</b>	Disaster Risk Reduction National Platform of Armenia
<b>SERTIT</b>	Regional Service for Image Processing and Remote Sensing
<b>CHS</b>	Core Humanitarian Standard
<b>CSO</b>	Civil Society Organization
<b>DRF</b>	Disaster Risk Management
<b>DRR</b>	Disaster Risk Reduction
<b>EMS</b>	Emergency Management Service
<b>EU</b>	European Union
<b>EWS</b>	Early Warning System
<b>FGD</b>	Focus group discussion
<b>GIS</b>	Geographic Information System
<b>IDPs</b>	Internally displaced people
<b>KII</b>	Key informant interview
<b>LSG</b>	Local Self-Government
<b>MIA RS</b>	Ministry of Internal Affairs Rescue Service
<b>MIRA</b>	Multi-sector Initial Rapid Assessment
<b>MoLSA</b>	Ministry of Labor and Social Affairs
<b>MoE</b>	Ministry of Environment
<b>MTAI</b>	Ministry of Territorial Administration and Infrastructure
<b>NFI</b>	Non-food item
<b>NGO</b>	Non-Governmental organization
<b>PDNA</b>	Post disaster needs assessment
<b>PIN</b>	People in Need
<b>RA</b>	Republic of Armenia
<b>SOP</b>	Standard operating procedures
<b>SDC</b>	Swiss Agency for Development and Cooperation
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Program
<b>USS</b>	Unified Social Services



## EXECUTIVE SUMMARY

### Executive Summary

On May 25–26, 2024, relentless rains in Armenia’s Lori and Tavush regions caused the Debed, Tashir, and Aghstev rivers to overflow, flooding nearby communities, infrastructure, bridges, and two main highways (M6 and M4) connecting Armenia with Georgia. The Government declared disaster zones and stood up an operational working group under the Prime Minister’s May 26 decree. A rapid Post-Disaster Needs Assessment (PDNA) put direct damage at ≈ USD 49 million, losses at ≈ USD 33 million, and recovery needs at > USD 117 million. The flash flood resulted in four casualties and significant damage. Many affected families were evacuated for safety.

Supported by the Start Fund, this Learning Initiative Report distills successes, system gaps, and priority changes across state, municipal, NGO, and community actors to shift from ad hoc response to risk-informed preparedness and early recovery.

#### ***Summary of the response and recovery***

In response to the flash flood, the Ministry of Internal Affairs (MIA) in collaboration with the affected community administration, Armenian Red Cross Society (ARCS) and Lore Rescue Team NGO initiated search and rescue operations, and the Ministry of Territorial Administration and Infrastructure (MTAI) started early recovery actions. In the first 24–72 hours, teams faced rolling power cuts that also knocked out mobile and internet connectivity, a classic secondary impact that complicates command and control.

Early warning was uneven. In some places, anticipatory evacuations prevented casualties; elsewhere, residents self-evacuated at night without timely alerts, exposing gaps in last-minute risk communication and scenario-based municipal standard operating procedures (SOPs).

Mobility became the turning point. Crews converted a nearby railway bridge to vehicle traffic, added temporary foot and vehicle bridges, and reopened old Jiliza mountain

routes, restoring access for humanitarian support including water, food, and medicine deliveries to isolated 7 settlements of Alaverdi consolidated community.

Utility companies, working under hazardous conditions, phased back electricity and gas while municipalities stabilized drinking water access, critical lifelines that directly affect safety and dignity.

Shelter and cash support followed a familiar arc: initial reliance on relatives and community spaces, rapid activation of hotel options with public reimbursement, then rental assistance through municipalities. The Government’s targeted social assistance (Decision 1033-N, launched July 4, 2024) approved 578 cases (1,425 people), providing one-off support per person as well as to host families who sheltered the evacuated population.

Housing compensation initially tied to cadastral values proved inadequate; after complaints and mediation, the rate was raised to 180,000 AMD/m<sup>2</sup>, exceeding Alaverdi’s market averages. Disbursements for renovation (governed by Decision No. 1043-N,) were phased against receipts, photos, and site checks—unpopular at first, but important for accountability, especially with absentee owners.

Based on the assessment findings the targeting and fairness of support programs to affected population were mixed. Adjustments to support sometimes arrived only after public advocacy, underscoring the need for simple appeals and grievance channels. Certain livelihood losses (e.g., irrigation systems, farm machinery) fell outside initial criteria, while flat-rate payments for movables frustrated households with higher-value losses.

#### ***Summary of recommendations***

Improvement of Disaster Risk Management (DRM) system based on the lessons learned from the May 2024 flashflood in the Lori and Tavush regions should be one of the priorities of the Government of Armenia’s recovery strategies. For proper enhancement of DRM system immediate attention must be given to addressing: i) participatory review of existing

DRM community plans to close gaps, convert plans into operational tools via regular drills, simulations, and scenario-based trainings; ii) establishment of community based institutional hubs to embed DRM in planning, provide technical assistance, and coordinate emergency response across authorities, private sector and NGOs; iii) establishment of unified information management system for centralized and standardized sector baselines with Geographic Information System (GIS) maps, dashboards, forecasts, and worst-case scenarios to speed evidence-based decisions; iv) modernization of hydrometeorological monitoring system; v) enhancement of GIS & remote sensing systems for risk-informed development; vi) establishment of functional multi-hazard Early Warning System (EWS) ensuring multi-channel dissemination of information and crisis communications; vii) promote disaster risk modelling, nature-based solutions and science-based decision making mechanisms; viii) establishment and strengthening of the mechanisms that systematically integrate scientific evidence, climate projections, and disaster risk assessments into all levels of decision-making; ix) establishment of community volunteer rescue forces with relevant legal mandate; x) standardization of data collection and management templates to drive recovery planning and funding and localization and

digitalization of MIRA toolkit with clear SOPs and coordination mechanisms established for managing humanitarian assistance—covering assessment, distribution, and monitoring; xi) introduction of disaster risk financing innovative mechanisms; xii) enhancement of DRM capacity building and public awareness raising mechanisms to ensure the development of culture of resilience.

These will help drive the overall DRM system enhancement including proper recovery process after flashflood. It is essential to consider specific needs of displaced population and vulnerable groups, including gender and social vulnerabilities across all sectors and ensure that DRM principles are integrated and mandatory at all levels.

Addressing the overall recommendations will be crucial for long-term resilience building of Armenia's communities and population. The timeline for covering the DRM system enhancement needs will depend on the availability of financial resources in the state budget, municipalities, civil society and community-based organizations, private sector and other organizations. Only with unified efforts Armenia can ensure transparent recovery and reconstruction of the affected communities, as well as strengthening of DRM system in Armenia.



# B BACKGROUND



## Background

On May 25–26, 2024, persistent rainfall in Armenia’s northern Lori and Tavush regions led to flooding. The intense downpours caused the Debed, Aghstev, and Tashir rivers to overflow, submerging multiple communities and causing significant damage to infrastructure, livelihoods, and vital services.

In response to the scale of the disaster, the Government of Armenia declared several communities in Lori and Tavush as official disaster zones, defining their geographic boundaries. On May 27, 2024, the government mandated that the core measures for population protection, outlined in Article 5, Part 1 of the Law on the Protection of the Population in Emergency Situations, would be implemented by an operational working group established under the Prime Minister’s Decision No. 492-A of May 26, 2024<sup>1</sup>.

According to the PDNA, conducted with European Union (EU) and United Nations Development Program (UNDP) support, the total economic damage reached around USD 49 million, losses in USD 33 million, and the estimated recovery needs surpassed USD 117 million. The overflow of the Debed River damaged key transport arteries, including a 31-km section of the M4 highway and multiple bridges. 7 settlements were isolated for around 5 days. Communications were temporarily disrupted, and supply chains for food and medical assistance were delayed<sup>2</sup>.

The flooding exposed significant vulnerabilities in Armenia’s disaster preparedness and response systems, particularly in stakeholder coordination, timeliness of aid delivery, and resilience to future hazards. The scale of damage and the complexity of the emergency response underscored the urgent need for a structured evaluation to capture both effective practices and critical gaps.

In light of this, Acted launched learning-focused research under the Start Fund Learning

Grant framework. This initiative seeks to analyze different aspects of the 2024 flood response and to generate actionable recommendations for strengthening Armenia’s disaster management framework. By identifying lessons learned and promoting evidence-based improvements, the project aims to enhance preparedness, ensure more coordinated and inclusive future responses, and contribute to national disaster risk reduction (DRR) strategies as well as the global body of knowledge on localized humanitarian action.



## RESEARCH DESIGN AND METHODOLOGY



<sup>1</sup> <https://www.gov.am/en/news/item/10542/>

<sup>2</sup> Armenia Floods May 2024 - Post Disaster Risk Assessment, October 2024, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

The purpose of this learning initiative is to assess the outcomes of the 2024 flooding response, examining the coordination between stakeholders, the quality of humanitarian assistance provided, and the lessons that can be drawn to enhance DRR strategies and future emergency responses. By analyzing the key factors that influenced the response, this initiative generated valuable insights that can inform both local and national disaster management frameworks. This research focused on the following objectives:

1. **Assessing stakeholder coordination:** Examining the effectiveness of coordination mechanisms between government entities, humanitarian organizations, local authorities, and communities during the flooding response. Understanding how these stakeholders worked together during the flooding response is crucial to identifying gaps in communication, decision-making, and resource allocation, and improving future collaboration during emergencies.
2. **Evaluating humanitarian assistance:** Understanding the relevance, timeliness, and effectiveness of not only consortium's organizational activities, but also overall humanitarian assistance provided during the emergency, including shelter, food, water, and other support. The evaluation will assess whether the assistance met the immediate needs of affected populations, how well it was distributed, and if it was sustainable in the long term.
3. **Reviewing vulnerability assessments:** Reviewing the methods used to assess vulnerability of affected population and make recommendations for improving these processes in future responses.
4. **Promoting localized approaches:** Analyzing the role of local actors in the emergency response and identifying ways to promote more localized and context-sensitive approaches to humanitarian action. This component will analyze the role of local actors, including rescue teams, local government authorities, and non-governmental organizations (NGOs) - in the emergency response and identify ways to promote more localized, context-sensitive approaches

to humanitarian action.

5. **Improving disaster response frameworks:** Based on the insights gained, the initiative will provide actionable recommendations to strengthen Armenia's disaster response and preparedness systems, aiming to improve their ability to respond to future crises. The focus will be on improving coordination, decision-making, and operational capacities, ultimately enhancing Armenia's ability to respond to future disasters in a timely and effective manner.

This research applied OECD-DAC evaluation criteria - relevance, effectiveness, efficiency, impact, and sustainability - to analyse the performance of response efforts and the coordination mechanisms employed, covering all engaged stakeholders including government agencies, NGOs, donors, and affected communities. By focusing on these criteria, the assessment addressed the following key questions:

- **Relevance:** To what extent were the response efforts aligned with the needs and priorities of the affected populations? Were the strategies and activities well suited to the local context and conditions?
- **Effectiveness:** How well did the efforts achieve their stated objectives in mitigating the flooding's consequences? What were the main success factors and barriers that influenced the effectiveness of the response?
- **Efficiency:** Were resources (funds, time, and personnel) utilized optimally to deliver timely and impactful results? How effective was coordination among stakeholders in avoiding duplication and maximizing resources?
- **Impact:** What measurable positive or negative changes resulted from the response efforts on the affected communities and overall recovery? Did the efforts contribute to strengthening local capacities and disaster resilience?
- **Sustainability:** Are the outcomes of the response likely to have a lasting effect, particularly in reducing vulnerability and

improving preparedness for future emergencies? To what extent have local actors been empowered to sustain coordination and response mechanisms independently?

### ***Selection of Research Methodology and its Justification***

The study employed a qualitative, participatory, and comparative methodology designed to capture in-depth perspectives, uncover context-specific lessons, and actively involve affected communities in shaping future response strategies. Qualitative methods, including Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), were selected for their suitability in exploring complex coordination processes, examining stakeholder relationships, and understanding community perceptions. The participatory nature of the approach ensures that communities are not treated merely as sources of data but as active contributors to the learning process, thereby enhancing both accountability and the relevance of findings. In addition, comparative analysis with responses to similar disaster globally as well as Sendai and other frameworks provides a valuable benchmark, helping to identify best practices and highlight gaps in Armenia's flood response in relation to international standards.

Fieldwork was conducted during May and June 2025, with an additional three KIIs completed in July 2025. Both FGDs and KIIs were carried out in face-to-face and online formats. This mixed approach accommodated the geographical distance between settlements, participants' availability, employment commitments, willingness to engage, and the project's time and budget constraints.

#### ***Focus Group Discussions (FGD).***

Five focus group discussions were held with the representatives of 3 affected communities from both marzes of Lori and Tavush- Alaverdi, Tashir and Noyemberyan large communities, including 6 most affected villages, including the most affected locations - Alaverdi, Sanahin station, Karkop, Tashir, Bagratashen, Ayrum.

#### ***Key informant Interviews (KII).***

Twenty in-depth interviews with key informants were conducted with representatives of the

main stakeholder entities involved in providing assistance or managing various aspects of the flood response. These informants were closely engaged in the response efforts and had a comprehensive understanding of many aspects of the operations they were involved in. This positioned them to provide insights not only into the challenges faced but also on achievements, coordination practices, and the overall effectiveness of the response. The KIIs sample included representatives from state institutions, local self-government bodies (LSGs), local NGOs, and international organizations (IOs).

All quotes in this report are drawn from the KIIs or FGDs.

### ***Data Collection Tool***

Two primary qualitative tools were developed for the study: interview guide for KIIs and discussion guide for FGDs. Both tools were designed to align closely with the research objectives and to capture diverse perspectives from different stakeholder groups. Both tools were developed collaboratively by the research team, reviewed internally for clarity and comprehensiveness.

For KIIs, the interview guide included a core set of open-ended questions focused on coordination mechanisms, effectiveness and timeliness of the response, resource allocation, challenges faced, and lessons learned. The format allowed flexibility for interviewers to probe deeper into specific issues raised by participants, enabling the capture of detailed, context-rich information.

For FGDs, a structured discussion guide was prepared to facilitate group dialogue among affected community members. The guide was organized around key themes, including immediate needs during the flood, adequacy and accessibility of aid received, recovery progress, and community perceptions of the response.

### ***Ethical considerations***

Guided by "Do not harm" principle, before commencing any discussions or interviews, all research participants were provided with

clear information, both in written and verbal form, regarding their rights and the nature of their participation. This included assurances that their anonymity would be fully preserved, that any data collected would be analyzed and presented in an aggregated and non-identifiable manner, and that they were under no obligation to answer any questions that made them uncomfortable. Participants were explicitly informed of their right to withdraw

from the discussion or interview at any time, without providing a reason and without any negative consequences.

They were also informed in advance about the purpose of audio recording the discussions and interviews, the intended use of the recordings, and the secure handling and storage of all data to protect confidentiality.



## LIMITATIONS



## Limitations

During the implementation of the project, the research team faced the following main obstacles and limitations:

**Stakeholder Availability:** Accessing key informants in some cases proved to be a challenge, particularly those in decision-making or supervisory positions. The combination of tight project deadlines, the demanding schedules of these individuals, and the sensitivity of the subject matter made it difficult to secure interviews. While the research team managed to engage some stakeholders after considerable effort, a few key actors were not reached at all. The absence of these perspectives, particularly from key stakeholders left gaps in the analysis despite efforts to gather similar viewpoints from other sources.

**Data Bias:** Limited financial resources affected the scope and depth of the research. The project utilized KIIs and FGDs as the main data collection methods. Given the qualitative nature of the study, findings rely heavily on self-reported experiences, which may be influenced by personal perceptions or incomplete information. But it was not possible to integrate additional data sources, such as formal compensation claim files, related administrative paperwork, and documented outcomes, into the analysis. This restricted opportunities for deeper triangulation between qualitative accounts and objective records.

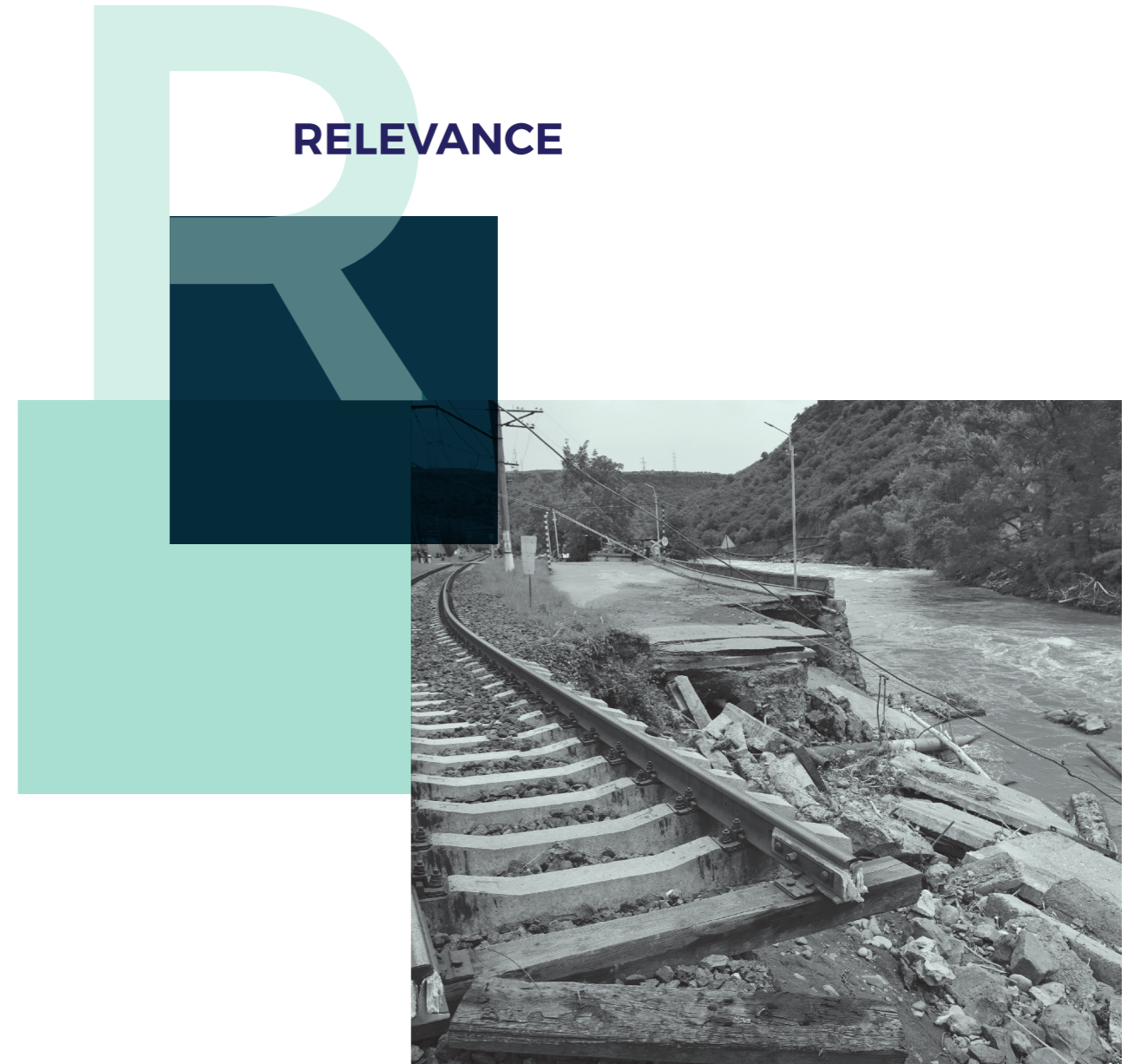
**The sensitivity of the topic:** A layer of sensitivity



arose from the perception among some community members that their feedback might be connected, directly or indirectly, to future compensation processes, official damage assessments, or eligibility for assistance. This perception may have influenced how certain needs and losses were described, with variations in emphasis across participants. Similarly, discussions with government stakeholders carried a possibility that accounts of the response could highlight achievements and activities more prominently, given that such narratives might be interpreted as reflecting institutional performance. While these perspectives provide valuable insight into stakeholder experiences and priorities, they do not always align perfectly with objective evidence.

To address this, the research team made clear that the study was independent from aid allocation and formal evaluation processes, applied triangulation across multiple data sources when possible, and cross-checked statements against available documentation and field observations. Even so, the inherently sensitive nature of the topic may have shaped the degree of openness and the framing of certain narratives.

**Context Sensitivity:** The study's conclusions are specific to the 2024 flood response and the political, social, and environmental context in which it took place. While some lessons may be applicable to other contexts, they should be adapted carefully before broader application.



**To what extent were the response efforts aligned with the needs and priorities of the affected populations? Were the strategies and activities well suited to the local context and conditions?**

### Emergency Evacuation and Immediate Response

The research revealed critical gaps in Armenia's early warning system. While centralized alerts were in place, they often failed to translate into timely, household-level notifications. As a result, many families were forced to self-evacuate under dangerous conditions, relying on neighbors or their own instincts rather than formal warnings.

At the same time, community cohesion and volunteerism played a decisive role in saving lives and reducing harm during the critical first hours of the disaster.

These experiences underscore a dual reality: while coordinated efforts between state services, municipal authorities, and community members proved effective in the aftermath, the reactive nature of many evacuations revealed deep systemic vulnerabilities in preparedness and rapid response capacity. Strengthening anticipatory action through robust, localized early warning systems and community-level evacuation planning is essential to reduce reliance on last-minute rescues and enhance overall disaster resilience.

During the flash-flood the evacuations began around 1 a.m. in the most affected areas. In Akhtala and Sanahin Kayaran, where bridges collapsed and roads were cut off, rescue teams used boats, heavy vehicles, and mountaineering gear in flooded areas to reach vulnerable residents.

*"On the very night of the flood, we started work on the evacuation of the population... we used large cars, trucks, and even boats at Sanahin Kayaran...to evacuate people at night".*

The response involved the Ministry of Internal Affairs Rescue Service (MIA RS), municipalities,

and NGOs such as Lore Rescue Team and the Armenian Red Cross Society. Local staff worked throughout the night and beyond.

*"Our municipality and its staff worked tirelessly all night and for days after, helping people."*

In the absence of accessible roads or functioning bridges, the Lore Rescue Team demonstrated adaptability by constructing a makeshift lifeline bridge and using mountaineering ropes, ensuring access to people in immediate danger.

*"Sanahin was the first to be completely cut off, and at the request of the regional Rescue Service, we conducted the evacuation using mountaineering gear. Our experts arrived on site, constructed a lifeline bridge, and used ropes to deliver critical aid and evacuate vulnerable individuals - pregnant women, children, and others in need."*

In some areas of Tavush region, anticipatory evacuations took place even before the river reached its peak, with municipal officials organizing the removal of high-risk households by midnight. Their foresight prevented casualties:

*"We organized the evacuation of the most vulnerable households before 1 a.m. We knew the water level would rise. By the time it reached its peak, around 3 to 5 a.m., it was impossible to reach the homes by any kind of transport".*

This foresight and swift action meant that: *"There were no casualties, no injuries. People had moved either to safer areas or to the second floors of their homes. We acted when we needed to - and thanks God, everything went smoothly."*

In contrast, some areas like Bagratashen lacked timely warnings. Community members took action where formal systems failed:

*"I woke to the sound of livestock, looked outside, and saw water surrounding our home."*

*"Local youth helped evacuate people with boats before rescuers arrived."*

*"I moved to a neighbor's two-story house - they helped me."*

This lack of communication placed residents at risk, forcing many to self-evacuate. These events exposed weaknesses in Armenia's early warning systems. Although alerts existed in some communities, many residents didn't receive them in time. As a result, many families were forced to self-evacuate under dangerous conditions, relying on neighbors or their own instincts rather than formal warnings. Still, strong community solidarity and volunteerism reduced harm.

The experience reflects a mixed reality: effective coordination in some areas versus dangerous delays in others. To avoid future last-minute rescues, robust establishment of a functional early warning system at all levels and scenario-based response plans that are tested during the simulation exercises with relevant Standard Operating Procedures (SoPs) and evacuation plans are needed.

### Infrastructure Collapse and Adaptive Logistics

The floods severed key transport links, paralyzing access to affected areas such as Akhtala and Sanahin Kayaran<sup>3</sup>. Around 3,200 people across seven villages in the Alaverdi consolidated community were isolated, with only a narrow mountain road through forested hills remaining accessible for aid delivery. Rescue Service of MIA quickly identified and reopened old mountain roads in the Jiliza area enabling the delivery of vital supplies such as food, water, and medicine.

*"From day one, emergency responders activated the old mountain route in Jiliza. We used tractors to clear and improve it so emergency vehicles could deliver food and medicine to isolated areas, ensuring immediate relief."*

This adaptive response highlights the importance of pre-mapped contingency routes and stronger investment in local emergency mobility for high-risk regions.

<sup>3</sup> Armenia Floods May 2024 - Post Disaster Risk Assessment, October 2024, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

### Needs Assessment, Damage Assessment and Compensation Mechanisms

#### Needs assessment

On May 27, the Armenian government declared the flooded areas in Lori and Tavush as disaster zones. By May 30, the Ministry of Internal Affairs requested United Nations (UN) support for a Multi-sector Initial Rapid Assessment (MIRA) and PDNA. Led by UNDP, and coordinated with national and international actors, the UN Country Team initiated MIRA. On June 4-5, rapid multi-sectoral assessments were conducted in affected consolidated communities of Tavush (Ijevan, Dilijan, Noyemberyan) and Lori (Alaverdi, Gyulagarak, Pambak, Stepanavan, Tashir, Tumanyan)<sup>4</sup>.

The MIRA report summarized immediate humanitarian needs and recommendations, but was not intended to replace sector-specific in-depth assessments. The application of MIRA revealed critical lessons for Armenia's disaster risk management system. While MIRA tools, originally developed for earthquake response, were adapted for this event, the process showed the need to tailor assessment tools to different hazards.

*"Tools designed for earthquakes cannot be directly applied to floods... One-size-fits-all does not work."*

The teams also addressed specific needs of displaced populations, especially Nagorno-Karabakh (Artsakh) internally displaced people (IDPs) in places like Tashir. Though not included in the original questionnaire, the tool was modified on the spot.

*"There was no section for displaced populations, but we adapted it because it was a real need."*

After MIRA, the PDNA process began, offering a more comprehensive, sector-by-sector review of damages, losses, and recovery needs. PDNA, a globally recognized framework, is used by the EU, World Bank, and UN<sup>5</sup> for strategic

<sup>4</sup> Mira Report Analysis of the Humanitarian Situation in the Lori and Tavush Regions of Armenia. June 2024

<sup>5</sup> Post disaster needs assessments, Volume A, guidelines, 2013. <https://www.undp.org/publications/post-disaster-needs-assessment>

recovery planning and serves as the foundation for mobilizing international support for recovery and reconstruction.

*“People were frightened and emotionally overwhelmed, there was a clear need for psychosocial assistance.”*

Traditionally, Armenian assessments have focused solely on “damage” - the direct physical and material losses. However, the PDNA methodology distinguishes between damage (the value of destroyed assets) and losses (the decrease in economic flows and additional expenditures resulting from the emergency). For example, if a business or community loses income or incurs extra costs because of an emergency, these should be systematically accounted for. This distinction is critical for both national and international recovery planning. By including both damage and losses, PDNA provides a more accurate and comprehensive picture of disaster impact - informing recovery requirements, resource mobilization, and resilience planning.

In several cases, needs identification relied on informal communications, such as phone calls between residents and authorities, revealing both community initiative and the absence of structured systems.

“The way communities managed the needs assessment and aid provision - sometimes by phone calls - reflects their enormous efforts but also points to the need for systematic tools and skills. If we localize, test, and institutionalize these mechanisms in advance, we can move from reactive crisis management to a much more effective, timely, and coordinated response.”

To move from reactive to proactive disaster management, Armenia must invest in local-level preparedness - pre-positioned tools, trained personnel, and operational mechanisms for real-time assessments.

### Damage Assessment/Stocktaking

The damage assessment efforts during the 2024 flood demonstrated some institutional readiness and rapid deployment of multi-level governance mechanisms. However, the rigidity of assessment criteria and lack of sectoral nuance limited the relevance of the response over time.

The Lori-Tavush flood of 2024 prompted the immediate activation of existing institutional mechanisms for assessing damage. Central to this response was the Damage Assessment Commission, a standing body within the municipality, which transitioned into a full-scale operational unit during the disaster. As stated by a local official:

*“There is a permanent commission in the community... it became our community-level commission during the disaster to assess losses.”*

The commission expanded to include regional officials and other partners (e.g. National Assembly representatives). Field groups were formed, each led by a member of the original

*“If we used the PDNA approach, for this flood we had ~\$49 million in damage and ~\$33 million in losses... True impact is often two to three times higher than what damage-only assessments show.”*

The Ministry of Labor and Social Affairs (MLSA), in coordination with the Unified Social Service (USS) and local municipalities, conducted a rapid household-level needs assessment using their own tool.

*“The platform helps us understand urgent needs - food, medicine, clothing - and target assistance more effectively.”*

Data was collected by local social workers and municipal staff. The tool enabled real-time entry of individual needs such as food, water, shelter, medical and psychosocial support.

The ARCS also conducted its own rapid needs assessment. Overall, assessments focused on three key areas: i) Population needs, ii) Infrastructure & business needs, and iii) Psychosocial needs.

Initial findings indicated urgent demand for food, hygiene kits, shelter, and cash assistance. Importantly, there was a high need for psychosocial support:

commission. These teams documented damage on-site, collected resident statements, and provided loss estimates.

*“Some farmers were just called later and told, ‘We’ve already assessed your needs’ - but they were never actually involved.”*

*“They worked every day for more than a month, without weekends... documenting both visible damages and what residents described as their losses.”*

Such practices fail to meet Sphere standards for participation and accountability, and risk overlooking key losses or context-specific needs. International standards stress the importance of comprehensive, asset-based valuations. However, the Armenian case revealed systematic undervaluation and omission of key livelihood assets:

The process followed a three-tiered approach: community, regional and national commissions. Each level validated findings before submitting them to relevant ministries for review.

*“Out of 142 claims for housing compensation in Alaverdi, 5 were rejected - mainly for not meeting the legal definition of residential property.”*

*“A farmer lost half his field to the river, half of his land no longer exists, yet he received only 250,000 AMD in compensation.”*

In many cases findings were officially recorded and signed by the affected household, confirming the accuracy of the information. Residents were also invited to personally declare additional losses, especially if certain damage could not be directly observed during the site visit. These included items or livestock washed away by the flood.

Similarly, compensation was often limited to easily quantifiable items (e.g., number of fruit trees lost), while other losses, such as destroyed irrigation systems, agricultural machinery, or infrastructure, were ignored:

*“I received support for the number of lost trees, but not for equipment or other agricultural infrastructure that was also destroyed.”*

To ensure transparency and fairness, a dual-track documentation process was adopted:

- Official documentation by trained registration teams
- Supplementary self-declarations by affected households

A key concern affecting the relevance of the response was its reactive and inconsistent nature in certain instances. Participants mentioned cases when the follow-up assessments and adjustments to support often occurred only after public advocacy or media attention rather than through structured, pre-established mechanisms.

It was mentioned by some KIs that the process prioritized household-level assessments, directly responding to affected people’s needs. In many communities, assessments were house-to-house, aiming to reach all affected households and allow beneficiaries to participate directly.

*“Where a problem became a matter of public debate, authorities sometimes returned and increased the support, but only after significant advocacy.”*

*“Residents were also invited to personally declare additional losses... These included items or livestock washed away by the flood.”*

This reliance on reactive measures underscores the absence of formal appeals and grievance mechanisms, which in turn resulted in inequitable outcomes. In such cases beneficiaries were compelled to resort to public advocacy to secure fair treatment, highlighting weaknesses in institutional accountability and limiting the timeliness and relevance of assistance to those most in need.

However, this participatory approach was not consistent everywhere. In some areas, affected persons reported not being consulted or present during the assessments.

### Environmental Assessment

Following the floods, serious concerns emerged

over potential contamination of agricultural lands and river ecosystems by industrial and mining waste, especially due to increased risks from tailing dams. Community representatives repeatedly called for comprehensive environmental assessments of high-risk tailing sites.

*“There are mining tailings, which have become more dangerous after these heavy rains. We requested an assessment, but the authorities only sent specialists for a brief visual inspection. No substantive results or data were shared with us.”*

As per KIIs, residents seeking inspection outcomes received only vague reassurances of “no apparent danger.” No testing data, risk analysis, or remediation plans were provided, despite visible contamination of farmland. Stakeholders suspect that comprehensive assessments are often avoided to protect business interests and prevent financial liability:

*“If a proper assessment is done, it might harm the business. People raising pollution concerns sometimes face lawsuits from mining companies for ‘damage to business reputation.’”*

International frameworks such as the Sendai Framework for DRR, MIRA, and PDNA emphasize independent, science-based, and transparent environmental assessments in disaster recovery. Findings must be made public, and legal protections ensured for those who report environmental risks.

### Targeted Social Assistance and Cash-Based Support for Early Recovery

Following initial in-kind aid at the municipal level, the Armenian government launched a targeted social assistance program on July 4, 2024, under Government Decision No. 1033-N<sup>6</sup>. Coordinated by the MoLSA, this temporary program supported flood-affected households in affected areas.

Applications were accepted until September 30, 2024, via the USS platform. Of over

600 applications submitted, 578 (covering 1,425 individuals) were approved based on predefined eligibility criteria, with verification conducted by regional governments and municipalities.

*“This program was about addressing the immediate needs of affected households. While it was not compensation, it provided critical relief to hundreds of families.”*

*“The one-time payment of 60,000 AMD per person was sufficient for families to cope with the immediate aftermath and begin resuming daily routines.”*

In addition, host families who sheltered displaced residents received dedicated financial assistance to offset the economic burden of providing accommodation:

*“We stayed at my brother-in-law’s house. They even received compensation for hosting us. They were also given money, around 40,000 AMD, as support for hosting us.”*

This integrated cash-based assistance approach - recognizing both displaced households and their hosts - aligns with Core Humanitarian Standard (CHS) principles, ensuring dignity, equity, and acknowledgment of shared community support mechanisms.

The assistance mechanisms also extended to non-residential structures critical to livelihoods, such as garages and animal sheds as well as vehicle losses, helping families partially restore mobility and independence:

*“We received 150,000 AMD from the state for the garage. They also accounted for the garage and the livestock shed.”*

*“My son’s car was swept away and crashed into a wall, it was completely submerged and everything inside was ruined. He received around 240,000 AMD in compensation for it.”*

Additional support came from civil society organizations (CSOs), international partners, private donors, and businesses.

While helpful for immediate recovery, the support’s limited scale highlighted the need

<sup>6</sup> Government Decision No. 1033-N, July 2024, <https://www.arlis.am/hy/acts/196470/latest>

for comprehensive asset valuation in future responses. This financial support enabled families to meet essential needs autonomously, allowing beneficiaries to prioritize their own urgent expenditures, whether for food, hygiene items, or basic services, based on household-specific needs.

### Housing solutions and compensation

Following the flood, temporary shelter solutions were quickly activated, consistent with past emergency responses in Armenia such as those seen during the Nagorno-Karabakh conflict displacement.

Within 1-2 weeks, formal assistance, including hotel accommodations, began. To prevent long-term vulnerability, the government introduced hotel reimbursement schemes, reducing the risk of eviction or debt and ensuring confidence among private providers. Initially, displaced families stayed with relatives or in temporary shelters, later receiving rental assistance from municipalities.

*“We stayed in a guesthouse for 15 days, then rented a house. The municipality covered the rent until December.”*

The housing compensation program, governed by Decision No. 1043-N<sup>7</sup>, aimed to reflect real market conditions. Initially based on cadastral values, compensation was low due to historical underreporting of sale prices. Following complaints and mediation, the government raised the rate to 180,000 AMD/m<sup>2</sup>, exceeding local market values in Alaverdi.

*“After long discussions, we agreed on 180,000 AMD per square meter, which, in my opinion, is a very good sum, and is certainly higher than the local market rate in Alaverdi. This applies to all residents, all 16 families from the twelve buildings will receive 180,000 AMD per square meter.”*

For home renovations, support was calculated using Yerevan’s average construction rates, giving recipients flexibility to restore or upgrade their homes.

<sup>7</sup> Government Decision No. 1043-N, July 2024, <https://www.arlis.am/hy/acts/201237/latest>

*“We calculated the cost per square meter based on actual construction rates in Yerevan, to ensure the amount would be sufficient for full restoration.”*

Compensation was delivered in phased installments, based on verified progress (receipts, photos, site visits). Though initially unpopular, the approach ensured proper use of funds, particularly where absentee owners were involved. To receive subsequent installments, beneficiaries were required to provide receipts, photos of completed work, and undergo on-site verification. Social workers confirmed that most homes were repaired to acceptable or improved standards.

*“Many people were dissatisfied and asked, ‘Why not pay everything at once?’ But the state’s phased approach was crucial for ensuring accountability and the actual use of funds for reconstruction.”*

*“For the families in Alaverdi, the compensation provided was quite adequate for drying out and starting the repair of their homes.”*

Separate flat-rate compensation was provided for furniture and movable assets, regardless of their quality or value. This standardized approach caused frustration among some residents. The flat lump sum was identified using market-based valuations. While compensation was not intended to cover full replacement value, it aimed to ensure that families could quickly restore minimum living conditions:

*“Compensation for lost property was the same for everyone, regardless of whether a family lost expensive or simple items. It is not fair to those who had invested more in their homes.”*

*““We reviewed market prices - not high-end, but the lowest available for things like washing machines, televisions, basic furniture... so people could at least replace one TV and sofa.”*

NGOs and private actors, including Acted, ARCS, Ideal Group, PIN, French Embassy and others, contributed building materials, vouchers, and financial aid.

*"In many cases, construction vouchers from NGOs, together with government compensation, covered the majority of our reconstruction costs."*

*"Ideal provided support either by giving checks for things like doors, or 100 000-dram worth of materials. There were also individuals from Russia and America giving 20 000-30 000 drams... But yours was the biggest contribution (the 200 000 drams from Acted)."*

This combined approach, linking state compensation with humanitarian and private sector assistance, allowed for faster and more comprehensive recovery.

Despite progress, according to both state representatives and as well as residents, some housing compensation cases remain unresolved. These include cases facing unresolved documentation and legal issues that have prevented the state from providing full compensation to their owners. Legal and bureaucratic barriers continue to delay solutions for these households.

Additionally, there are cases of residential buildings classified as "unsafe" (structurally uninhabitable). Residents of the ground floor have not yet received compensation, as the state has offered housing vouchers (certificates) for purchasing alternative accommodation, contingent upon the full evacuation of the building. However, upper floor residents (e.g., those on the 2nd and 3rd floors) have not agreed to vacate or accept compensation for alternative housing.

## Agricultural Compensation and Recovery

The compensation process for agriculture faced challenges in verification and failed to fully reflect losses of professional farmers. Local authorities had to conduct repeated site visits to validate damage and counteract exaggerated claims. A key frustration was the fixed compensation rate per tree, which ignored factors like age, variety, and productivity of agricultural lands. Farmers argued that compensation should reflect not just the value of a sapling but the years of lost income, especially for mature, productive orchards:

*"Compensation only covered the cost of replanting a new tree, not the lost yield or income that would take another 5-10 years to recover. For professional farmers this is a major concern."*

Another concern was the lack of differentiation between professional farmers and households with small gardens. Without considering formal registration or scale, compensation failed to reflect actual livelihood impact.

*"With livestock, official registration was required to claim compensation. A similar approach is needed for orchards and crops, so that professional farmers are recognized and compensated accordingly."*

Farmers in settlements like Karkop and the Narrow Valley area were hit particularly hard. While some compensation was given, it often covered only asset value, not broader economic losses or land restoration costs like irrigation and replanting.

Although some state compensation was provided, it was often limited to the value of lost assets, such as trees or equipment, and did not reflect the full economic losses or the costs required for land restoration. Restoration in such cases demands significant investment, not just in cleaning and re-soiling, but also in replanting and re-establishing irrigation and infrastructure. Many households, especially those who lost productive orchards, have not received the level of support needed to recover yet.

*"The primary focus of recovery assistance was on households that lost their homes. However, families whose main income came from agriculture, and small businesses that were affected received far less support. Their losses were often much greater than what was compensated."*

*"We didn't fully compensate agricultural losses at first, because at the time, we couldn't verify if the damage was real or to what extent."*

Initial agricultural damage declarations, submitted by residents, were often overstated or difficult to confirm. Some residents reported inflated figures, which were later adjusted

through technical inspections and zoning-based verification.

*"People claimed extensive losses, but when expert assessments were conducted, the actual damage turned out to be far less than initially reported."*

A more accurate evaluation became possible only several months later, particularly by the following spring 2025, once the condition of orchards and crops could be clearly observed - whether they had recovered or suffered permanent loss.

*"You can't always tell in the moment how much a tree is damaged, you need to wait a season to see whether it recovers."*

The final agricultural damage records were completed and submitted only in April 2025, nearly a year after the disaster. While visible damage was compensated earlier, most support was deferred until full verification.

According to Government Decision No. 926-L of July 10, 2025<sup>8</sup>, the process was amended to extend support to citizens who suffered flood-related damage but had not previously accessed state assistance.

According to the official response provided by the Ministry of Economy to Acted's inquiry, the following figures summarize agricultural support in the two affected provinces: In Lori, 273 beneficiaries received compensation totaling 109,830,875 AMD, while in Tavush, 307 beneficiaries were supported with approximately 48.96 million AMD. These amounts reflect combined assistance for both agricultural and livestock losses, as recorded under the government's post-flood compensation framework<sup>9</sup>.

## Economic Losses and Business Compensation Mechanisms

Local businesses faced heavy losses in infrastructure, equipment, and operations. A compensation cap of 1,200,000 AMD was

<sup>8</sup> Government Decision No. 926-L, July 2025, <https://www.arlis.am/hy/acts/209287/latest>

<sup>9</sup> Official inquiry response from the Ministry of Economy, N 09.9.8/16831-2025 dated 29.07.2025

applied across all categories limiting support regardless of total loss.

There were indeed cases where the value of the damaged property exceeded this limit, and the compensation did not fully cover the losses. In such situations, additional compensation was reportedly linked to declared turnover, allowing extra support through official business channels. To address these damages, the Ministry of Economy took the lead in developing and implementing compensation mechanisms<sup>10</sup>.

## Food and Non-Food Item Distribution

All participants of the FGDs confirmed that they had received various types of food assistance from municipalities, NGOs, and private businesses, including items such as cooking oil, rice, sugar, pasta, flour, canned food, drinking water, etc.

KIIs noted that early food and water aid came mostly from local self-government, but hygiene items and other non-food essentials were lacking. State organizations had no sufficient pre-positioned stocks to cover basic needs in the first hours.

*"We did not have adequate reserves for the primary needs of those people. That was a key gap."*

*"We rely on international and non-governmental organizations in those early hours to supply food and hygiene kits. Without them, the state alone could not have addressed the needs."*

The Armenian Red Cross, with pre-positioned supplies, filled gaps through providing hygiene kits, foldable beds, blankets, bedding, and other essential non-food items.

*"Starting from the second day, we were able to deliver the necessary humanitarian aid to the region and provided support to 175 families, covering a total of 515 individuals. Later on, in cooperation with the organization "Hungary Helps", we extended assistance to more than*

<sup>10</sup> This evaluation did not include an assessment of the response measures specifically related to business recovery or support for affected businesses.

*1,000 additional families by providing them with both food and other essential supplies."*

State resources also organized immediate clothing, bedding, and essentials distribution. In Alaverdi, a centralized warehouse that was established after flood in the sports school gym enabled efficient dispatch.

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*"There was confusion and over-distribution - entire towns that were not directly impacted by the flood, but simply isolated, were included in aid distributions."*

*"Aid, especially food, should not be automatically provided to all affected persons; rather, it should be based on clearly demonstrated need, verified through assessment."*

The universal distribution of food aid, despite a lack of widespread food insecurity, highlighted the need for objective, targeted assessment criteria.

*"This response appeared to be guided more by humanitarian concern than by comprehensive assessments of food insecurity. People came to the municipality, regardless of their social status, simply to claim their share of food aid. There was a general expectation: 'I am a disaster victim, so I am entitled to food support.'"*

An important exception to this was the availability of clean drinking water, which was indeed limited due to disruptions in water supply infrastructure.

Klls noted that while families with damaged homes received aid from multiple sources, indirectly affected households, those losing agricultural land or livestock, were often excluded from relief despite major livelihood losses. Nearly a year later, social workers formally appealed to international organizations about

this gap:

*"This year, we (WFP) received a formal written request from community social workers, highlighting that there are a significant number of households facing severe food insecurity, caused by the flood. Some families received food aid and other assistance because they were directly affected. Meanwhile, others, whose fields or orchards were damaged by the flood, became food-insecure due to indirect impacts and received nothing."*

The experience highlights the importance of establishing clear, data-driven criteria for aid distribution during emergencies. Without such systems in place, well-meaning relief efforts risk creating inefficiencies, dependency, and public dissatisfaction, ultimately diluting the effectiveness of assistance for the most vulnerable.

### Psychosocial Support

During the floods, municipal staff, especially social workers, were the first to offer psychosocial support, providing reassurance and guidance before being reinforced by structured interventions from the Armenian Red Cross Society.

*"We, as municipal staff, became the initial providers of psychological support, residents confided in us, and we tried to reassure them that they were not alone and that material losses could be restored. Thankfully, there were no human casualties, and we reminded people that physical recovery was possible."*

However, this informal role placed heavy strain on staff, who worked long shifts while managing aid distribution under strict rules. Frustration from excluded residents, sometimes escalating to aggression, added pressure:

*"Working with the affected residents could be difficult, some people were aggressive, demanding aid to which they were not entitled. Even strong, able-bodied men who lived abroad insisted on their share. This created extra stress, and at times we, the staff, needed psychological support ourselves."*

Later, the ARCS formalized support, leading

regular group therapy sessions, two to three times per week in Alaverdi and Karkop. These provided safe spaces for sharing experiences and receiving professional care. Initial hesitancy from community governors eased as ARCS teams demonstrated professionalism and disaster-response experience:

*"In Alaverdi and Karkop, group sessions were held several times a week, offering residents a chance to talk and receive psychological support."*

*"Then they came with their team, and it was quite a professional team. At first, I was reluctant, but later we agreed because, as I interacted with them, I saw that they were indeed very professional. Besides that, they have experience in disaster situations, in force majeure circumstances, and we agreed. I think it turned out to be effective."*

These sessions were supported by structured outreach:

*"They (Red Cross) prepared a space for us to sit, and messages were sent out saying that if anyone needed psychological support, they could come."*

### Vulnerable population

During the initial evacuation in flood-affected areas, no systematic vulnerability targeting was applied. All residents, regardless of their status, were evacuated and given primary assistance with priority on universal safety and rapid shelter.

However, in subsequent stages, and in situations such as the blockade of Akhtala, vulnerability criteria became central to aid distribution. When humanitarian supplies (such as food) reached Akhtala's isolated communities, distribution was prioritized for those identified as most at risk:

- Elderly people living alone
- People with disabilities
- Households composed exclusively of pensioners
- Large families with children
- Female-headed households
- Families who had lost their breadwinner

*"In the blockade areas, vulnerable groups received aid first - elderly people living alone, people with disabilities, and pensioner households were the top priority."*

Health-related needs were addressed through coordination with hospitals and later local outpatient clinics, identifying people with chronic illnesses and ensuring medicine supply despite pharmacy closures:

*"Those with chronic health conditions, such as high blood pressure or heart problems, were identified through the health system, and their medicine needs were registered and addressed."*

The distribution of prescription-only medicines required close coordination with local healthcare providers. Public announcements encouraged residents to contact authorities or healthcare workers directly, enabling targeted and timely support:

*"We made announcements for those who needed something specific to reach out to us. Requests were then processed together with the local doctors and organized as necessary."*

Despite these efforts, some groups remained unsupported. One affected resident, a displaced person from Nagorno-Karabakh who had settled locally and opened a small auto-service in his garage, described how the flood devastated both his livelihood and personal property, destroying equipment and damaging his home. Yet, his status as a displaced person was not given special consideration, and he has never received support for his business losses:

*"I lost my tools and my workshop was destroyed, but there was no separate support for people like me, even though I am displaced and my whole livelihood was gone."*

Gender vulnerabilities were also insufficiently addressed in the immediate response. The PDNA report later stressed that women, particularly female-headed households, were disproportionately affected by the May 2024 floods, highlighting the need for gender-sensitive planning. This progression from

undifferentiated emergency measures to targeted prioritization shows why vulnerability analysis must be embedded from the start to ensure inclusive, needs-based disaster response.

**Conclusion**

Since Armenia's independence, the level of government support provided to the flood-affected population was unprecedented in terms of financial assistance programs and compensation schemes. The only comparable case was the support extended to the business sector during the COVID-19 pandemic to mitigate economic losses.

The 2024 flood response in Armenia showcased adaptability and resilience. Community solidarity, anticipatory evacuations, and adaptive logistics, such as reopening old mountain routes and building lifeline bridges, played a crucial role in saving lives and ensuring access to isolated areas. Rapid assessments led by the government, UN, and NGOs provided

an important foundation for coordinated interventions, while cash assistance, housing reimbursements, and agricultural support helped affected households begin recovery.

At the same time, the experience emphasized the value of further refining hazard-specific assessment tools, expanding early warning systems to reach all households, and strengthening compensation mechanisms to better address the needs of farmers, businesses, displaced persons, and women-headed households. Psychosocial support and targeted aid for vulnerable groups also proved vital, underscoring the importance of inclusive, community-centered recovery efforts.

Overall, the flood demonstrated both the resilience of communities and the commitment of institutions, while offering clear lessons on how investments in preparedness, localized early warning, and equitable recovery frameworks can further strengthen Armenia's disaster resilience.



**EFFECTIVENESS**



### How well did the efforts achieve their stated objectives in mitigating the flooding's consequences? What were the main success factors and barriers that influenced the effectiveness of the response?

In emergency or humanitarian response, the OECD DAC criteria of Relevance and Effectiveness are closely interconnected. Relevance often serves as a critical foundation or prerequisite for effectiveness. Consequently, the analysis of effectiveness builds directly upon the considerations outlined in the section "Relevance".

In the immediate aftermath of the devastating floods of May 2024, the Armenian Government, through its key ministries, activated an extensive disaster response mechanism. The MIA spearheaded search and rescue efforts, while the MTAI coordinated emergency repairs. Additionally, the Ministry of Environment (MoE) directed clean-up operations, ensuring an organized approach to disaster recovery. Key national response activities included:

- The formation of an operational emergency working group, established by a Deputy Prime Minister's decree, to oversee emergency response and early recovery actions.
- The deployment of 136 teams and 42 operative groups, mobilizing a total of 1,809 rescue personnel under the MIA. These teams constructed two temporary pedestrian bridges in Karkop and Sanahin to restore access to isolated communities.
- Temporary evacuation of 2,382 people, with 332 individuals housed with relatives or in six hotels, while others have safely returned home.
- Temporary repairs and restoration of basic services such as electricity, gas, water, and roads were carried out by the relevant departments and companies, though full assessments and comprehensive reconstruction are still underway.
- Damage assessment teams, under the direction of compensation commissions, collected data on damage.

- Non-food items (NFIs), such as clothing and hygiene supplies, were distributed to meet immediate needs.

In coordination with the Government of Armenia, the international community promptly mobilized to provide critical support. This multi-level cooperation involved key partners such as the EU, UN agencies, the Asian Development Bank, and the Swiss Agency for Development and Cooperation (SDC), among others.<sup>11</sup>

Overall, the flood response demonstrated clear strengths in immediate life-saving measures by preventing significant loss of life, driven by strong local leadership, rapid mobilization of resources, and volunteer engagement. However, effectiveness dropped in the shift from relief to recovery, particularly in addressing medium- and long-term impacts. Notably gaps emerged in preparedness, professional capacity, coordination mechanisms, and infrastructure resilience, underscoring the necessity for systematic preparedness, adaptive planning, and stronger governance.

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The effectiveness of various flood response activities will be discussed below in close connection with the factors that contribute to or hinder their success.

### Main success factors that influenced the effectiveness of the response

#### Use of Remote Sensing Tools

<sup>11</sup> Armenia Floods May 2024- Post Disaster Needs Assessment, October 2024, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

The International Charter "Space and Major Disaster" and the Copernicus Emergency Management Service (EMS) Risk and Recovery have been activated for disaster response and assessment of post-flood landslide risk, respectively.

SERTIT's Rapid Mapping Service has collaborated closely with the regional office, European Commission (EC), and UNDP to provide critical information, including the localization, qualification, and quantification of debris; the estimation and simulation of flood propagation within river basins; and the assessment of landslide risks triggered by flooding.<sup>12</sup>

### Post Disaster Needs Assessment

The UNDP-led PDNA and a Rapid Response Team (Swiss Humanitarian Aid Unit) swiftly evaluated damages to critical infrastructure, including bridges, roads, and utilities, enabling informed and coordinated humanitarian interventions across nine municipalities. The PDNA also evaluated physical asset losses, indirect economic impacts, and additional flood-related costs, providing a quantified prioritization of needs to guide effective reconstruction and recovery.

### Infrastructure recovery

#### Road infrastructure

The rapid deployment of temporary measures, such as reinforcing damaged roads, bridges, railway and embankments, was key to ensuring safety and maintain access during recovery and ensuring continuity of essential services.

*"For example, at Sanahin Kayaran, we constructed temporary pedestrian bridges, and at Akhtala, we constructed a temporary bridge for vehicles. Subsequently, high-quality temporary metallic vehicle bridges were built, three in total."*

Early restoration efforts for critical infrastructure like railways, roads, and temporary bridges

<sup>12</sup> <https://ceos.org/ourwork/workinggroups/disasters/wgdisasters-activities/generic-ro/floods-in-armenia-in-may-2024/>

were effective, facilitating humanitarian access and socio-economic recovery. However, significant gaps in long-term resilience and quality emerged<sup>13</sup>.

Following the flood, one of the most critical immediate needs was to ensure access to safe drinking water and other essential supplies for affected populations, particularly in areas cut off by infrastructure damage. The rapid conversion of a railway bridge into a vehicle-accessible road bridge played a key role in restoring this access. This adaptive measure allowed for the transport and distribution of first-need items, including potable water, to isolated communities as well as ensured connectivity between the affected neighborhood and the rest of the municipality.

*"In a very short timeframe, we were able to restore the railway. The railway authority undertook major work, and with our available resources, we supported their efforts to restore operations quickly."*

*"Through the Ministry of Territorial Administration and Infrastructure, the nearby railway bridge was quickly converted into a traffic-accessible bridge. Once the railway bridge was converted into a road bridge, it became possible to deliver vital supplies, starting with drinking water, to residents in the affected area."*

This timely intervention illustrates how infrastructure improvisation in an emergency context can directly enable the provision of life-sustaining services.

Nevertheless, to ensure continued access to education, the local administration has been providing transportation for schoolchildren, using an alternative route and not this bridge to safely bypass the damaged area.

Deployment of temporary bridges aligns with early recovery and business continuity principles, providing immediate mobility while planning for durable solutions. The rapid

<sup>13</sup> Shortcomings are discussed under barriers

construction of both footbridges and vehicle bridges minimized disruption, supported the movement of emergency services, and enabled supply chain restoration.

**Utility infrastructure**

In addition to road restoration, critical utility infrastructure, including electricity, gas, and water supply, was also severely affected by the flood. Large sections of electricity poles were toppled, and gas supply pipelines, especially high-pressure transmission lines, were damaged or washed away by the floodwaters. Access to drinking water was also disrupted across multiple affected areas.

*“There were entire stretches where electricity poles were knocked down. Gas pipelines were broken or swept away, and the supply of clean drinking water was fully cut off in some places.”*

Restoring these essential services became a top priority, not only for immediate humanitarian needs but also to support shelter, sanitation, and health systems. Despite the technical complexity and hazardous conditions, rapid mobilization of utility service providers enabled the phased restoration of electricity and gas to the affected populations.

This recovery of basic services represents a key indicator of response effectiveness, ensuring that affected communities could regain a sense of safety and dignity. It also highlights the importance of infrastructure resilience and maintenance as stronger, more flood-resistant systems are essential to reducing vulnerability to future disasters.

*“The work done on restoring utilities, especially electricity and gas, was enormous. These are lifelines and getting them back up quickly made a huge difference for people’s daily lives.”*

**Communications**

In the initial days following the disaster, the community faced significant disruptions in electricity supply, which, in turn, impacted both mobile and internet communications. This disruption is a common secondary impact in flood and landslide scenarios,

affecting coordination and response capacity. Despite these challenges, teams adapted operational protocols to maintain safety and effectiveness:

*“There were times when our response teams could not communicate with each other, as overall connectivity was very poor at that moment.”*

*“No one ever went alone, response teams always worked in groups of at least two.”*

*“If one team member had VivaCell (Viva-MTS) as a carrier, the other would have Beeline, so at least one would usually have a signal.”*

These field-based lessons should be documented and integrated into formal contingency plans to further strengthen future resilience and effectiveness of early emergency operations.

**Short-Term Relief**

**State Cash assistance**

Following initial municipal aid, the Government of Armenia launched a targeted social assistance program on July 4, 2024 (Government Decision No. 1033-N) for flood-affected families. Managed by MLSA via the Unified Social Service platform, it approved 578 cases (1,425 individuals) out of 621 applications<sup>14</sup>.

A key part of the government’s emergency response was a one-time cash assistance for flood-affected individuals. Though delayed until after critical needs were met, it still played a vital role in stabilizing households during the shift from relief to early recovery.

*“The one-time payment of 60,000 AMD per person was sufficient for families to cope with the immediate aftermath and begin resuming daily routines.”*

Host families also received 40,000 AMD to offset accommodation costs. In addition,

<sup>14</sup> Armenia Floods May 2024 - Post Disaster Risk Assessment, October 2024, p.36, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

assistance covered livelihood-linked assets such as garages and vehicles.

*“We stayed at my brother-in-law’s house... They even received money as support for hosting us.”*

This cash-based approach aligned with CHS principles, enabling households to meet priority needs autonomously.

**Temporary shelters**

In the first 1-2 weeks after the flood, many displaced households were sheltered by host families, including both relatives and, in some cases, unrelated volunteers, even foreigners. This immediate reliance on social networks and community solidarity filled a critical gap before state-managed solutions became operational.

*“At first, for the first one or two weeks, many displaced people stayed with host families, some with relatives, others even with foreigners.”*

Formal state assistance, including hotel accommodation, began after around a week, providing a more structured shelter arrangement for those unable to remain with hosts:

*“On the first day, hotels provided shelter for the displaced population. Payments to the hotels were processed subsequently, and I am genuinely grateful, many hotels offered significant discounts and, in several cases, stood by our side during those days.”*

Local hotels served as the primary emergency shelter solution. Displaced households were accommodated in safe, dignified settings, an approach aligned with Sphere Shelter Standards, which recommend using existing urban infrastructure (like hotels and guesthouses) for temporary shelter during the early phase of displacement. This allowed for a culturally appropriate and non-camp-based shelter response, avoiding the negative impacts of overcrowded collective shelters.

To prevent long-term vulnerability among displaced populations, the Armenian government established reimbursement mechanisms for hotel stays. This financial

support reduced the risk of secondary impacts, such as eviction or debt accumulation, and reassured private providers about timely compensation. Later, displaced families were supported with rental assistance provided by the municipality.

*“We stayed in a guesthouse for 15 days, then rented a house. The municipality covered the rent until December.”*

By December 2024, some households had already completed urgent repairs and returned to their homes:

*“I finished my house by December and moved back quickly after starting renovations right away.”*

This demonstrates how municipal assistance with temporary housing and rent support enabled affected families to stabilize their living conditions and transition toward self-driven home restoration within a relatively short timeframe.

**Verification-Based Compensation<sup>15</sup>**

To ensure transparency and fairness of the damage registration process, a dual-track documentation process was adopted:

- Official documentation by trained registration teams
- Supplementary self-declarations by affected households

All assessment teams were briefed in advance by the MTAI. A brief training (“orientation”) was conducted for all team members before deployment, emphasizing key priorities and the correct way to fill out the registration forms. The form was designed to be comprehensive and standardized.

*“We designed the forms to capture everything: housing data, animal loss, legal documents, ownership verification, so that when the time came to calculate compensation, the data would already be in place.”*

Damage assessment processes carefully

<sup>15</sup> Shortcomings are discussed under barriers

distinguished between genuine losses and inflated or ineligible claims, ensuring that assistance reached those truly affected.

*assets deserved full compensation but verified claims without formal records still received partial support.”*

This tiered system effectively balanced fairness and responsibility. It rewarded compliance with asset registration requirements while still extending support to informally documented households.

To further support residents navigating the compensation process, municipality workers assisted with incomplete documentation - a major administrative barrier, which initially excluded many households from compensation. Local authorities actively assisted residents by retrieving missing records, liaising with agencies such as the Cadaster Committee, and organizing rapid response teams to help complete applications within the limits of existing law. When documentation was incomplete, authorities extended deadlines and allowed reapplications to ensure inclusion.

*“Out of 142 beneficiaries, only 61 had proper documents initially. We helped prepare legal papers for more than 40-50 others.”*

*“We tried to lighten the burden for our residents. Even at the documentation level, we organized rapid response teams to help fill gaps so that people could get the support they needed without unnecessary bureaucratic obstacles.”*

*“The program was extended multiple times so that applicants could re-submit and receive the compensation they deserved.”*

*“We tried to ensure that everyone who suffered losses had their legal documentation in place. I’m not a legal expert, but I know we did what was possible within the law to support our residents.”*

A practical example illustrates the issue: one applicant initially claimed their home was significantly larger than what was shown in official records. When authorities requested verification documents for the compensation process, only 26 square meters were legally recognized.

*“We had to write 26 sqm in the forms, because*

*“Those who genuinely needed help were accounted for, but those who tried to exploit the situation were not. Some even presented things like an “old doghouse”, unused for 100 years, and called it a ‘home,’ asking the state for compensation.”*

The collected data were later cross-verified, particularly for cases where residents reported agricultural losses.

*“If someone claimed they had orchards with fruit-bearing trees, we checked that against historical Google Maps to validate the data. This gave us a clear and objective picture.”*

Understanding the potential for data omissions or inaccuracies, the teams also conducted second and even third rounds of verification, revisiting entire neighborhoods to catch any oversights.

*“We did second and third rounds of assessments across the entire flooded zone to ensure that no one was left out, especially in cases where homes had been locked during the first visit.”*

In the livestock compensation process, a differentiated, verification-based approach was implemented to ensure fairness and accountability. Households with official documentation and validation from local authorities received full compensation. For households lacking formal documentation, claims were subjected to supplementary verification checks. Where ownership was confirmed, partial compensation (typically 50%) was provided. These cases followed standardized procedures, applying pre-determined rates set by Government Decision N1264-L (2024).

*“If someone had properly registered their animals and paid the symbolic local fee, they were eligible for full compensation. That was our way of encouraging formal accountability.”*

*“We needed to ensure fairness. Those who followed legal steps and registered their*

*that’s what the certificate showed. But we didn’t stop there, we worked with the person to help them obtain a new, updated property certificate”.*

Within two to three months, the resident successfully secured a revised property document reflecting the actual size of their home. Local officials resubmitted the case with the updated documentation, and the person eventually received compensation based on the correct property size.

This illustrates how pre-disaster registration systems directly impacted compensation outcomes, rewarding those with proper documentation but creating disparities for unregistered losses. While it incentivizes formal registration, it also underscores the need for greater pre-disaster outreach and support to ensure vulnerable households are documented in advance.

### Sanitary and Health Interventions<sup>16</sup>

Post-flood health and hygiene measures were implemented promptly to reduce public health risks. Post-flood conditions created significant risks for waterborne diseases, as water safety could not be fully guaranteed. However, regular water quality testing and monitoring played a key role in preventing serious health issues.

*“Specialists from the Sanitary-Epidemiological Service came and disinfected the houses. They disinfected the residential buildings.”<sup>17</sup>*

*“Of course, water safety wasn’t at 100%, but because testing was conducted, we were able to prevent major illnesses.”*

While risks remained, these proactive health measures ensured that no severe disease outbreaks occurred, demonstrating the effectiveness of basic monitoring and preventive interventions in post-disaster contexts.

### Timely and Needs-Based Medical Response

<sup>16</sup> Shortcomings are discussed under barriers

<sup>17</sup> Shortcomings are discussed under barriers

Despite logistical challenges, collaboration among Ministry of Health, Ministry of Internal Affairs and Rescue Services was properly ensured during the emergency response phase, especially for the isolated communities, where the medical supplies were delivered.

*“We were able to resolve medicine shortages in coordination with emergency services. There were no cases where someone suffered serious health consequences due to lack of access to care or medications during this flood.”*

Rather than issuing a general request for medical supplies, local teams first conducted a rapid household-level inventory. Residents were asked to identify the specific medications they were using, including dosage, frequency, and quantities needed. This targeted data collection enabled the authorities to avoid waste and duplication.

*“We didn’t just say, “send us medicines”. We documented exactly what each person needed, what medicine, in what dose, and how often.”*

Based on this community-level inventory, the Ministry of Health responded within 2-3 days, swiftly procuring and delivering the required medications to the affected areas. The fast turnaround ensured that residents with chronic health conditions did not experience harmful interruptions in treatment.

### Collective solidarity and mobilization

#### Civil Society support

The 2024 flood response in Armenia provided a powerful example of how strategic collaboration between government bodies and experienced CSOs can enhance the quality and reach of emergency interventions.

When the Rescue Service issued a formal request detailing the specialized capacities required for field response, it was civil society actors who stepped in swiftly (e.g. Lore Rescue Team, Armenian Red Cross Society), leveraging their technical networks to mobilize highly trained personnel.

*“Rescue Service made a clear request describing what was needed, and we (Lore) responded by sending in specialists - people trained in drone operations, river crossings, alpine rescue, and rapid assessments.”*

ARCS activated its trained Disaster Response Teams - pre-positioned volunteer units across various regions equipped with necessary tools, training, and simulation experience. It deployed both its needs assessment team and volunteer support, with assistance from Italian Red Cross experts and staff from the International Federation of Red Cross and Red Crescent Societies (IFRC). As floodwaters receded, ARCS volunteers participated in extensive cleanup operations, including hospitals, pharmacies, and residential yards. Over 250 trained volunteers contributed via the rotational system over 10 days.

*“Volunteers helped clear silt and debris across affected zones, and many local residents expressed interest in joining our volunteer network, which we welcomed and trained.”*

These CSO-deployed teams not only had technical and logistical expertise but also brought critical experience in community-based assessments and psychosocial support - capacities often underdeveloped in public agencies.

This cooperation proved especially important in ethically sensitive situations, such as entering homes where water was still flowing, or interacting with people in shock or distress. Rather than relying solely on standard government protocols, the integrated response leveraged flexibility, empathy, and contextual knowledge of CSO personnel.

*“Imagine walking into a home while floodwater still runs through it to ask what people need. That requires more than a checklist. It demands empathy and trained responders who can build trust.”*

Among external actors, ARCS, WFP, Acted’s and other organizations cash assistance programs proved impactful, complementing both public and private aid streams.

*“... we provide cash assistance, allowing people*

*to decide for themselves how to best meet their specific needs. This approach is more dignified, as it empowers affected individuals to prioritize and address what matters most to them. Later, when we conducted evaluations, beneficiaries themselves confirmed that this type of support was much more appropriate. They expressed high satisfaction and appreciated the flexibility it offered. We have implemented similar approaches during previous emergencies as well, offering cash assistance during various disasters. This experience has shown that when well-planned and implemented, cash-based aid is not only more impactful, but also a more respectful and empowering way to support people in crisis”.*

*“Acted called people directly, conducted assessments, and offered meaningful support. They provided 200,000 AMD vouchers for household appliances and another 200,000 AMD for construction materials. People really needed that kind of help.”*

By addressing both immediate relief and early recovery needs, these interventions significantly strengthened the overall effectiveness of humanitarian assistance and reduced the pressure on government-led aid mechanisms.

**Volunteer Mobilization**

The emergency response was significantly reinforced by a surge in volunteerism and community solidarity. Hundreds of individuals, from university students to organized civic groups, mobilized spontaneously to support relief efforts, demonstrating the deep social capital that underpins disaster resilience.

*“We calculated that between 400 and 700 people, not counting local Alaverdi residents, came to help us as volunteers.”*

From the earliest days, social organizations and individual volunteers coordinated clothing drives, food distribution, and cleanup operations. Diaspora-linked groups and faith-based organizations also played a visible role. A volunteer team from Nagorno Karabakh (Artsakh), motivated by shared experiences of displacement, mobilized to assist affected households.

*“A group came from Artsakh. The leader told me, ‘I will never forget how Armenians welcomed us when we came from Artsakh with nothing. I decided I would be the first to respond.”*

In parallel, informal kinship networks eased pressure on formal shelters. Many displaced residents found refuge with relatives or host families, illustrating how family ties and community cohesion provided immediate relief and reduced demand on emergency infrastructure:

*“We stayed at my brother-in-law’s house.”*

Furthermore, private donors, diaspora networks, and church groups provided direct financial support, sent directly to affected families. This informal assistance complemented formal aid mechanisms, bridging gaps in immediate needs and early recovery.

However, support was uneven across regions. For example, in Tashir, residents reported an absence of organized cleanup assistance, forcing households to manage debris removal and sanitation independently:

*“No organization came to help. No one assisted us during the cleanup.”*

This disparity highlights how volunteerism and informal solidarity mechanisms played a critical but uneven role in the effectiveness of the flood response. Where well-organized volunteer networks and formal assistance aligned, they significantly accelerated early relief and recovery. Conversely, in areas lacking coordination, the burden fell disproportionately on already vulnerable households, highlighting the need for systematic planning to ensure equitable support across all affected communities.

Inter-Municipal Solidarity and Resource Sharing

The flood response demonstrated strong horizontal cooperation among municipalities, which significantly boosted local effectiveness. Leaders from neighboring communities personally mobilized to provide manpower and equipment support.

One of the most compelling examples of quiet, self-organized solidarity came from Sevan and Hrazdan communities. As was noted by KII and FGD participants, for a full week, a volunteer crew led by the mayor of Hrazdan, worked from morning until night to clean thick mud and debris in the flood-affected zone. Notably, the central response headquarters only learned about this effort on the final day, because the local coordinator had quietly managed the connection with Hrazdan municipality without escalating it through formal channels.

*“People from Hrazdan came with a full team - municipal workers and residents. They were assigned a specific area and carried out the cleanup work efficiently and silently. No publicity, no announcements - just service.”*

This peer-to-peer municipal assistance filled critical resource gaps during the emergency, showcasing how solidarity and informal networks strengthened operational capacity beyond formal disaster management systems.

**Public-private partnership**

The collaboration with local hotels also highlighted the importance of private sector engagement. Many establishments not only opened their doors but did so at discounted rates, demonstrating solidarity with affected communities. This form of public-private partnership expanded the state’s surge capacity for emergency accommodation and reduced delays in service provision.

*“Within the first 24 hours, displaced households received dignified accommodation through local hotels, with costs later reimbursed by the government till December... many hotels offered significant discounts.”*

Such partnerships mirror global best practices, where governments and humanitarian actors contract hotels or similar facilities during crises to provide scalable, flexible shelter solutions.

Local businesses, such as Ard Elite, Ideal Group proactively supported affected residents by providing construction materials, technical assistance, and significant discounts, under-

scoring the crucial role of the local private sector in early recovery.

*“All affected residents received 30% discount vouchers on construction materials.”*

*“Ideal Group provided vouchers for doors and construction materials worth around 100,000 AMD.”*

Despite structural and preparedness gaps, one encouraging pattern continues to emerge during crises in Armenia: a strong sense of collective mobilization. In the face of large-scale disasters, both institutions and society at large often come together swiftly, pooling resources and directing efforts where they are most urgently needed.

*“One positive thing is that when situations like this happen, society and institutions alike tend to unite. There’s a collective force that forms, and most resources are quickly directed where they’re needed most.”*

This collective momentum, while often ad hoc, underscores the value of social solidarity and spontaneous cooperation, which can serve as a powerful complement to formal response mechanisms. Strengthening this innate potential through better coordination and preparedness systems could significantly enhance future disaster responses.

### Flexibility of Voucher-Based Assistance in Access-Constrained Settings

The 2024 flood response in Armenia highlighted the value of voucher-based assistance provided by the CSOs in areas where physical access was temporarily disrupted. The case of Karkop village serves as a compelling example of how this modality can ensure timely support despite damaged infrastructure and displacement.

In Karkop, a key bridge collapse made it extremely difficult to deliver in-kind assistance in the early days of the response. Traditional aid delivery methods, dependent on transport and storage, would have been severely delayed. By contrast, voucher-based assistance allowed for uninterrupted aid delivery. Affected families could access local goods through partner

vendors, regardless of the logistical bottlenecks affecting the physical supply chain.

*“In the case of Karkop, the connecting bridge had collapsed. Although temporary solutions were established a few days later, this delay would have made it extremely difficult to deliver physical relief goods. Fortunately, since the support was provided via vouchers, the issue was manageable.”*

Another key advantage of the voucher system was its adaptability to displacement scenarios. Even after being relocated from their homes, flood-affected residents could still access essential items without the need to return to inaccessible or damaged areas.

*“The advantage of vouchers was that people could simply approach a shop with a coupon, even in their temporary accommodation sites, not their homes in Karkop, which had been evacuated.”*

This flexibility ensured continuity of assistance and reduced pressure on emergency logistics systems, while also preserving the dignity and agency of affected households.

### Main barriers that influenced the effectiveness of the response

#### Uneven Support in Early Recovery

While some communities, such as Alaverdi, received substantial assistance, others faced minimal external support, forcing families to rely on self-help and informal networks for evacuation, cleaning, and early recovery.

*“They started visiting homes only a few days later. By then, we had already cleaned the mud ourselves. Chemical cleaning crews came to some areas like Ayrum, but not here in Bagratashen. Nobody came at all.”*

Some residents reported difficulties in accessing timely assistance during the initial emergency response. In certain cases, requests for urgent help, such as water removal, were referred elsewhere without adequate support:

*“I went and said water had entered my house, and they told me, “Call Emergency Services*

*to come and pump it out.”*

Psychosocial support availability was similarly uneven. While Alaverdi residents accessed assistance from both the ARCS and state agencies, Noyemberyan residents, despite experiencing severe stress and disruption, reported no targeted psychosocial interventions at the community level.

Initial aid efforts, while rapid, led to uneven distribution, with directly affected households receiving overlapping support from multiple sources (food, hygiene, emergency cash). However, indirectly affected households, such as those with flooded farmlands, orchards, or lost livestock, were frequently overlooked.

*“This year (2025), we received a written request from community social workers stating that there are serious food-insecure families who have been affected by the flood, some directly, others indirectly. Some families received food aid and other assistance from several sources because they were directly affected. Meanwhile, others, whose fields or orchards were damaged by the flood, became food-insecure due to indirect impacts and received nothing.”*

This discrepancy created humanitarian blind spots, especially for households whose food-producing assets (e.g., gardens, animals) were wiped out, making them newly food insecure despite not being on the official “damaged homes” list.

### Infrastructure Recovery and Resilience

Early restoration of railways, roads, and temporary bridges were effective but revealed significant gaps in long-term resilience and quality. While temporary bridges reduced isolation of affected communities, these measures were often short-term fixes, some were destroyed in later floods, highlighting weaknesses in engineering assessments and early recovery.

*“For example, a temporary pedestrian bridge was built to replace a destroyed bridge, but the river washed it away again. Clearly, there was a miscalculation, or something was done*

*incorrectly in that process. Professionals worked on it, but the result was not what it should have been.”*

*“When the river was low, they should have put a tractor in and cleaned it. But they didn’t. Now new metal bridge is built but the old panel is still stuck underneath. If there’s another flash flood, it will hit that panel and wash the bridge away”.*

Such ad hoc measures prioritized speed over durability, leaving infrastructure vulnerable. Early recovery must be based on robust technical assessments and risk modelling to avoid repeat losses.

Restoration in Lori region, particularly in Alaverdi and adjacent communities, has been progressing, albeit with ongoing gaps. A significant portion of the Alaverdi highway remains unrepaired, while bridge rehabilitation efforts are reportedly still underway. Local accounts emphasize that not all critical infrastructure has been fully restored, and temporary structures are used. Many essential systems, such as railways, inter-community roads, and drainage infrastructure, remain incomplete.

The floods revealed that historical structures and bridges outperformed modern ones:

*“The bridge built in the 9th century withstood the flood, while more recent ones were destroyed.”*

This underscores the need for enhancement of “build back better” principle of Sendai framework. Recovery must be completed not just to pre-disaster standards but to withstand future climatic shocks.

### Challenges in Damage Assessment and Compensation

The damage assessment process aimed to streamline response and compensation. However, its effectiveness was hindered by several key operational, procedural, and systemic factors.

The absence of pre-defined damage assessment tools and criteria led to inconsistent

and delayed assessments. Initial methods based on water depth proved ineffective and were replaced by house-size estimates:

*“At first, they thought we could assess damage based on how much water had entered a home, e.g. if it was 40 cm or 1 meter. But later, we all realized there’s no real difference. Whether it’s 20 cm or 1 meter, the damage is total. Furniture, renovation, everything is ruined. You end up repairing the entire wall anyway. And after discussions we moved to assessing by the size of the house - like 40 or 100 square meters and used that to estimate losses.”*

Confusion over application locations further delayed aid registration. Initially, residents were directed to regional centers to submit applications, only to later be told to apply at their local municipalities:

*“At first, there were some difficulties. People were told to go to the regional centers to file applications, but later, following a higher-level directive, it was clarified that they should apply directly at their local municipalities, since the commission members were, in fact, staff from the municipality itself.”*

While the situation was eventually corrected later, unclear workflows slowed response and frustrated beneficiaries. Some stakeholders noted that the damage assessments were formalistic, failing to address sector-specific losses, especially in agriculture, environmental degradation and industrial pollution. Residents with contaminated land of industrial waste were frequently left out of official evaluations and received no compensation.

*“The damage assessment has not been carried out effectively... I am not aware of the exact methodology used... but the damage assessment should be differentiated according to stages and according to sectors. They have been identical for all sectors and for all times... as a result, this farmer, who has lost half of his vineyard at all, that is, there is no land anymore, has received only 250,000 in support from the state... imagine, half of human real estate no longer exists.”*

*“There are people whose gardens were polluted*

*with mining waste... there was no response at all, no evaluation.”*

This lack of targeted assessment limited recovery in some of the most severely impacted sectors, especially in rural communities.

Verification relied heavily on resident statements due to the lack of pre-flood inventories or photographic evidence, increasing risks of misreporting, both overstatement and undercounting of losses:

*“There were no photos or official records showing the pre-flood conditions. We relied on the resident’s statements, and the confirmation of the community leader, unless a contradiction was obvious.”*

*“We had around 120 trees behind our house, but only 33 were recorded in the final list.”*

*“It’s not always the case that people describe their situation exactly as it is, especially after some time has passed and people are expecting assistance. For example, one resident claimed that his barn had been destroyed by the flood. But when we inspected the site with the local head, we saw the river was far below and it was impossible for the flood to have reached that building. The land adjacent to the barn was completely unaffected.”*

Such cases, while not widespread, highlight a systemic vulnerability: the lack of robust documentation and independent verification mechanisms increases the risk of both under- and over-reporting, complicating fair compensation and effective resource allocation.

Delays in compensation for verified and legally documented properties were a recurrent concern.

*“Ours is a garage, and we have legal documents for it, registered under my father-in-law’s name. We submitted the application before the deadline of August 24, just days before the August 31 cutoff. It was fully legalized, but we are still waiting for compensation.”*

A notable challenge in the flood response was the outsourcing of damage assessments to

insurance company, particularly for vehicles and auxiliary structures, due to the absence of qualified technical specialists at the local level.

*“We didn’t have the technical expertise to assess vehicle damage, so it was delegated to another organization. But people were dissatisfied with how their cars were evaluated. That was already a service, we had no control over it. They won the contract and conducted the assessments.”*

While outsourcing aimed to ensure technical rigor and timely implementation, the lack of direct oversight and feedback mechanisms undermined the perceived fairness and transparency of the process. Some residents expressed dissatisfaction with the evaluations.

While the state compensation program addressed many urgent needs, residents raised concerns about fairness and inconsistent application of criteria. Some reported that non-residential or vacant properties received full compensation, while others with verified damage were excluded:

*“We know cases where people got aid unfairly, even houses where no one lived received support. Meanwhile, some of us with real damage were told our homes didn’t qualify as ‘residential’ and got nothing.”*

Similarly, agricultural losses and land damage were inconsistently addressed:

*“They told me only residential homes qualified, but later I saw cases where landowners and even livestock owners were compensated.”*

In some cases, the affected households only received assistance or re-evaluation after repeated advocacy, media coverage, or public outcry, reflecting a system that responded selectively rather than systematically.

*“Where the problem is raised, that is, it has become a subject of public discussion, they respond to these incidents.”*

This reactive model left many unassisted unless their cases gained visibility, reinforcing inequities in the recovery process.

These perceived gaps in targeting and transparency undermined trust in the response, despite its overall reach. Clearer eligibility criteria and communication, along with stronger verification are needed to enhance equity and community confidence in future disaster assistance programs.

## Premature Termination of Rental Support

Initial rental assistance was provided until December 2024, but its early termination left displaced families with ongoing housing needs:

*“We received rental payments until December. Since January, we have been paying rent ourselves.”*

The premature end of rental assistance placed a financial burden on displaced households still awaiting durable housing solutions. In Sanahin, 12 flood-damaged apartment buildings remain slated for demolition with no finalized relocation or compensation plan, even a year later:

*“A year has passed - now there’s neither this nor that. We can’t live in them, but there’s nowhere else to go. The first floors are empty, but people on the second, third, and fourth floors are forced to live there.”*

*“We are also part of the government, but there were gaps. Some cases were resolved quickly, but for others, like the residents of the 12-building complex - four families are still waiting. They should not have lost their rental support until their housing issues were resolved.”*

Residents cited unclear government plans, insufficient compensation, and inflated housing prices, leaving them in unsafe conditions and financial strain:

*“If they’re going to demolish them, then they must provide compensation so we can buy new housing.”*

*“Sellers are taking advantage of the situation, raising prices beyond what the government’s proposed amounts could cover.”*

This reflects a critical limitation in the response's effectiveness: while immediate rental support was delivered efficiently, the absence of a long-term housing solution has left affected families in limbo, exposed to unsafe living conditions and financial strain.

### Delayed Trust and Missed Opportunities for Assistance

In several affected areas, skepticism toward government-led aid delayed residents' participation. Many refrained from applying, doubting meaningful support:

*"Back then, we had absolutely no faith in the process. But once we saw that people in neighboring areas were receiving support, we regretted not applying."*

By the time trust improved, documentation deadlines had passed. Efforts to resubmit updated lists to regional and ministerial levels faced obstacles to lack of timely evidence:

*"Now there are no photos from the disaster scene, no visible traces left of the damage. It's hard to conduct a meaningful evaluation anymore. Even for us, it's become a real problem."*

This sequence illustrates how trust deficits and delayed participation can directly undermine the effectiveness of aid delivery. Without early community engagement, opportunities for timely and accurate needs assessment are lost, impeding both equitable relief distribution and the credibility of response mechanisms.

### Insufficient Equipment and Protective Gear for Rescue Workers

A critical factor hindering the effectiveness of Armenia's 2024 flood response was the shortage of essential equipment and protective gear for state rescue personnel. Rescue teams were often deployed without adequate technical tools or protective clothing, which directly limited the scope, speed, and safety of their operations. As one of the KIIs noted:

*"State rescue workers were not fully equipped with the necessary gear, protective clothing,*

*or technical equipment. Since the Surmalu explosion, we've seen this repeatedly. The difference in quality between a volunteer's rescue team uniform and a state-issued one is significant".*

In several cases, emergency responders had to rely on supplies provided by humanitarian organizations and CSOs rather than the state:

*"They didn't have the necessary gear. Equipment from the Red Cross was used instead."*

*"In terms of rescue equipment, the state was not adequately equipped. It was once again that international and civic organizations stepped in to provide support."*

Again, key response and recovery actors were pivotal in supporting government efforts, highlighting the importance of strengthening domestic emergency logistics capacity.

### Insufficient Backup Communication and Power Systems

One of the challenges experienced during the flood emergency was the failure of communication systems due to overreliance on mobile networks and lack of backup infrastructure. Several base stations went offline, leaving authorities unable to establish contact with multiple affected communities at a critical time.

*"The problem was the lack of information. The system was too dependent on mobile networks. Once a few towers went out of service, we lost contact with entire communities."*

There was no automated or redundant system in place to ensure continuous communication during power outages or loss of network coverage. The emergency response remained tied to assumptions about power availability, without proper planning for scenarios involving electricity cuts or network failures.

To cope with the disruption, emergency teams resorted to basic tools like handheld radios, which became the primary means of communication. In areas without backup

electricity, generators could have resolved the problem, but many facilities, including essential infrastructure like water pump stations, were not equipped with them.

*"We used handheld radios. As for electricity, it wasn't a huge investment - we're talking about small generators that could have powered facilities like pump stations. It wasn't an impossible cost, but it hadn't been planned for."*

### Information Gaps

Another factor mentioned by participants affecting the efficiency of the flood response was the lack of timely crisis communication in contaminated areas. Delays in soil contamination assessments and insufficient community-level outreach left residents unaware of relevant risks:

*"I visited households and saw people pulling onions from garden soil to consume them, right after the sanitary epidemiological service had sampled the soil and disinfected the walls."*

While official assessments were conducted, the absence of effective crisis communication reduced their impact, prolonging exposure and increasing the likelihood of secondary health risk such as waterborne diseases.

Volunteer mobilization also lacked safety protocols, with many responders working without protective gear or training:

*"When volunteers were sent to remove mud, we saw young people working without instruction or protective clothing. We warned them: you're going to make these kids sick."*

A notable gap emerged regarding awareness of state compensation programs for host families hosted flood-affected residents. Some interviewees stated that they were unaware of state compensation programs highlighting weak public communication.

*"We didn't know such a program existed."*

These shortcomings - delayed contamination assessments, poor public messaging, and inadequate volunteer protection - hindered the overall efficiency of the response by

compounding risks, straining resources, and eroding public trust in official efforts. Strengthening crisis communication and safety protocols is critical to improve the speed and effectiveness of disaster responses.

### Lack of Baseline Data

Lack of accessible, digitalized baseline data on population, housing, infrastructure, and services at the community level made needs and damage assessments less efficient and less accurate. While some sectors (e.g., energy, water, gas) maintained functional databases, and the Cadaster provided housing and property data, most other sectors lacked reliable information.

*"The greatest challenge was the lack of information. In almost all areas, baseline data was missing. The private sector was better off because they had basic data we could use during the assessment - on electricity, water, gas. The Cadaster had baseline data on the housing stock, by region, settlement, and type, which helped in the Damage and Loss Assessment. But in most sectors, the situation was poor because of this data gap, making efficient assessment impossible"*.

Regularly updated digital baseline data registries at national and community levels will improve speed and accuracy of both initial and post-disaster assessments.

### Gaps in DRR and Local Preparedness

Despite Armenia's formal DRR frameworks, the 2024 flood response exposed significant gaps in implementation, coordination, and local capacity. These challenges undermined proactive risk mitigation and delayed timely response at critical moments.

#### a. Insufficient Community Contingency and Reserve Funds

A critical barrier identified in implementing planned flood recovery and risk reduction interventions is unpredictable and insufficient financing. Despite having clear technical plans, the lack of timely financial inflows stalls progress.

The experience in Alaverdi and Tashir, where around 2,400 people<sup>18</sup> were evacuated during the floods, demonstrated the insufficiency of existing resources and the importance of flexible, locally controlled funding for crisis response. Currently in Armenia what is labeled as a “reserve fund” in local budgets (typically 5% of the community budget) is inadequate to cover even minor emergency needs.

*“We do not have a true concept or structure of reserve or contingency funds in Armenia’s communities. What exists is a minimal 5% budget line, but it is far too small to address real problems.”*

Global DRR guidance encourages communities to maintain emergency reserves to enable immediate action, bridge funding gaps, and support rapid recovery while larger-scale aid is mobilized. There is an urgent need to institutionalize the concept of contingency and reserve funds at the community level in Armenia.

*“We’ve identified the risks, and we’ve listed the actions - everyone understands what needs to be done. But the problem is always in the financing. For example, community risk reduction plans may include measures like hail suppression stations or riverbank reinforcement, but the funding source is often listed vaguely as “state budget” or “to be determined,” with a disclaimer like “if available.”*

*“We have a plan, but you can’t plan finances today. For over two months, we couldn’t proceed with tenders because not a single dram entered the budget. It’s all about financial constraints. Once funding arrives, you can plan and organize everything.”*

DRM planning without corresponding financial planning mechanisms weakens the overall system. To bridge this gap, local and national authorities must integrate realistic budgeting, explore diverse financing mechanisms (e.g., contingency funds, donor support, public-private partnerships, risk transfer mechanisms),

and move toward risk-informed investment frameworks that turn plans into action.

### **b. Mobile Command Centers and On-Site Coordination: A Missed Opportunity for Effective Disaster Response**

One of the key reflections shared during the flood response was the absence of a functional, mobile command post at the actual disaster site. While DRM community plans existed on paper, they were not operationalized effectively in practice—an issue that significantly hindered coordination during critical early hours.

*“It would have been much better if at least what was written on paper could have been implemented - like establishing a mobile command center.”*

Stakeholders emphasized that a dedicated coordination point within the disaster zone would have allowed for real-time oversight, faster decision-making, and better mobilization of equipment and personnel for cleanup and recovery.

*“It would have been more effective to manage heavy equipment deployment and debris removal directly from the disaster zone itself, rather than from a distance.”*

### **c. Weak Integration of DRR into Local Practice**

Although Armenia’s National Strategy for Disaster Risk Reduction (2017-2030) and related action plans include provisions for hazard mapping, early warning systems, and community-level risk management, these tools were largely underutilized before and during the 2024 floods, limiting their potential to reduce disaster impacts.

*“The strategy is a high-quality document that reflects input from multiple stakeholders. The next challenge is ensuring the actions outlined in the strategy are actually implemented.”*

Despite hazard maps and DRR plans, many municipalities were unaware or untrained in their use. Gaps in training, insufficient follow-up from national agencies, and weak

local-level ownership further hindered implementation:

*“The plans exist. The hazard maps are there. But many municipalities were simply unaware or not engaged. Sometimes the local government fails; other times the agency that handed them the plan didn’t provide training or follow-up.”*

Additionally, limited coordination between national DRR institutions and local governance, uneven external support, and varying levels of mayoral leadership and initiative contributed to inconsistent preparedness across communities.

*“I don’t believe existing DRR tools were effectively used for prevention. This, to me, was a failure. Major resources are still focused on emergency response, not proactive prevention.”*

These shortcomings illustrate a critical barrier to effectiveness, where the lack of practical application of DRR tools resulted in reactive, response-driven disaster management, rather than proactive risk reduction. Plans were often outdated or purely formal.

*“Decades of experience have shown that these plans are rarely put into practice. Even in tabletop exercises, community leaders simply gather, talk, and disperse, without any meaningful learning or preparation.”*

### **d. Limitations of the Early Warning System**

One of the most serious challenges during the early hours of the disaster was the lack of a functional, flood-specific early warning system, which critically affected the community’s ability to respond in time. Manual sirens were not linked to monitoring, and no night watch protocols were in place:

*“We had real problems with alerting the population. The flood happened at night, and it moved quickly. We didn’t have an early warning system in place, and that created a major issue.”*

*“There is a siren, but it serves another purpose entirely, it’s not linked to flood risk or river monitoring.”*

*“There must be night watch protocols in place. Even if we can’t stop the water, we need a way to inform the population quickly and begin evacuation. That was one of the most serious problems we faced in the early stage.”*

Hence, individual actions rather than systemic processes were critical in avoiding numerous deaths.

*“The destruction was going to happen either way, but we were lucky that people managed to get out in time. When the water entered homes, people had to wake up and climb out in the dark. No one knew what was coming.”*

In some places evacuation efforts were largely self-organized by residents, with neighbors helping each other to safety before any formal assistance arrived.

### **e. Lack of Institutional Memory and Knowledge Transfer**

Effective disaster management requires not only training but also systems for retaining and transferring knowledge across administrations. In Armenia, changes in government or local leadership often disrupt continuity, as there are no formal mechanisms to pass on tools, skills, or institutional learning.

*“There is no mechanism for passing on knowledge and tools from one administration to the next. This is a governance issue, and it is missing at almost every level.”*

This gap leads to the loss of technical capacity built under previous leadership, weakening preparedness and response during future disaster, particularly in politically sensitive or high-turnover environments

### **f. Human Resource Gaps and the Need for Disaster-Specific Expertise**

A critical lesson emerging from the flood response is the lack of specialized professionals in disaster risk mitigation, preparedness, response and recovery at community level. While physical recovery received attention, the response also exposed systemic weaknesses in human capacity, particularly in technical leadership and local-level disaster

<sup>18</sup> Armenia Floods May 2024 - Post Disaster Risk Assessment, October 2024, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

management coordination.

*“At this point, I don’t think we have disaster specialists. If we had difficulties responding, it was because we didn’t have the right people. Even at the level of task force leaders - there were no professionals specifically trained in disaster or crisis response.”*

Another operational challenge mentioned by the KII and FGD participants was the limited presence of experts in agriculture and rural infrastructure in local/regional assessment commissions. The absence of agronomists, soil scientists, or construction engineers reduced the quality and speed of evaluations:

*“We faced real difficulty when we needed to assess agricultural losses. We proposed bringing in additional agricultural specialists, and the regional commission approved it. But the problem was that the original commission didn’t include technical experts at that level.”*

*“This is where the real challenge lies. We need to have relevant specialists in the commission with deep technical knowledge - someone who can, even without sophisticated tools, tell whether a tree was damaged before or after the flood, or whether the soil composition shows new or pre-existing degradation.”*

Without such expertise, assessments relied on subjective judgment, raising concerns about accuracy and fairness, especially in rural contexts where distinguishing pre-existing from disaster-related damage is complex.

Community members reported inconsistent risk awareness and preparedness initiatives at the local level. This indicates fragmented and irregular preparedness efforts, largely dependent on external organizations rather than systematic municipal planning. While some training occurred, it lacked coverage, frequency, and integration with early warning systems.

*“Sometimes organizations like the Ministry of Internal Affairs, Red Cross come here to train.”*

Despite relatively healthy budgets, Armenian municipalities, including but not limited to Alaverdi, tend to under-invest in the education,

training, and capacity building of local staff and residents. Instead, funds are typically allocated for tangible infrastructure, with little attention to:

- Professional development for municipal staff (e.g., in DRR, emergency management, or risk assessment).
- Community training and drills to ensure the population is prepared for emergencies.
- Expert support for developing robust, evidence-based civil protection and emergency response plans tailored to local risks and resources.

As noted by local experts:

*“Our communities do not invest in education. There is little or no funding for staff training, non-formal education for residents, or for expert services. What is needed is not just a good plan on paper, but the knowledge and skills to implement it in practice.”*

*“If we bring the best mechanism or response plan and put it in the hands of the community leader or local specialist, they still won’t be able to use it unless they have been properly trained. Real capacity takes time and investment.”*

Global standards (Sendai Framework, PDNA, Sphere) emphasize that resilient communities require capable people, not just infrastructure. DRR and recovery are most effective when:

- ✓ Municipalities set aside budget for continuous professional capacity building.
- ✓ Local plans are developed with consideration of disaster risk scenarios by involving external expertise.

Building disaster resilience is not just a technical or financial challenge, but an educational and organizational one. Municipalities and partners, should shift towards investing in human capital, ensuring that local expertise, capacity building and community preparedness are at the core of all DRM and recovery efforts.

**g. Lack of Stockpiling and Emergency Storage**

The disaster response experience clearly highlighted the urgent need for pre-positioned emergency stockpiles, specifically, properly equipped storage facilities and secure, dedicated spaces for emergency supplies. One of the main issues encountered during the flood was the inability to safely store large quantities of food aid. For example, the municipality received significant amounts of dairy products, especially large wheels of cheese, from both private donors and the government. However, the lack of proper warehouse space and refrigeration made it impossible to store these perishables safely.

*“Strict orders from the regional governor required us to accept and store large amounts of dairy products. Without refrigerators or suitable warehouses, some of this food began to spoil within a day.”*

In response, the municipality relied on the goodwill of local shopkeepers, who temporarily provided refrigerator space, and converted community facilities, such as a sports school, into makeshift warehouses. This disrupted regular activities, as children’s sports classes were suspended for months while the building was used to store aid supplies.

*“We used a local sports school as our warehouse, which disrupted children’s activities for 3 months. The cheese and other perishable foods quickly became inedible due to inadequate storage conditions.”*

Having dedicated, climate-appropriate storage facilities are critical for effective disaster response. Dedicated storage facilities would prevent waste, protect perishable goods, and avoid secondary impacts on educational programs or public services.

**h. Challenges in Volunteer Management**

The 2024 flood response in Armenia revealed significant gaps in the management and coordination of community volunteers, undermining the efficiency and safety of local response efforts. Volunteer engagement during the flood was in many cases spontaneous, often involving youth and community members acting without guidance, training, or

clear roles. This reactive model failed to match volunteers’ skills with actual operational needs, leading to missed opportunities and inefficiencies during response operations.

*“I recall during the disaster, an alpine rescue team offered to help. When I approached the authorities, they said what they needed most was garbage collectors. This shows that those managing the response did not fully understand how to utilize specialized skills.”*

For example, university students and faculty members responded to calls for support and arrived in affected areas to assist with debris removal. While well-intentioned, some groups acted independently and did not coordinate with the municipality.

*“Some groups decided on their own where to work, only to discover that another team was already covering the same area, while areas with urgent needs were left unattended.”*

This lack of coordination also created logistical bottlenecks, especially when humanitarian aid deliveries arrived simultaneously in the same locations, leading to congestion and inefficiencies.

Many of these volunteers responded to public calls for support issued by government officials, ministries, and local authorities. However, upon arrival in the affected areas, they often failed to formally introduce themselves to local response coordinators or municipal authorities. As a result, their presence, capacity, and availability remained unknown to those leading the operational response.

*“Often, these groups arrived but didn’t report to anyone. Local authorities had no idea that 50 students had come to help or for how long they were available. This made it very difficult to assign tasks or plan efficiently.”*

To improve coordination in future emergencies, public appeals for volunteer support should include clear instructions and protocols. Volunteers should be directed to register with a designated local authority upon arrival, provide basic information about their team size, availability, skillsets, and tools (if any), and be briefed on safety protocols and work

priorities.

*“If the initial calls for volunteers had included practical guidance—like ‘be prepared, bring your own gloves, boots, and tools’—both the volunteers and response teams would have been better positioned to help effectively.”*

Clear pre-deployment guidance and structured onboarding of ad-hoc volunteers can enhance safety, reduce duplication, and ensure that spontaneous solidarity is translated into meaningful, coordinated action.

Spontaneous volunteerism cannot be considered a form of preparedness, especially since, when uncoordinated, it can hinder an effective disaster response. The absence of a structured volunteer management system in Armenia poses a significant barrier to effective disaster response. Moving from reactive mobilization to formalized, trained, and coordinated volunteer engagement is essential for transforming community resilience from aspiration to practice.

### Challenges in Humanitarian Assistance Management

During the response to the flood, it became evident that the effectiveness and safety of humanitarian aid distribution significantly depended on the degree of coordination between donors, NGOs, and local authorities.

Those charitable actors and organizations who collaborated closely with the municipality and had access to up-to-date information from community staff were able to deliver assistance smoothly and fairly. However, when NGOs or individuals bypassed official channels and distributed aid directly to residents, without engaging local authorities, serious challenges emerged. In some cases, this led to disputes and tensions among residents, unequal access to support.

*“Organizations that didn’t coordinate with us sometimes handed out aid directly in courtyards, leading to arguments and even hostility among residents. I even confronted a family for accepting an aid box of unknown origin, not knowing where it came from.”*

Weakly coordinated aid distributions also raise potential safety and public health risks.

*“There’s a security risk - someone could distribute food that causes poisoning, or hand out medication that could harm. Residents may not realize the dangers of accepting aid from unknown sources. In such cases, coordination with local authorities and police is crucial.”*

While humanitarian organizations provided valuable support, some initiatives faced implementation gaps that caused frustration among affected residents.

*“My neighbor, who was only slightly affected by the flood, received a lot of support from various organizations, while my mother, who lives alone, received nothing.”*

This example underscores how incomplete, or inconsistent aid delivery can erode trust and lead to grievances, even when initial support is appreciated. Clear communication, coordination and follow-through are essential to maintain transparency and community confidence in humanitarian programs.

### Psychological support

Despite positive efforts mentioned in the Relevance section, significant gaps remain in Armenia’s psychosocial support system.

*“The rapid needs assessment tool allowed for the assessment of immediate psychological support needs. However, resources at MoLSA were not well aligned with the scale of mental health needs in the affected areas. At that time, we did not have significant capacity to provide comprehensive psychological assistance.”*

The country faces a severe shortage of clinically trained psychologists. Most professionals working in the field are not medical psychologists but rather have backgrounds in pedagogy or general counseling. As one key informant observed:

*“Let’s be honest, in Armenia you can count the number of medical psychologists on one hand. Most of the ‘psychologists’ here have*

backgrounds in pedagogy or other fields, not in clinical or medical psychology. As a profession, it’s only now starting to develop.”

Mental health support during the flood response thus relied heavily on informal, community-based approaches, supplemented by NGOs like ARCS and limited government resources. While these measures were effective in the short term, they underscore the urgent need for systemic investment in professional, medical-grade psychological services and training.

This experience highlights that psychosocial care is not only critical for affected populations but also for frontline responders and municipal staff, who often bear the emotional weight of managing disasters while directly supporting their own communities.

### Professional and Perceptual Gaps in Social Work During Emergency Response

The 2024 flood response in Armenia revealed significant shortcomings in both the operational delivery and public perception of social work. These issues hindered effective case management, created unrealistic expectations among some beneficiaries, and blurred the professional role of social workers in disaster settings.

A central challenge was the widespread misconception of social workers as aid distributors, rather than trained professionals responsible for conducting needs assessments and targeting assistance based on specific eligibility criteria.

*“People often perceive social workers simply as those who distribute aid, not as specialists who conduct needs assessments and determine eligibility.”*

This limited understanding led to friction when professional decisions, such as closing a case or discontinuing aid, were not accepted or understood by recipients. The lack of clarity surrounding the social worker’s role diminished their authority and effectiveness in the field.

The inability of some social workers to clearly

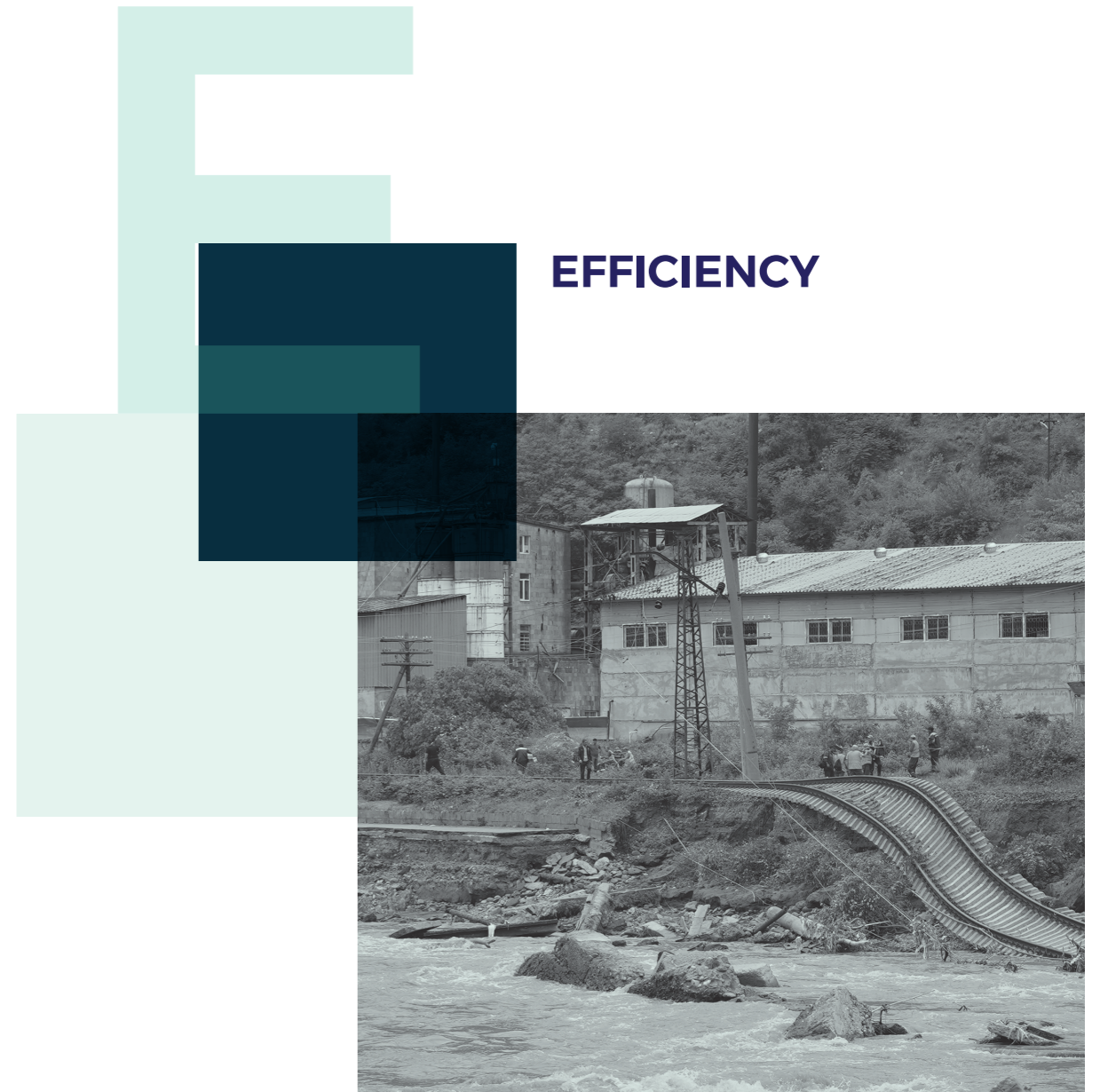
communicate assessment outcomes further strained relationships with the affected population. Beneficiaries who felt entitled to prolonged support often reacted negatively to being deemed no longer in need.

### Conclusion

In the immediate phase, effectiveness of the 2024 flood response was visible in the prevention of mass casualties, rapid mobilization of rescue teams, and restoration of essential services. Evacuation of around 2,400 people, construction of temporary bridges, and restoration of utilities such as electricity and water allowed communities to stabilize quickly. Similarly, cash-based assistance, hotel accommodation, voucher schemes, and volunteer mobilization enabled affected families to meet immediate needs and regain a sense of safety and dignity.

However, effectiveness diminished as the response transitioned into recovery. Short-term infrastructure repairs, while critical, were often ad hoc and not sufficiently resilient, with some temporary bridges later destroyed by subsequent floods. Gaps in professional expertise, equipment for rescue workers, and contingency planning limited the capacity of local authorities. Compensation processes, though widely implemented, were hindered by perceived inequities - particularly for agricultural and environmentally damaged lands. Rental assistance ended prematurely, leaving some displaced households without safe alternatives, while psychosocial and health support remained uneven and under-resourced.

At a systemic level, the lack of robust baseline data, weak integration of disaster risk reduction into municipal practice, insufficient early warning systems, and fragmented volunteer management undermined the consistency and equity of the response. Communities often relied on solidarity, improvisation, and external aid rather than on institutional preparedness. These shortcomings reveal that while immediate objectives of saving lives and stabilizing conditions were largely met, the response fell short in addressing deeper vulnerabilities, ensuring durable recovery, and building long-term resilience.



**Were resources (funds, time, and personnel) utilized optimally to deliver timely and impactful results? How effective was coordination among stakeholders in avoiding duplication and maximizing resources?**

Efficiency was both a strength and weakness. Volunteer mobilization and community self-help bridged institutional gaps in the early hours and days, but systemic inefficiencies emerged due to uncoordinated aid, lack of digital tracking, and limited pre-disaster planning.

The Armenia 2024 flood response proved that local strengths, such as spontaneous solidarity and adaptive logistics, offer a foundation, but these must be scaffolded by institutional commitment, data-driven decision-making, and a shift from reaction to prevention.

### Structural Changes

The flood occurred shortly after the dissolution of the Ministry of Emergency Situations and the establishment of the Ministry of Internal Affairs<sup>19</sup>. Given the limited time since this structural transition, existing coordination mechanisms were still in the process of adjustment, which contributed to disruptions in response efforts. Consequently, leadership of the response was assigned to the Ministry of Territorial Administration and Infrastructure. As a result, the Disaster Management Country Team did not function as intended, and engagement with NGOs and other partners occurred on an ad hoc rather than systematic basis.

Furthermore, established collaboration mechanisms between national authorities and the UN system were disrupted. In response to these challenges, the UN and national authorities initiated a review and revitalization of the inter-agency coordination system. A key outcome of this process has been the development of a new Contingency Plan, created in close consultation with the

<sup>19</sup> <https://mia.gov.am/%d5%b6%d5%a1%d5%ad%d5%a1%d6%80%d5%a1%d6%80%d5%b8%d6%82%d5%a9%d5%b5%d5%b8%d6%82%d5%b6/>

Ministry of Internal Affairs and other relevant ministries. These consultations have informed the updated plan, which now serves as a foundation for re-establishing a coherent and functional cooperation framework.

### Timely Assistance

Among factors affecting the efficiency of the flood response was the absence of standardized, well-structured data collection formats and processes. Early in the response, beneficiary list templates and legal documentation forms were incomplete and poorly designed, necessitating repeated follow-ups with affected individuals.

*“There were issues with how the formats were designed. If we had created a more comprehensive template from the start, we wouldn’t have had to go back to the same people multiple times. We submitted the document, and then two days later we were asked to add another data point.”*

Technical limitations in municipalities compounded these inefficiencies. Outdated or incompatible computers, some decades old, were used to upload forms, often in areas with weak or no internet connectivity.

*“We had to upload all these forms using different programs, on computers that weren’t compatible. In some areas, there was no internet at all; in others, the devices were so outdated that basic tasks became time-consuming.”*

These combined challenges - flawed form design, lack of interoperability, and inadequate technology - resulted in significant delays in aid disbursement and heightened the risk of errors in data entry and processing as well as unnecessary administrative burdens for local teams already operating under pressure.

Meanwhile, FGDs participants mentioned that while state-led support was slowed by administrative and documentation requirements, some humanitarian organizations, e.g. ARCS, Acted, were among the first to provide visible assistance:

*“Acted was among the first organizations to*

*provide 200,000 drams in support.”*

While NGOs were able to deliver rapid relief, the state’s slower, bureaucratic processes undermined the timeliness of its response during the critical initial phase, eroding public confidence and further highlighting the need for improved efficiency in disaster response systems.

### Donor engagement and Funding

A major factor limiting the efficiency and reach of the flood response was reduced donor funding and diminished international attention. Despite Armenia’s recent absorption of over 100,000 displaced persons, the floods were not classified as a high-priority emergency, which restricted operational funding for NGOs and UN agencies reliant on rapid, flexible resources.

*“The donor community’s shifting focus away from Armenia—toward other global crises”*

*“Our emergency response headquarters even organized site visits with ambassadors to advocate for funding. But it didn’t work. Donors didn’t consider this flood a major emergency.”*

Few humanitarian organizations were able to scale up operations with international donor funding. Those that did largely had to align with government-led cash programs, limiting flexibility and local adaptation. Institutional donors, including the EU, routed most funding through state channels, sidelining civil society.

*“Even when we tried to fundraise, donors told us this wasn’t a ‘large enough’ crisis. Any available funds were directed through the state.”*

*“We faced significant challenges in fundraising for this crisis and achieved limited success. Our urgent response was made possible primarily thanks to the Start Fund’s immediate support.”*

This highlights the need for more decentralized funding models that empower local actors, especially in crises that fall below global thresholds but have severe local impacts.

### Trust and Outreach

One of the significant challenges at the outset of the flood response was a deep-rooted lack of public trust in government assistance mechanisms.

*“Floods of this scale hadn’t happened before, but there had been river overflows. And never had the state provided direct financial assistance. So naturally, there was no trust in the beginning.”*

This distrust had a direct impact on the efficiency of the response. Many residents refused to submit applications, assuming that no real support would follow. Some were reluctant even to provide documentation or bank account details, and in some cases, people submitted random account numbers belonging to friends or relatives, unsure whether the process was legitimate. There was even a casual attitude toward photo documentation and damage reporting.

*“People didn’t believe they would receive anything. They wouldn’t even come to apply, we had to actively guide them. They were unprepared, doubtful, and skeptical that any state support would materialize.”*

This severely hampered initial operations. Field teams had to invest significant time and effort encouraging participation, correcting misinformation, and building confidence among affected households.

*“Until the first beneficiary actually received support, no one believed it. But once that first transfer was made, people finally realized the government was serious about helping - whether or not they were satisfied with the amount. After that, people were much more willing to cooperate and submit their paperwork.”*

### Phased Compensation Disbursement Ensuring Accountability

The government implemented a phased compensation system to ensure funds were used appropriately for reconstruction. This approach prevented misuse of funds and ensured that payments were tied to verified

progress.

*“Houses were repaired step by step. Photos were taken and sent for verification, then the second, third and fourth installments were transferred. Everyone is still receiving funds in phases, and checks must be submitted as evidence.”*

*“It was a very good program. If the money had been given all at once, half the neighborhood would never have been rebuilt.”*

This demonstrates how linking disbursements to documented reconstruction milestones improved accountability and effectiveness, while ensuring that aid translated into tangible recovery outcomes.

### Technical Capacity and Infrastructure

One of the indicators of inefficiency during the 2024 flood response was the inappropriate use of materials and methods in protecting critical infrastructure. When the Debed River overflowed, its waters eroded riverbanks and damaged nearby infrastructure.

*“Instead of using large rocks to create a real barrier, we pour in a few cubic meters of small stones or sand, which the water simply washes away. Not only does this fail to protect the area, it can actually make the debris flow even more destructive.”*

This was not simply a matter of negligence but reflected systemic gaps in technical capacity. Emergency infrastructure planning and response often lacked qualified civil or environmental engineering expertise. Without professional oversight, resources were applied ineffectively, and preventable damage occurred.

*“This is everyone’s problem - from road construction to engaging qualified experts in emergency response. It comes down to a lack of knowledge and ineffective disaster risk management systems. It is a systemic problem”*

These technical shortcomings were also evident in post-disaster infrastructure planning. Of

28 modern bridges destroyed during the floods, the historic 8th-century stone bridge in Sanahin largely survived, sustaining only minor damage to its base. This stark contrast raised questions about the resilience of modern construction and the sustainability of infrastructure investments.

### Adaptive Resource Management and Pre-Positioned Stocks

During the June 2024 Alaverdi flood response, a key efficiency measure was the rapid redeployment of pre-positioned relief stocks from Goris, originally assembled after the September 2023 Nagorno-Karabakh displacement. These included quality non-food items (NFI) and food items.

*“Our first batch of assistance came from the Goris warehouse. The clothing was appropriate, and the food was fine, except for a small expiry date issue with the oil.”*

When some cooking oil was found near expiry, it was withheld from distribution in line with food safety standards and sold via public auction to a certified biofuel company. Proceeds were added to the municipal budget, funding additional recovery support. This adaptive approach balanced urgency, safety, and transparency, turning a potential liability into community benefit and illustrating how localized, pragmatic decisions can strengthen response efficiency.

At the same time a major challenge was the inability to safely store large quantities of food aid.

*“We were ordered to accept large amounts of dairy products, but without refrigeration, some began spoiling within a day.”*

To cope, the municipality borrowed refrigerator space from local shopkeepers and repurposed community facilities, such as a sports school, which suspended children’s classes for months.

This highlights how the absence of climate-appropriate, dedicated storage reduced efficiency, caused food losses, and disrupted normal community functions. Properly

equipped facilities and relevant mechanisms are essential to ensure aid remains usable and response operations avoid creating secondary disruptions.

### Volunteer Engagement

The early phase of the 2024 flood response in Armenia was marked by a high degree of efficiency, largely driven by local initiative and volunteer mobilization. Community action filled critical gaps in the immediate aftermath of the disaster, enabling swift life-saving interventions before formal structures were fully activated. Among the most notable examples was the Lore Rescue Team, which demonstrated high levels of organization, adaptability and speed.

According to multiple participants, Lore stood out for its high level of professionalism, especially in terms of responsiveness and familiarity with terrain. Their agility in navigating crisis conditions was a key asset during the first 48-72 hours of the emergency.

In parallel, the ARCS activated its volunteer network during the initial emergency phase, contributing significantly to early relief efforts.

As conditions stabilized and the response transitioned into the recovery phase, municipality-led volunteer groups were mobilized to assist with clean-up operations such as removing mud and debris, helping to restore a sense of normalcy in affected areas.

While spontaneous volunteerism can rapidly fill early gaps, long-term efficiency requires institutional mechanisms and legal frameworks to sustain, coordinate, and support these efforts as part of a cohesive disaster response system.

### The Role of DRR National Platform of Armenia (ARNAP) in Coordinated Emergency Response

The DRR National Platform of Armenia (ARNAP), established in 2010 and operational since 2014–2015, has become a key hub for DRM in Armenia. It coordinates specialized thematic working groups focused on priorities such

as community-level risk assessments, early warning systems, and alert modernization. ARNAP’s collaborative model leverages voluntary contributions from experts and partners, enabling cost-effective development of tools like early warning concepts, educational modules, and regulatory frameworks. It also serves as a national forum for policy consultation and supports major assessments like the MIRA and PDNA, benefiting from its strong community-level network that ensures rapid local engagement during fieldwork.

*“There is now a thematic group dedicated to community-level assessments and another focused on upgrading early warning systems.”*

*“The platform calls on partners - some lead on education modules, others on workshops, or provide experts or financial support.”*

However, ARNAP’s role in flood response remained underutilized. Despite its charter mandating support to national authorities during crises, unclear institutional roles and the absence of a defined national response strategy have limited its operational involvement.

*“Our charter does include a provision for supporting authorized agencies in response activities. But for this to work, there must be a concrete assignment of responsibilities at the national level, a clear strategy for emergency response that specifies the roles of each structure.”*

Better integration of ARNAP’s expertise and networks into emergency operations could significantly improve response efficiency, bridging gaps between national coordination and community-level implementation.

### Alignment with State-Led Cash Programming

In response to the evolving needs, the government shifted toward a state-led cash compensation program, replicating a model used during the 2023 displacement of ethnic Armenians from Nagorno-Karabakh. The state took a leadership role in designing and delivering financial aid and invited humanitarian organizations to align their resources and

programming within this framework.

*“As in the case of the Artsakh crisis, the government developed a compensation plan. In such situations, the state usually calls on organizations to integrate their efforts with its cash programming. This is the most dignified form of assistance.”*

To safeguard coherence and avoid fragmentation, the government issued clear guidance through formal working groups. Humanitarian actors were encouraged to channel any available resources through the national program, rather than implement independent, parallel interventions.

*“We had working groups, and calls were issued: if you have resources to assist, channel them into the government’s cash program.”*

This approach reflects a growing global trend in humanitarian-development coherence, particularly the use of cash-based assistance for its efficiency, dignity, and flexibility. However, such centralization places greater demands on coordination systems and underscores the importance of robust communication protocols, clearly defined roles for all actors, and mutual trust between state authorities and humanitarian partners.

While the model improved cost-efficiency and reduced duplication, its success was contingent on effective planning, transparency, and inclusive engagement - areas that remain in need of further strengthening.

## Coordination

### Internal coordination

Internal role clarity among local responders was another key factor affecting operational efficiency of the local self-governments. The first week of response was described by key informants as chaotic, despite strong community solidarity. With no predefined incident management system in place, many responders, including social workers and volunteers, were uncertain about their responsibilities. The lack of predefined task allocation delayed decision-making and reduced early operational impact.

*“In the beginning, it was quite chaotic, no one really knew who was responsible for what. I would come to work and wonder: what should I do today, whom should I help?”*

*“When we spoke to communities after the event, there were many cases where local actors simply took charge spontaneously, based on the needs at the time.”*

*“Looking back, none of us knew exactly what we were supposed to do. If we had defined responsibilities and task assignments from day one, like, ‘you package food, you distribute tools’, our work would have been faster and more effective.”*

While legislative reform is underway, the lack of an integrated national response plan, with roles and authorities mapped in advance, continues to hinder coordination, resource allocation, and efficient deployment during crises.

### External Coordination and Communication

The 2024 flood response underscored the importance of centralized municipal coordination and clear role allocation for an efficient disaster response. When empowered, municipalities effectively aligned humanitarian activities with real needs, optimized resources, and minimized duplication.

*“In Alaverdi, municipal leadership managed to take charge of coordination, preventing external actors from implementing activities or distributing aid without their agreement... I have always been against ad hoc distribution efforts that are not coordinated by the appropriate authorities.”*

This approach was validated by partners:

*“Local governments understood where aid was needed and helped direct resources effectively.”*

Municipalities also acted as the first contact for international actors, vetting unfamiliar organizations through national channels before reintegrating them locally. This

safeguarded accountability while streamlining operations.

While the centralized approach streamlined response efforts in some municipalities, its effectiveness varied across locations. Coordination often weakened as the emergency phase shifted to early recovery, leading to inequities in aid distribution. In some areas, humanitarian actors operated in parallel to local systems, further fragmenting the response.

*“Dissatisfaction arises when two families, one severely affected and one less so, receive the same level of support, or when one benefits from both state and NGO aid while the other receives none. Without clear, sustained coordination, such inequities persist.”*

Maintaining coordination throughout all phases is essential for accurate targeting, accountability, and efficient resource use. Local authorities, with real-time knowledge of community needs, are key to this process.

*“Humanitarian actors should share recipient lists with local governments, enabling follow-up and fair, needs-based distribution.”*

A lack of crisis communication between local services also caused inefficiencies. For example, residents requested medical assistance from the municipality, unaware that hospitals were already providing it. The municipality, also uninformed, sought alternative solutions unnecessarily:

*“People would call us for help, and we tried to assist - only to find hospitals were already handling it. Without a unified headquarters, information sharing was missing.”*

The absence of a fully functional Emergency Operations Center with representation from all key local services -health, social protection, utilities, limited coordination and response speed.

Another challenge affecting the efficiency of the flood response was the duplication of needs assessments conducted separately by different organizations, e.g. the MoLSA, ARCS and Lore/Acted. While each agency sought

to gather data for their respective mandates, these parallel assessments resulted in consuming time and resources and creating frustration among affected residents.

Instead of leveraging shared data systems or coordinating assessment teams, agencies often worked in isolation. This not only delayed aid delivery but also diverted human and logistical resources from other critical response activities. This highlighted the need for better resource mapping, emergency response management and crisis communication, both internal and external, to avoid duplication and wasted effort.

### Prioritization of Support and Resource Efficiency: The Case of Tavush

An illustrative example of efficiency in resource allocation came from Tavush, where local leadership prioritized aid for the hardest-hit areas. As it was mentioned by the KII, recognizing that Alaverdi’s needs were greater than those of their own community, the municipal head formally informed the emergency operations headquarters and requested that resources be redirected to Alaverdi residents.

*“The need in Alaverdi was greater, and our municipal leader asked the emergency headquarters to prioritize support for Alaverdi over our residents.”*

This proactive approach demonstrates how clear communication and prioritization at the municipal level can optimize resource use and ensure assistance is directed where it is most needed.

### Data sharing systems

The floods highlighted significant inefficiencies in data access and inter-agency cooperation at the local level. Even within the same community, municipalities lacked mechanisms to collaborate effectively with organizations holding relevant information, such as hospitals or the USS.

*“If we need data on residents with disabilities, the hospital may have it in an unstructured form, while the Unified Social*

*Service holds partial records. To obtain information from the social service, we must send an official letter and wait a long time, often receiving only aggregate figures like “1,500 people” rather than specific names. Getting individual-level data is extremely difficult.”*

These bureaucratic hurdles significantly delayed decision-making and targeting during the flood response. The absence of legal provisions obliging entities like the USS and municipalities to collaborate further exacerbated the problem.

*“The ministry follows its own policies, and the municipality follows its own. There is no legal framework requiring mutual cooperation. Even if paperwork remains necessary, it should not be so bureaucratic that officials are forced to physically visit every settlement to collect data manually.”*

This case underscores how fragmented data systems and rigid administrative processes reduce operational efficiency in emergencies. Establishing clearer legal and procedural frameworks for information-sharing, while safeguarding privacy, would enable faster, better-targeted responses during future disasters.

Lack of integration was also evident in municipality-NGO cooperation, where the absence of a shared coordination platform resulted in duplication, gaps, and community tensions. While civil society actors often mobilized faster than government agencies, the lack of real-time beneficiary data or information-sharing mechanisms undermined efficiency.

*“Before state assistance arrived, NGOs responded faster and secured funds more quickly. However, because NGOs cannot cover all affected households and often lacked accurate beneficiary data, this created tensions within communities. Families saw others receiving aid while they did not, leading to resentment.”*

*“There was no platform where NGOs could see what the community needed. As a result, the support sometimes was not targeted and based on real needs - some households got*

*repeated aid, while others received nothing.”*

This highlights how insufficient information-sharing not only delayed assistance but also eroded equity and trust within communities, emphasizing the need for integrated platforms/data systems to align government and NGO efforts in future responses.

Beyond the emergency context, municipalities face structural weaknesses in data inventory and digital record management. Many communities lack comprehensive, accurate, and up-to-date databases of individuals and households - essential for guiding effective response and recovery planning. Current practices rely on fragmented, reactive datasets, often tailored to donor-specific requirements, which are difficult to consolidate during a crisis.

As a result, municipalities struggle to:

- Quickly identify vulnerable households by category (e.g., elderly, disabled, single-headed families).
- Map sectoral impacts (e.g., agriculture losses, affected businesses).
- Align response measures with actual needs.

*“Our existing databases have historically been developed reactively, often tailored to the specific requirements of each humanitarian or development partner. This has led to fragmented and overlapping datasets, without clear segmentation by vulnerability category or need type.”*

Municipalities are currently working to improve and consolidate their databases, recognizing that stable, interoperable digital data systems are essential not only for social protection, but also for other key sectors. This would enable rapid sectoral-needs assessments and more targeted support during emergencies.

### **Coordination Among Humanitarian Actors**

As per respondents the coordination among international actors and other type of NGOs

remained limited. Although some informal collaboration occurred, often based on pre-existing relationships from previous initiatives, there was no centralized or formal inter-agency coordination mechanism in place.

*“We met some of our international partners on the ground, and while we knew each other from previous projects, we discussed things informally, there was unfortunately no formal coordination process.”*

This lack of structured coordination became more evident during the “lessons learned” workshop organized by ARCS at the end of their emergency response program. While the event involved multiple partners and was intended to reflect on challenges and successes, one key conclusion was the need to improve coordination beyond government actors.

*“Besides the cooperation with local and central authorities, it became clear that we need more effective coordination with other stakeholders.”*

For example, parallel needs assessments were conducted independently by different agencies. The UN used the MIRA/ARIANA toolkit, while ARCS used its own tool aligned with its mandate and operational methods. Another needs assessment was done by Lore/Acted. Although the organizations eventually exchanged findings, the lack of joint planning and harmonization created inefficiencies.

*“We shared our findings with them, and they did the same. But I strongly believe it would have been much more efficient to coordinate from the beginning, to avoid duplication and ensure affected people weren’t asked the same questions multiple times by different organizations.”*

This fragmentation also had implications for affected communities, who were at risk of survey fatigue and growing frustration.

*“People began asking, ‘You’re all here asking questions, but who’s actually going to help us?’ Joint teams with harmonized methodologies would have been much more effective.”*

During the flood response, efforts were made to initiate coordination and reduce overlap in humanitarian interventions through a 5W matrix - a widely used coordination tool designed to document Who does What, Where, When, and for Whom. The goal was to enhance efficiency by identifying potential overlaps and fostering complementarity among humanitarian actors.

*“We had a 5W document where all partners were supposed to record which areas they were working in, their budgets, target groups, and so on, so that we could complement rather than duplicate each other’s efforts.”*

However, in practice, use of the 5W system was inconsistent. While some organizations actively submitted information, others did not engage meaningfully. Crucially, there was no sustained facilitation or oversight to ensure full participation and accountability.

Unlike prior emergencies, such as the 2023 displacement response for ethnic Armenians from Nagorno-Karabakh, the flood response featured only two formal coordination meetings, after which momentum was lost and inter-agency collaboration significantly declined.

*“In the flood response, we had two meetings, and that was it. Some organizations were not engaged at all. This may have been due to disinterest or the lack of a robust coordination framework.”*

The lack of structured collaboration led to duplication of efforts and some blind spots which overall undermined the efficient use of resources.

In contrast, lessons from the Nagorno-Karabakh displacement response illustrate how functioning inter-agency working groups, supported by regular meetings and a clear coordination lead, can evolve from simple information exchange to strategic alignment, greatly enhancing the effectiveness and efficiency of aid delivery.

### **Risk Assessment Utilization**

In 2021, a climate risk assessment for Alaverdi

and the Debed River basin identified flash flood hazard as one of the main potential risks that can negatively affect the community and was integrated into the DRM plan. Many of these risks materialized during the 2024 floods, yet the findings were never acted upon.

*“All these issues were identified, and recommendations were submitted. The report was shared with municipal leadership, but nothing was utilized during the flood.”*

This case underscores a systemic efficiency gap: technical assessments are often produced but not operationalized, resulting in missed opportunities to reduce disaster impacts and response costs. This phenomenon often referred to in international recovery literature as “program evaporation” - the gradual disappearance of program results after implementation mainly because of the lack of transfer of relevant information during the local administration changes after elections, lack of financial resources and legislative gaps.

*“We’ve done studies, delivered reports, developed plans... but when you return months later, no one remembers. It’s as if it never happened.”*

Since 2021, DRM plans were developed in 27 municipalities. Based on the lessons learned from the 2024 flood, there is a need to update those plans with the integration of risk mitigation and post disaster recovery actions that were missing from the previous ones. However, without integration into local and national development plans, budget allocations, and governance processes, these assessments remain underutilized and fail to enhance preparedness efficiency. This issue will be addressed through the implementation of newly adopted law on DRM and Population Protection by establishment of relevant mechanisms defined by sub-laws.

*“It’s not enough for municipalities to receive these reports. Relevant ministries - territorial administration, internal affairs, environment - must also integrate the findings into planning and investments.”*

Local leaders often acknowledge risks but deprioritize action due to limited resources

or political constraints and legislative gaps, favoring reactive compensation over preventive investment.

*“Community leaders say: ‘We recognize the risks, but we lack the time and means. If something happens, we’ll compensate for losses.’ Preventive measures are always deprioritized.”*

A reactive approach contributes to inefficiencies, as the costs associated with post-disaster recovery significantly exceed those of proactive preparedness and risk reduction measures.

### Conclusion

Volunteer mobilization and community solidarity played a pivotal role in bridging critical gaps during the early days of the flood response. The coordinated efforts of Lore and the ARCS in addressing equipment shortages and technical limitations highlighted how the humanitarian sector can effectively complement public institutions - an approach that offers a model for replication in future emergencies. Local rescue teams, civil society actors, and host families were instrumental in enabling rapid life-saving interventions, while adaptive logistics, voucher-based aid, and phased cash disbursements demonstrated flexible, needs-based, and accountable resource use.

At the same time, systemic inefficiencies undermined performance, including delays from flawed data systems, fragmented coordination, and limited pre-disaster planning. Structural transitions, limited donor engagement, and public mistrust further slowed operations, while technical weaknesses and underutilized DRR structures left risk knowledge unacted upon. These inefficiencies reduced the overall cost-effectiveness of the response despite notable local strengths.



## LIMITATIONS



### What measurable positive or negative changes resulted from the response efforts on the affected communities and overall recovery? Did the efforts contribute to strengthening local capacities and disaster resilience?

The Impact criterion under the OECD-DAC evaluation framework assesses the wider effects of the flood response. In the case of the 2024 flood disaster in Armenia, both immediate humanitarian successes and persistent systemic challenges were observed. The evidence revealed a complex landscape of short-term mitigation success, ongoing recovery gaps, and transformative but uneven institutional and behavioral shifts.

### Prevention of Fatalities and Rapid Restoration of Services

One of the most significant immediate achievements of the flood response was the prevention of extensive loss of life through timely evacuations and community-led efforts. Around 2400<sup>20</sup> residents were safely temporarily evacuated, and essential services such as transport, schooling, and commerce resumed within days or weeks in some areas.

*“Only 4 lives were lost because the people acted quickly. The evacuation happened almost immediately, and neighbors helped each other.”*

This rapid stabilization was bolstered by strong community solidarity, local leadership, and support from different networks. Infrastructure repairs, such as provisional bridges and road access, allowed isolated communities to reconnect, enabling the delivery of aid and restoration of basic mobility.

### Behavioral Shifts

While the flood brought significant damage, it also served as “impulse for sobriety” that heightened public and institutional awareness of disaster risk management. The critical

<sup>20</sup> Armenia Floods May 2024- Post Disaster Needs Assessment, October 2024, <https://www.undp.org/armenia/publications/armenia-floods-may-2024-post-disaster-needs-assessment>

impact of the flood was a shift in community attitudes toward unregulated construction in hazardous zones and a heightened awareness of environmental stewardship.

According to respondents, there has been a noticeable increase in legal awareness among residents. Many who previously faced unresolved property documentation issues, and thus challenges in accessing compensation, are now actively seeking to formalize ownership and legalize unregistered buildings. Years of informal construction without proper documentation had left many exposed to risk, the disaster highlighted the importance of regulatory compliance for access to state support. This is a significant positive change.

*“We are finally seeing that... the desire of people to do new construction at the mouth of the river or to absorb new areas on the riverbank has come down.”*

In the aftermath, a compliance and enforcement mechanism has been strengthened as well. Municipalities are now taking proactive steps to stop unpermitted construction in risk-prone areas, and newly initiated work is subjected to rigorous inspection and approval procedures.

*“Our position is that illegal construction should be halted, even in remote areas... We are not doing people a favor by letting them build in hazardous locations, we are actually putting them at greater risk.”*

*“We’re not just fixing past mistakes. We’re making sure they don’t repeat. The goal is not to keep solving problems once they happen, but to ensure they don’t arise in the first place.”*

As it was noted by key informants, ongoing multi-phase riverbed cleaning works were initiated last year and are continuing this year, with further phases planned. River deepening and cleaning have been implemented and is implemented in several critical locations to restore flow capacity and reduce future flood risk, aligning with international best practice in flood risk management.

Even in border communities like Noyemberyan, where security and defense-related concerns

have historically dominated as local priorities and most risk reduction efforts, including public education and preparedness activities, have traditionally focused on national border security and safety threats, the 2024 flood served as a critical turning point in local risk awareness, demonstrating that natural hazards can pose equally severe threats to the safety and well-being of the population.

assistance not only restored damaged homes but, in some cases, enabled upgrades that improved housing quality and resilience, aligning with “build back better” principles. However, recovery outcomes were uneven. Some households suffered losses that far exceeded the compensation received, creating disparities in recovery trajectories.

*“I had a fully built, furnished house - everyone knows it. And this money is not enough to get back to what I had.”*

### Long-Term Community Development

#### Infrastructure Recovery and Uneven Risk Reduction

In Alaverdi, one of the communities hardest hit by the flood, a comprehensive recovery and development package is now being implemented. This includes the paving of inner-yard and access roads, modernization of sewage systems, and upgrades to drinking water infrastructure, directly improving living conditions and reducing future health and sanitation risks.

*“These investments will not only repair the damage caused by the flood but also improve the overall quality of life in the most affected communities.”*

In Sanahin all programs, tenders, and contracts have been completed, with government financing planned across four phases, of which the first installment has already been disbursed.

*“We’ve been drinking from a natural spring since Tsar Nicholas time. Lab tests showed it wasn’t even potable, but we had no alternative. The basins were unprotected; you could even find dead animals in them. Finally, we’re getting a new water supply. Those century-old pipes had reached their limit, and this project will finally solve a problem we’ve lived with for generations.”*

*“We’re starting asphalt works on Tumanyan Street from scratch. This year, we’ve been committed to resolving all disaster-related infrastructure issues in the community. Planned works also include entrance repairs and roof reconstruction*

*“When the flood happened, it showed us that beyond security threats, the community is vulnerable to other serious risks as well. That was a wake-up call.”*

An unexpected outcome of the flood response has been a marked improvement in environmental cleanliness and municipal oversight, particularly along riverbanks:

*“The mayor of Karkop himself now pays close attention to riverbank cleanliness. He might even drive by, spot trash, and immediately call the community head saying: ‘What is this? Who dumped it? Make sure it’s cleaned up.’”*

These changes reflect the early stages of a broader cultural transition - from reactive to preventive disaster governance. Riverbed cleaning, legal formalization of properties, and adherence to construction regulations are becoming more common, suggesting an emerging community resilience dynamic aligned with Sendai Framework principles<sup>21</sup>.

### Housing recovery

In some case the compensation provided to affected households contributed directly to housing recovery and visible improvements in living conditions, reflecting a tangible short-term impact of the response.

*“They received a total of 5.8 million AMD. Now the house is being rebuilt - European-style windows installed, heating systems added. You can see real progress, the house is taking shape.”*

This example demonstrates how financial

<sup>21</sup> Sendai Framework for Disaster Risk Reduction 2015-2030, <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>

*in damaged residential buildings in Sanahin Station.”*

Flood recovery efforts in the affected communities extended beyond housing and infrastructure, contributing to significant improvements in educational and childcare facilities:

*“The kindergarten was fully renovated. The school was completely repaired and equipped with the best resources. The kindergarten now has entirely new facilities.”*

These interventions had a notable positive impact on community recovery, helping restore essential services, improving learning environments, and addressing the psychosocial needs of children and staff after the disaster. From a DAC impact perspective, the efforts demonstrate a transition from emergency recovery to longer-term development, with tangible improvements in public services and infrastructure resilience.

Nevertheless, the long-term impact of the flood response has been constrained by ongoing challenges in infrastructure protection and the uneven implementation of risk reduction measures. As it is reported by participants, in some cases, repairs were superficial, damaged roads were filled in and repaved rather than rebuilt with reinforced, flood-resilient structures. This has left vital transportation routes exposed to future hazards, reducing the sustainability of the response.

*“To this day, the main roads along the Debed River in Alaverdi are still without proper flood barriers. If another flood occurs, the same sections of road will be destroyed again.”*

Progress has also been regionally uneven. While some channels have been cleaned and bridges restored in one area, the other ones remain largely untouched:

*“While some flood channel cleaning has begun in the Lori region, no comparable efforts are made in the neighboring Tavush region.”*

The failure to implement even basic mitigation steps, such as temporary flood walls or

reinforcements, has left communities at risk. A clear example is found in road segments where trucks are forced to use the opposite lane to avoid dangerously sunken sections:

*“It’s not normal for freight trucks to use highways while avoiding sunken areas, knowing the road could collapse into the river beneath them at any moment.”*

Stakeholders recognize that international financing for large-scale infrastructure projects often involves long timelines, which highlights the importance of interim risk reduction measures. It remains essential for the government to take timely steps to protect lives and assets in the meantime. It remains the state’s responsibility to implement interim risk reduction measures to protect lives and assets.

*“We are a state for a reason: to minimize risks before international funds or major projects arrive... Temporary barriers or protective measures are justified expenditures.”*

### Aging Infrastructure

The flood also underscored Armenia’s deeper structural vulnerability: a deteriorating Soviet-era building stock, with many residential, public, and industrial buildings dating from a time before modern resilience standards.

*“It’s no secret that the majority of Armenia’s building stock... is outdated.”*

*“The key problem we encountered during the flood was the poor condition of residential buildings from a seismic perspective—they are dilapidated and need to be either deeply renovated or demolished and rebuilt.”*

From an impact perspective, these structural deficiencies exacerbate disaster risks and limit the effectiveness of recovery efforts. While urban resilience is a national priority, current funding is insufficient. As a result, the government has adopted a tiered approach - prioritizing essential public infrastructure (schools, health facilities) over housing, which requires significantly more investment.

Critical infrastructure vulnerabilities were also

exposed, particularly in bridges, many of which were outdated or structurally compromised. A national review was launched to assess their safety and prioritize upgrades:

*“We circulated a document throughout the entire country about all bridge structures... This review, now submitted to the Prime Minister’s Office, covers structural integrity classifications (hazardous to adequate), geographic distribution across all regions and long-term plans for rehabilitation or replacement.”*

### Soil erosion

As soil erosion intensifies and agricultural land becomes submerged, the urgency of these interventions continues to grow. Timely execution of these riverbed cleaning activities is crucial for protecting private property, preventing further loss of land, and reducing disaster risk ahead of future heavy rainfall events.

*“In the Tavush section of the Debed, where the situation is especially dangerous, riverbank erosion is already affecting private lands. The works are scheduled to start within the next month or so.”*

### Early Warning and Community Preparedness

The 2024 flood prompted a wave of sirens installations across municipalities - an important but incomplete step toward building effective early warning systems. While these technical fixes were visible and well-intended, their impact was limited due to critical gaps in flash-flood risk modeling, risk informed community planning, public awareness, training, and operational protocols.

*“Yes, the sirens were installed, but that’s just one piece of the system. If the residents don’t know what to do when they hear it, and if the municipal staff don’t even know what the siren means, then what’s the point?”*

This reveals a broader challenge: early warnings must translate into early action. Without proper data collection system, risk modeling programs including worse case scenarios, disaster risk-informed and scenario-based development

efforts, capacity building including education and public awareness, simulation exercises and clearly assigned responsibilities, the existence of sirens alone cannot reduce harm. The lack of preparedness among both residents and municipal staff significantly undermines the potential life-saving impact of these systems.

### New Research, Studies and Assessments

Among the unintended impact of the flood response is that it catalyzed new research and studies aimed at understanding flash-flood risks, river management, and local vulnerabilities. These efforts, if sustained, can inform more robust policy and planning. Ongoing assessment and research are essential for informing adaptive, locally relevant strategies.

### Community Engagement and Youth Mobilization

The flood catalyzed youth involvement in disaster response and policymaking, which has since been formalized through the Alaverdi Youth Policy and reinforced by Municipal Council budgetary commitments, effectively institutionalizing youth participation in disaster risk management.

*“Young people themselves identified the need for disaster preparedness and rapid response mechanisms as a key priority... the council has formally endorsed this.”*

Furthermore, CSOs and volunteers have become more active, forming new partnerships with municipal authorities to drive community-based recovery efforts.

### Ecosystem Protection Strategy: Lessons from the Debed River Floodplain

The 2024 Debed River flood had serious environmental consequences that go beyond immediate physical damage. In addition to destroying agricultural land and livelihoods, the flood altered the river’s course, degraded ecosystems, and filled riverbeds with debris and industrial waste.

*“The river system itself has fundamentally changed, areas that people once worked are now abandoned... the riverbed is filled with debris and even industrial waste.”*

These environmental impacts have reduced the long-term viability of land and water resources, directly undermining the sustainability of recovery and economic resilience. This highlights a critical gap in the overall impact of the flood response: while short-term access and services were restored, ecological recovery remains neglected, risking future disasters and perpetuating vulnerability.

Stakeholders emphasized that without a formal, evidence-based ecosystem protection strategy, neither the Armenian government nor international partners are likely to invest in major recovery infrastructure such as water purification or land remediation.

*“No government body will invest in infrastructure such as water purification plants, etc. without a clear, integrated strategy in place.”*

The absence of such a strategy severely constrains the impact potential of ongoing recovery and limits the effectiveness of donor and government interventions. In response, civil society actors have begun to mobilize public attention and policy advocacy. A growing coalition of community leaders, environmental groups, and local experts has initiated a campaign to push for government action. As one advocate explained:

*“The main result so far is that people are talking about the issue, media are covering it, and we are preparing a formal package of recommendations for the authorities. Though immediate legislative change may not be forthcoming, momentum is building. Several international development partners have expressed willingness to support Armenia in developing a formal strategy, provided that national leadership prioritizes the issues.”*

### Impact on Systemic Reforms

One of the developments in the aftermath of successive crises has been the formal

recognition of Rapid Needs Assessment (RNA) as a distinct assessment type in Armenia’s Law on Social Assistance<sup>22</sup>. Considerable resources and time are invested in developing and refining both the assessment tool and the accompanying digital platform, ensuring that data collection, filtering, and analysis can be conducted efficiently in future emergencies.

*“These emergencies, such as the displacement from Nagorno-Karabakh in 2023 and flood 2024 have diverted significant government resources away from planned structural reforms. Human and financial resources that had been allocated to system-level improvements were fully redirected toward emergency response for at least a year. For example, the planned overhaul of Armenia’s social vulnerability assessment system—a large-scale and resource-intensive reform—had to be postponed.”*

### Cost-Efficient Solutions and Sustainable Preparedness

One of the key operational lessons from the 2024 flood response was the value of adaptive, resource-aware problem-solving in emergency preparedness. When faced with budget constraints that prevented the purchase of a professional rope tensioning device, crucial for setting up evacuation lines, Lore Rescue Team improvised with alternative, lower-cost tools.

*“Instead, we developed a lower-cost solution using alternative components. By combining other tools, we managed to solve the problem just as effectively.”*

This innovation underscores an important aspect of impact: preparedness is not solely about access to high-end technology, but the capacity to adapt effectively under constraints. This approach preserved safety, functionality, and operational readiness, despite limited resources.

The experience also revealed a critical technology blind spot. Rescue teams had relied heavily on drones, which proved

22. Law on Social Assistance, October 2024 <https://www.arlis.am/hy/acts/199657>

ineffective in bad weather, highlighting the risk of overdependence on advanced but fragile tools. In response, the team invested in a weather-resistant device usable in fog, rain, and low visibility. Training is now planned to ensure readiness in future conditions.

*“We found a new device that works in any weather. We plan to train people on how to use it, so we’re not caught off guard next time.”*

This case illustrates how cost-effective innovation, and flexible thinking can sustain emergency operations and enhance long-term preparedness. From an impact perspective, the ability to adapt, improvise, and invest in resilient, context-appropriate tools is just as critical as large-scale infrastructure, especially in resource-constrained environments.

**Technological Transformation as a Foundation for Impactful Risk Reduction**

A critical insight from the recent flood response is the urgent need for modern digital infrastructure to enhance Armenia’s risk forecasting and early warning capacities. Stakeholders consistently emphasized that current hydrological and disaster monitoring systems are outdated and insufficient, severely limiting the accuracy of risk modeling and response.

*“Currently, national-level flood and debris flow modeling in Armenia achieves only 50–60% accuracy, largely due to the absence of real-time data acquisition systems, limited sensor networks, and fragmented risk information platforms. Without these tools, preparedness and mitigation remain reactive and imprecise.”*

*“With this system in place, we can cover the entire territory of the Republic, enabling effective management of weather extremes with short-term forecasts.”*

These systems must be integrated into a unified national risk management platform, combining hydrological, meteorological, and geospatial data for use by local governments, emergency responders, and policymakers. Only through such integration can Armenia

move from fragmented reaction to coordinated prevention.

Importantly, the benefits extend beyond disaster risk management. Reliable real-time data and predictive tools will catalyze economic resilience, particularly in agriculture and insurance. With accurate modeling, Armenia can introduce indexed crop insurance, attract private sector investment, and enable more disaster risk-informed development.

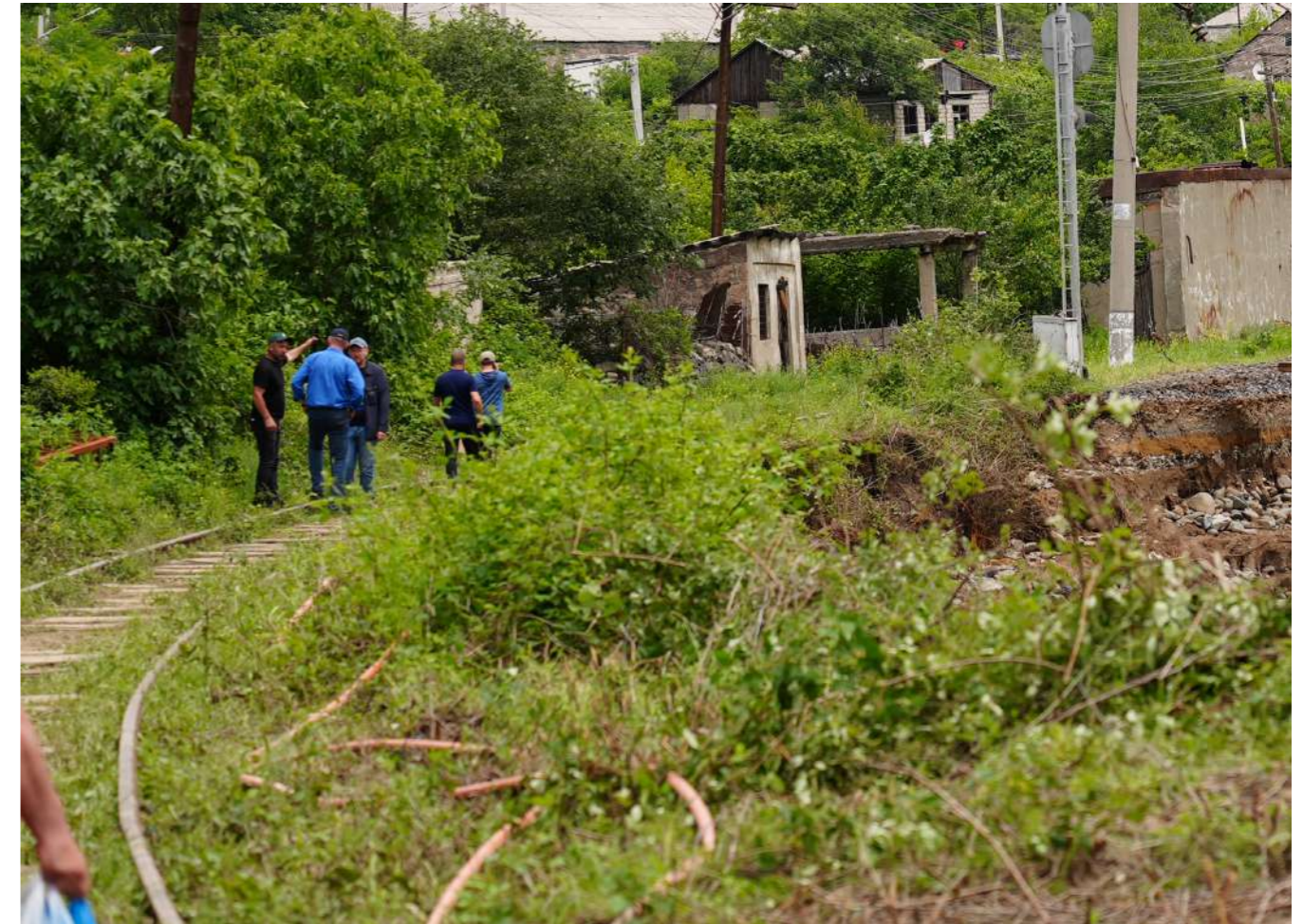
*“Once these systems are established, the environment becomes more attractive not only for insurance providers but also for farmers and other stakeholders. Everything is interconnected.”*

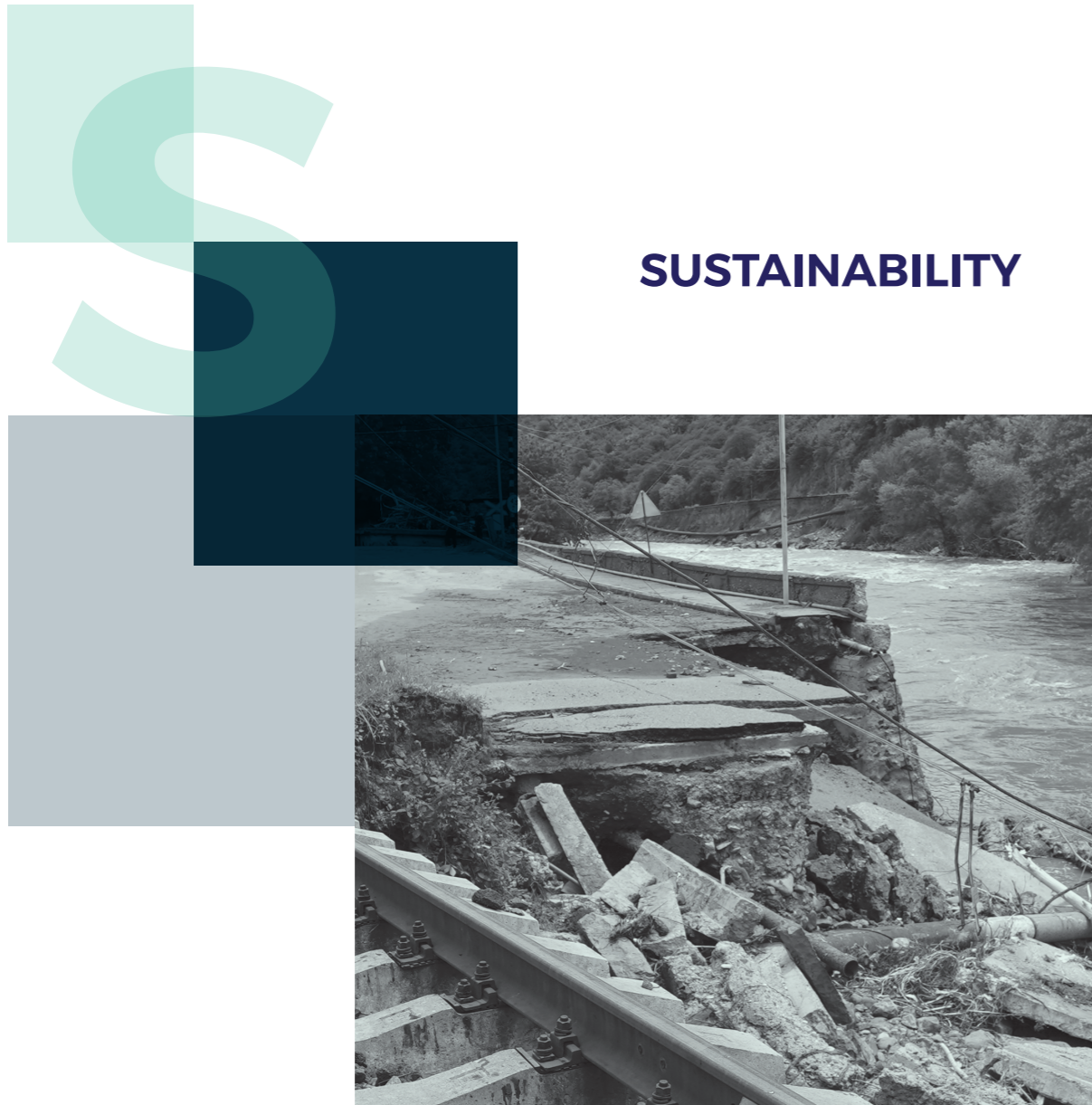
**Conclusion**

The 2024 floods in Armenia had both immediate humanitarian successes and long-term systemic effects. Rapid evacuations and strong community solidarity helped prevent mass fatalities - only four lives were lost, and around 2,400 people were safely relocated. Essential services and mobility were restored quickly in several areas through provisional bridges and road repairs, demonstrating adaptability and resilience.

The disaster also triggered behavioral and institutional shifts. Public awareness of environmental risk and compliance with construction regulations increased, property owners sought to formalize legal documentation to access compensation. Ongoing riverbed cleaning and municipal oversight of riverbanks signaled early steps toward preventive governance. Recovery investments, including the modernization of schools, kindergartens, and water systems, have delivered tangible improvements in community living conditions.

However, disparities persisted - uneven risk reduction, outdated infrastructure, environmental degradation, and gaps in early warning systems limit the sustainability of gains. Looking ahead, digital transformation of hydrological monitoring, investment in resilient infrastructure, and embedding risk-informed governance at all levels remain critical to achieving lasting impact.





## SUSTAINABILITY

Are the outcomes of the response likely to have a lasting effect, particularly in reducing vulnerability and improving preparedness for future emergencies? To what extent have local actors been empowered to sustain coordination and response mechanisms independently?

Sustainability in disaster risk reduction and recovery refers to the durability of outcomes over time - beyond initial relief. After the 2024 flood, Armenia advanced legal reform, recovery programming, and local engagement, yet institutional weaknesses, enforcement gaps, cultural attitudes, and limited financial resources undermine systemic resilience. Sustainable DRR demands a shift from reactive response to proactive, risk-informed development, backed by legislation, behavior change, risk transfer, and local ownership.

While direct compensation to affected individuals provided essential short-term relief during the 2024 flood response, its contribution to long-term sustainability remains limited unless embedded within a broader strategy of resilient recovery and risk reduction.

*“If we look only at the compensation that people receive, of course, it’s not enough, it can never fully cover losses. But if investments are now being made in long-term protective measures, say, if riverbank protection structures are being rebuilt to higher standards, then that is a different matter. Those actions will have a lasting effect, potentially reducing future losses.”*

This perspective underscores a central lesson in sustainable disaster response: compensation alone does not equate to recovery, especially when critical assets such as homes, farms, or livelihoods are lost. Recovery becomes sustainable only when relief is paired with forward-looking, risk-informed reconstruction.

Compensation is necessary but insufficient. While welcomed by affected households, monetary payments cannot replace the intangible and long-term impacts of disaster, particularly for low-income communities or those dependent on agriculture. Resilient infrastructure investments offer multiplier

effects. Rebuilding to higher, more resilient standards, especially riverbanks, roads, and housing, can significantly reduce vulnerability in future hazard events.

*“If protective structures are rebuilt to a higher, more resilient standard, they will serve for many years, and this experience will inform future construction, possibly changing the local culture and technical approach to infrastructure in hazard-prone areas.”*

### Sustaining Flood Resilience through the New Law<sup>23</sup>

Armenia’s adoption of the new Law on Disaster Risk Management and Population Protection marks a critical turning point in its disaster governance system. Prompted by persistent implementation gaps, the law introduces a multi-level, inclusive, and capacity-oriented approach that aligns with the best global practices, including the Sendai Framework for Disaster Risk Reduction.

As was stated by KII participants, the lessons learned from the disastrous events that occurred in Lori and Tavush provinces in May 2024 have also been considered in the new Law, and appropriate solutions have been provided.

A core strength of the law is its devolution of responsibilities from the national level down to regional authorities, municipalities, community-based organizations, and even individuals. By formally recognizing the roles of both local governments and civil society actors, the law ensures broader participation and accountability in disaster planning, preparedness, and response.

*“The law devolves powers from the national level down to the individual, with every actor having a defined mandate. We now have national, regional, community, organizational, and citizen levels; all five layers are addressed in the law and this will address many of the gaps we have identified”*

<sup>23</sup> Law On Disaster Risk Management and Population Protection, April 2025, <https://www.arlis.am/hy/acts/206798>

This whole-of-society model paves the way for better local ownership, clearer roles, and improved responsiveness during emergencies, critical lessons highlighted during the 2024 flood response.

While the law is already ratified by the President, a two-year transition period has been established to develop over 40 sub-legal acts. These will define the technical and procedural details necessary to implement the law - such as needs assessments, emergency response protocols, digital coordination systems, etc.

The new law offers a formal foundation for risk governance. However, the 2024 flood response revealed that legislative alignment alone is insufficient without operationalization, institutional capacity, and sustained ownership.

*“Our legislation is quite effective, but we have a problem with enforcement... we take good laws... but as soon as it arrives, there are problems of applicability.”*

The New Law codifies critical principles of risk-informed development, integrated planning, and multi-level coordination. Yet, gaps remain in translating these provisions into practice. The law provides architecture for sustainability, but its success depends on building durable institutions and embedding preparedness into national systems and community practices.

*“Sometimes communities just copy-paste plans from elsewhere, change the names, and submit them for compliance, without understanding or commitment.”*

This disconnect highlights a central tension: regulatory frameworks are necessary but not sufficient. Plans must move beyond formal compliance to become living instruments of risk governance - embedded in real decision-making, budget allocations, and community engagement. Legal reforms are necessary but not self-executing: they require political will, dedicated resources, and a culture of prevention to ensure that resilience is not temporary or donor-driven, but nationally owned and enduring.

*“One day, international organizations will leave. When that day comes, the government must be strong enough to support its people without our help.”*

Another important legislative advancement is Armenia’s new Law on Social Assistance, which introduces “social emergency assistance” mechanisms tailored for crises such as natural disasters. Work is currently underway to finalize the accompanying regulations.

*“Once operationalized, this framework will enable faster, more coordinated social support during emergencies. Notably, it defines “emergency situations requiring urgent response” broadly, covering climatic, biological, technological, and conflict-related hazards, creating a foundation for sustainable, institutionalized social protection in disaster contexts.”*

### Continuous Water Resource Monitoring

A key addition to the revised law is the introduction of a continuous monitoring mechanism for water resources, reflecting a critical shift toward proactive and data-driven disaster risk governance. By establishing regular observation and data collection systems, Armenia aims to maintain an up-to-date understanding of hydrological conditions and identify emerging risks before they escalate.

*“The objective is to have a clear and timely picture of what is happening with our water systems, allowing us to identify potential hazards early and take preventive action.”*

The interagency technical working group will oversee the review and interpretation of this monitoring data.

By institutionalizing this mechanism, Armenia aligns with the Sendai Framework’s<sup>24</sup> call for risk-informed governance, ensuring that hydrological monitoring becomes a permanent function within state institutions rather than an ad hoc, project-based activity. This approach not only reduces the likelihood

<sup>24</sup> Sendai Framework for Disaster Risk Reduction 2015-2030, <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>

of future disasters but also strengthens institutional capacity and resilience, making risk reduction an ongoing, embedded practice rather than a reactive response.

### Municipal Capacity

A persistent misconception in Armenia’s disaster governance is that territorial reforms and municipal consolidation have endowed local governments with sufficient financial and technical capacity to manage disaster response independently. The 2024 flood response, however, revealed stark limitations: even the largest municipalities lacked the resources, equipment, and institutional mandate to lead recovery or implement preventive interventions sustainably.

*“If this entire burden had been left to the municipality, they could not have handled even 10% of what was needed.”*

Critical flood response tasks, such as riverbed cleaning, agricultural land restoration, and the deployment of heavy machinery, lie far beyond the operational and financial scope of local authorities.

*“The municipality doesn’t have the equipment, doesn’t have the technical capacity, and doesn’t even have the authority in some cases. Riverbed management, for example, is a state-level responsibility.”*

*“Even if the municipality had poured all of its resources into the effort, it wouldn’t have covered even a fraction of the needs. These are high-cost operations far beyond local budgets.”*

This experience underscores a critical lesson for sustainability in disaster resilience: decentralization does not equate to self-sufficiency. While Armenia’s new law mandates localized risk planning and response, these functions cannot be sustainably achieved without state-level support, inter-agency coordination, and, at times, international assistance. From a sustainability perspective, the law must be operationalized in a way that strengthens vertical integration in disaster governance:

- Municipalities act as the frontline implementers of preparedness and response.
- State institutions provide technical expertise, legal mandates, and resource-intensive functions (e.g., riverbed management, large-scale debris clearance).
- External partners offer catalytic support, especially during severe events that exceed national capacity.

Without such multi-level architecture, local governments risk becoming structurally overwhelmed, undermining both immediate response and long-term resilience-building efforts.

### National Emergency Evacuation Capacity

One of the most critical lessons from the 2024 flood was the lack of adequate technical capacity to manage evacuations under high-water conditions. More concerning, however, was that national response institutions, including the Rescue Service and the police, also lacked the high-water evacuation capabilities necessary to conduct effective rescues.

*“It wasn’t just the municipality that was unprepared. Even the emergency services didn’t have the equipment to reach people during flooding.”*

*“That was the real issue - we simply aren’t equipped to respond when the water rises to that level.”*

This gap reveals a systemic weakness in disaster preparedness that spans both local and national levels. While resource limitations at the municipal level are expected, the absence of water rescue assets and trained personnel within specialized state agencies points to a critical vulnerability that undermines both immediate response and long-term resilience.

From a sustainability perspective, this deficiency highlights that resilient disaster governance is inseparable from institutional capability. Building resilience is not only about enacting laws or drafting plans, but it also requires conti-

nuous investment in operational readiness to ensure that response systems are equipped for foreseeable hazards.

Sustainable DRR therefore demands:

- Dedicated Investment in Specialized Equipment: Procurement of amphibious vehicles, rescue boats, and protective gear for high-risk flood zones.
- Institutionalized Training and Simulations: Regular scenario-based exercises for both state and municipal actors, ensuring readiness even with staff turnover.
- Integrated Response Protocols: Strengthened coordination between municipalities, MES, and police to ensure rapid, unified action during high-impact events.

### River Rehabilitation and Preventive Infrastructure

Following the 2024 flood, one of the most notable and forward-looking interventions in Armenia was the comprehensive cleaning of the Tashir riverbed, initiated by the national government. This initiative marked a critical shift from reactive disaster response toward proactive and sustainable risk reduction.

*“The government organized the complete cleaning of the Tashir river. Not just in our 35 years of independence, it hadn’t been done even during Soviet times, not to this extent.”*

*“They cleaned the entire river channel. If we get rainfall like last year again, we are confident we won’t face the same level of damage.”*

As per respondents, the cleared section runs the full length of the floodplain and represents an essential investment in climate-resilient infrastructure. In addition to the large-scale cleaning of the Tashir River channel, authorities have also initiated the clearing of the adjacent floodways - critical drainage systems that channel stormwater into the main river. These tributary floodways, located near residential areas, had been heavily obstructed, increasing the risk of localized urban flooding.

*“Not only is the riverbed being cleaned, but*

*we have floodways that flow into the Tashir River. Some of those run right next to residential houses. One of the two major floodways has already been cleared.”*

This initiative has since expanded into ongoing rehabilitation works along the Debed River, from Dzoraget near Tufenkian Hotel to the Armenian border.

*“All areas - Karkop, Sanahin - are included. From Dzoraget, where the Debed turns near Tufenkian, to our border, the program will run for two years. The tractors are still in the riverbed, working.”*

This initiative goes beyond immediate recovery. It exemplifies sustainability in action, aligning with the Sendai Framework’s emphasis on reducing existing risk, strengthening risk governance, and investing in disaster resilience. Rather than reacting to floods once they occur, such structural mitigation measures help prevent or significantly lessen their impact, thereby protecting lives, livelihoods, and ecosystems over the long term.

*“If we had last year’s level of torrential rains today, we would not face the same problems again. I can say with 100% confidence that we would avoid that kind of damage.”*

In contrast, some other areas still remain vulnerable. For example, in Noyemberyan, the residents expressed growing frustration over the lack of sustained follow-up and preventive maintenance on the riverbanks, despite repeated warnings and offers of community contributions:

*“I even told them, take my compensation money, just solve this river problem somehow. The river has advanced so much, it’s coming closer again, even past their house toward ours.”*

*“Even before this, the embankments were broken. The old floods had destroyed the upper part, and this time it’s been completely washed away. If there’s heavy rain for just two days, our neighborhood will flood again. It won’t just flood—it will wash everything away.”*

The regional governor confirmed that funding

has been secured for riverbed cleaning works. However, implementation is contingent on a reduction in the river’s water level to allow machinery access.

*“The program has been financed. Once the water level drops, possibly within a month, machinery will be able to enter, and work can begin. They will clean all the way from Karkop down to Ptghavan.”*

A key challenge mentioned here is that here is that some of the affected river systems are shared with neighboring countries, and similar sedimentation problems exist across the border. Therefore, effective management will require cross-border coordination and joint agreements.

### Institutional Memory and Continuity

The sustainability of disaster risk reduction efforts in Armenia is significantly undermined by weak institutional memory, particularly during political or administrative transitions. When leadership changes, there is often no systematic mechanism to preserve, transfer, or build upon prior work. As a result, valuable progress made in planning, training, or infrastructure maintenance can be lost, forcing each new administration to restart from scratch rather than consolidating and expanding on existing achievements.

This lack of continuity is not merely an administrative inconvenience; it fundamentally disrupts the institutionalization of DRR. In some cases, critical documentation is deleted or archived without handover, and programs initiated by previous administrations are either deprioritized or intentionally reversed for political reasons. This pattern creates a cycle where disaster resilience efforts remain tied to individuals rather than embedded within enduring systems and processes. Without mechanisms to safeguard institutional knowledge, each political turnover resets the DRR agenda, eroding both efficiency and credibility.

*“New leaders often delete files or remove documentation. The new team starts over from scratch, sometimes even intentionally undoing previous work.”*

For sustainability, this presents a serious challenge. Effective DRR requires incremental, cumulative progress over years or even decades, particularly in areas such as infrastructure maintenance, risk monitoring, and community preparedness. When programs are dismantled or forgotten with each administrative change, investments in capacity-building, studies, and risk assessments fail to deliver long-term benefits.

Addressing this requires deliberate reforms aimed at institutionalizing DRR knowledge and practices so they are preserved regardless of leadership changes. This includes creating standardized archiving systems, establishing legally mandated handover protocols, and embedding DRR responsibilities into permanent civil service roles rather than relying on politically appointed positions.

### Long-Term Aid Dependency and Misaligned Expectations

Even well after the acute phase of the crisis, social services continued to receive requests for items or support from individuals whose situations no longer met the criteria for assistance. This points to a broader issue of aid dependency and misaligned expectations stemming from the early emergency response phase.

*“Some beneficiaries continue to request items or aid - e.g. wheelchairs, or walkers - even if they no longer have acute needs, simply because they believe being a disaster victim should guarantee ongoing support.”*

Without strong public messaging and professional boundaries, the social response risked undermining its own credibility by reinforcing a passive recipient model rather than enabling self-recovery and resilience.

### Risk Sharing, Compliance and Insurance

The sustainability of flood response depends not only on institutional capacity but also on the risk awareness and engagement of communities themselves.

*“It’s not only up to the authorities - every*

*resident also must consider their own safety. We often ignore expert advice, only to suffer the consequences.”*

Many participants underscore the need for a cultural shift from passive reliance on state intervention to shared ownership of risk management and compliance.

Armenia’s limited fiscal capacity further constrains its ability to provide comprehensive disaster compensation. Recognizing these limitations, the new Law on Disaster Risk Management and Population Protection introduces a strategic pivot - moving from state-funded recovery toward risk transfer instruments like property and disaster insurance, aligning with Sendai Framework priorities and EU disaster risk finance guidance. This policy evolution is driven by the understanding that financial protection is essential for sustainable recovery.

*“We need to have an insurance system in place, people should pay a certain amount in advance to insure their property, so if disaster strikes, they can at least hope to recover part of their losses.”*

However, Armenia’s insurance market remains underdeveloped, hindered by low public awareness, affordability challenges, and weak enforcement of compliance requirements. To address this, the new law directly links compensation and insurance eligibility to legal and technical compliance. “No compliance, no compensation” approach introduces powerful accountability incentives, encouraging safer construction practices and shifting public attitudes.

*“If you’ve built something illegally or in violation of regulations and you suffer damages, the state simply won’t compensate you. And no smart insurance company will take on your risk, either.”*

*“Most people, I think, have learned from this bitter experience. Sometimes the hard way is the only way.”*

By tying risk reduction actions to financial protection, Armenia is building the foundations for sustainable DRR, with three key impacts:

- Safer communities, as adherence to risk zoning and building standards is incentivized;
- Reduced fiscal burden on the state, as part of the recovery cost is shifted to insurance markets;
- A culture of accountability and resilience, where compliance and risk awareness become social norms.

However, for this system to function, Armenia must also address barriers to insurance uptake.

*“People don’t fully understand insurance, and for poorer households, even small premiums are hard to afford”*

A state-backed insurance floor integrated with social assistance could protect vulnerable groups while embedding risk transfer into Armenia’s broader DRR framework.

As one expert summarized, *“Instead of addressing the root cause with small resources, people wait for big money to deal with the consequences. That mindset needs to change.”*

This shift—combining financial resilience, regulatory enforcement, and risk awareness—is central to breaking Armenia’s cycle of reactive recovery and building sustainable disaster governance that aligns individual responsibility with national resilience goals.

Institutionalization of Best Practice for Holistic and Sustainable Recovery

A major challenge undermining the sustainability of Armenia’s disaster response is the absence of a standardized methodology to assess full disaster impacts. Current local assessments are ad hoc, focused mainly on visible damage, and lack socio-economic analysis.

*“We do not have a professional, standardized format for recording the consequences of emergencies.”*

Typically, ad hoc commissions conduct rapid inspections and issue basic reports, overlooking cascading effects on livelihoods, services, and economic activity. To close this gap,

Armenia is localizing the PDNA methodology, co-developed by the UN, World Bank, and EU. PDNA distinguishes between:

- Damage: Physical destruction of assets (e.g., buildings, infrastructure).
- Losses: Reduced economic activity, income, and increased costs from disruption.

This dual-layer approach enables realistic recovery planning. Failing to capture losses results in underestimated needs, inequitable aid distribution, and weak resource mobilization, as donors depend on detailed, multi-sectoral data. PDNA is now embedded in Armenia’s DRM strategy and new law, with plans to codify it through by-laws in collaboration with the Ministry of Internal Affairs. However, key challenges remain, including limited digital baseline data and the need for specialized training. PDNA modules are now included in the curriculum of the former Crisis Management State Academy to build local expertise.

Armenia’s flood response was strengthened not only by domestic mobilization of governmental and civic resources but also through targeted international cooperation. One of the most notable contributions came from an Iranian team that constructed an emergency bridge in Sanahin Kayaran.

*“Representatives from the Islamic Republic of Iran built a bridge in the disaster zone in a rapid and efficient manner. Personally, I found their solution highly acceptable for our context.”*

Beyond immediate relief, the Iranian team’s bridge design offered a practical, cost-effective model for emergency infrastructure. Recognizing its relevance, Armenian authorities moved to formalize this knowledge.

*“I personally packaged and submitted the bridge project as a prototype to the Urban Development Committee. The goal is to have it formalized as a reusable model for future emergencies in Armenia.”*

This illustrates how international cooperation can catalyze institutional learning and long-

term resilience-building. By transforming an externally introduced emergency solution into a standardized national prototype, Armenia is embedding lessons from the flood into its formal disaster risk reduction framework.

This example underscores the value of combining immediate international support with structured knowledge transfer, ensuring that emergency interventions contribute not just to short-term relief but to the development of durable, nationally owned solutions that enhance Armenia’s long-term disaster resilience.

### Building Sustainable Volunteerism for DRR

The adoption of Armenia’s Law on Volunteerism marked a key step in formally recognizing civic engagement in disaster preparedness and response. However, while the legal framework now exists, the operational, motivational, and systemic components needed to sustain volunteerism remain underdeveloped.

Promising initiatives, such as the volunteer rescue team in Masis supported by the municipality and trained by Lore, demonstrate local ownership and institutional commitment. Yet, most volunteer engagement remains spontaneous and crisis-driven, lacking structured systems, professional development, and incentives.

*“Our current system often mobilizes volunteers emotionally and ad hoc. We need to transform these groups into structured, institutionalized systems with real incentives.”*

Volunteer participation also declines over time, particularly as young people leave student life and face greater financial pressures. International models address this by offering registered volunteers’ tangible benefits like service discounts, travel subsidies, and education support, linking intrinsic motivation to structural incentives.

*“ARCS maintain a highly motivated volunteer base - despite turnover caused by life changes such as marriage or military service. It*

*demonstrates what a people-centered, mission-driven volunteer system can look like and proves that when volunteers feel empowered, valued, and connected, they stay engaged, even during long-term crises.”*

Discussions in Armenia are exploring ways to bridge civic service with job security, such as agreements where volunteer responders are granted justified paid leave during emergencies, a model benefiting volunteers, employers, and communities alike.

*“When a young person is mobilized to respond to a disaster, their working hours would be considered justified and paid for by the private sector.”*

Despite these emerging ideas, Armenia still lacks the enabling mechanisms - financial incentives, employer agreements, and support structures - that would shift volunteerism from goodwill-driven mobilization to a sustainable, institutionalized component of disaster risk reduction.

*“For Armenia, the next step is clear: transform goodwill into infrastructure, and passion into policy.”*

### Whole-of-Society Culture

One of the obstacles to effective and sustainable DRR in Armenia is the low perception of risk at the local level, coupled with a dependency mindset that delays preventive action. Communities frequently underestimate hazards, particularly when long periods pass without disasters, leading to complacency. Rather than taking small, affordable steps to address visible risks, such as clearing drainage channels or reinforcing vulnerable embankments, residents often wait for large-scale government funding or external assistance to respond after damage has already occurred.

*“I warned the local authorities: ‘If it rains again in a few days, it will flood again.’ But the response was dismissive: ‘It just rained; it won’t happen again.’”*

*“Failure to perceive risk is a social issue. Communities wait for the state to provide*

*50 million drams, when in reality, they could solve the problem themselves with just two canisters of diesel. I say this symbolically, but the point is real.”*

Disaster risk reduction must go beyond laws, plans, or infrastructure - it must become a social norm rooted in shared responsibility. While Armenia has advanced its institutional and legal frameworks, discussions reveal persistent gaps in local ownership, personal accountability, and risk awareness.

Many DRR initiatives focus on technical fixes but overlook the behavioral and social dynamics needed for uptake. As highlighted in the Sendai Framework<sup>25</sup>, effective disaster resilience requires a whole-of-society approach, where every actor - individuals, communities, businesses, and government - plays a role in preparedness, response, and recovery. Without this, interventions risk fading over time, leaving communities unprepared and reliant on state services.

*“International experience shows that in major disasters, formal services may reach only 10% of people quickly. The rest depends on neighbors helping neighbors.”*

Preparedness remains low in many communities. Risk is often deprioritized in daily life, and drills are treated perfunctorily, reinforcing the belief that emergencies are solely the government’s responsibility.

*“People don’t take it seriously. Safety concerns often rank far below other daily priorities, and many assume, ‘If something happens, the state will save us.’”*

Sustainability in DRR demands embedding risk awareness into everyday life. This includes continuous education, public messaging, regular drills, and civic engagement, reinforced from early childhood. Armenia’s recent initiatives, such as teaching basic emergency responses in kindergartens through play, mirror international good practice and help normalize preparedness behavior.

<sup>25</sup> Sendai Framework for Disaster Risk Reduction 2015-2030, <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>

However, these efforts remain limited. Experts argue for integrating DRR as a standalone subject in schools with practical drills, formal testing, and parental involvement to build intergenerational risk literacy.

*“While disaster topics are included in school curricula, their integration is often superficial. Evacuation drills, for instance, are sometimes reduced to mere formalities.”*

*“I’ve witnessed drills where a school bell rings, students cheer because class is interrupted, and they walk outside to line up, without truly understanding why. There’s little awareness about how evacuation protocols differ for earthquakes versus fires, or whether the school bell is even an appropriate signal in an emergency.”*

This underscores the need to move beyond symbolic activities and ensure meaningful preparedness exercises that build actual capacity. Drills should test real readiness, identify weaknesses, and provide actionable insights.

Private sector engagement is also growing, driven by legal requirements and international standards. Businesses increasingly commission risk management plans, training, and simulations, recognizing that preparedness safeguards operations and aligns with global norms. This trend shows the potential of public-private collaboration to broaden DRR ownership beyond government.

Ultimately, sustainable resilience depends on shifting from passive reliance to active engagement. Families, schools, communities, and businesses must see DRR as part of their own responsibilities.

*“We must take responsibility for our own safety, and our neighbor’s. Only then will things truly change.”*

This mindset fundamentally undermines the sustainability of DRR efforts. Even well-funded, technically sound initiatives have limited impact if they are not reinforced by a proactive, risk-informed culture. Creating this culture requires system-wide investment in risk communication, local ownership

of risk, practical education, and structured incentives for participation. Embedding DRR across education, workplaces, and civic life will ensure that preparedness becomes habitual rather than reactive, anchoring disaster risk reduction as a sustainable, society-wide practice rather than a government-driven program.

### Municipal Capacity Self-Assessments for Sustainable Preparedness

A key advancement for sustainable preparedness is the self-assessment by municipalities of their human and technical capacities for disaster response. Communities are now systematically evaluating their equipment, machinery, and workforce, creating clear inventories that identify available resources, their locations, and potential emergency functions.

*“It is now known that a crawler-type machine is available in Karkop and can be mobilized immediately when needed.”*

This proactive approach reduces delays in emergencies by eliminating the need for ad hoc resource searches, enabling faster, better-coordinated response logistics.

### Multi-Hazard Resilience in Agriculture

In the immediate aftermath of the 2024 floods, Armenian authorities acted swiftly to prevent irreversible damage to perennial crops:

*“Where orchards were covered by silt, we moved as quickly as possible. Once residential areas were cleared, we immediately turned to the orchards to prevent the trees from dying in the mud.”*

Unfortunately, within weeks of the flood, several agricultural zones, e.g. Shnogh, were struck by a severe hailstorm.

*“There wasn’t much left after the hail. It destroyed what was left; the trees themselves were physically damaged, so in some orchards, the damage is not just for this year, but for several years ahead.”*

This cascading hazard illustrates a critical challenge - while the flood's damage was largely physical and short-term, the hailstorm had deeper, multi-year consequences for both tree productivity and rural household income.

Recovery efforts must shift from single-event response to climate-adaptive, multi-hazard strategies. Livelihood protection requires crop diversification, hail nets, insurance, and early warning systems tailored to agricultural risks. DRR financing should prioritize resilience-building over recurring compensation.

### Fertile Ground for Replanting

Despite the destruction caused by the flood, the river also deposited nutrient-rich sediment, particularly humus, into affected areas, creating highly fertile soil conditions in places where trees were damaged or uprooted.

*"The sand and sediment left by the river was full of rich humus - it went deep into the tree roots. It's actually created ideal conditions for replanting."*

Local experts noted that if new trees are planted in these areas, they are highly likely to thrive and produce strong yields.

*"If replanting happens now, the harvest will be excellent—100% guaranteed."*

This observation suggests an opportunity to link recovery efforts with long-term agricultural and reforestation goals. By capitalizing on the improved soil conditions, it may be possible to enhance both environmental restoration and local economic recovery through targeted replanting programs.

### Learning from Experience and Strengthening Early Warning and Preparedness

Several months after the 2024 floods, the ARCS organized a "Lessons Learned" workshop in Yerevan to review the response and identify areas for improvement. The event brought together ARCS staff, volunteers, local authorities from Lori and Tavush, the Rescue Service, Police, healthcare institutions, UN agencies, and EU representatives. Over two

days, participants reflected on what worked well and what didn't, covering logistics, coordination, and preparedness. Key gaps were identified, particularly in early warning systems and community awareness.

All findings and conclusions from the workshop were documented and shared with partners. A joint commitment was made to enhance inter-agency preparedness efforts, particularly in strengthening early warning systems and risk communication.

The workshop revealed specific gaps in early warning coverage and public awareness—insights that led to concrete follow-up actions. Based on this, ARCS launched a new initiative to strengthen early warning and risk communication. A five-day event, "People Awareness, People Education (PAPE)", brought together government and international partners to build capacity and develop joint approaches. This led to the creation of a new thematic group on climate change and early warning under The Disaster Risk Reduction National Platform, led by ARCS.

### Integrated Beneficiary Management System

A significant and forward-looking development in Armenia's disaster response architecture has been the introduction of a centralized digital platform for beneficiary registration and aid coordination, initiated by the government and linked to the MoLSA.

*"The government had already developed a platform to register support needs for Artsakh displaced populations. But last autumn, they presented an upgraded version of the platform that would also apply to disasters like floods."*

The platform aimed to perform two core functions:

1. Register affected households based on verified government social protection data, ensuring accuracy and reducing the risk of fraud or exclusion.
2. Coordinate humanitarian support by enabling NGOs and other actors to register

available assistance, track services, and avoid duplication.

*"The idea was that both aid providers and affected households would register, and only verified beneficiaries could access the system because it was linked to social protection database data. That was a perfect model, if operationalized."*

*"As NGOs, we often miss things or double count because we base our decisions on what people tell us. We don't have access to the state registry, which is why this platform would have been the perfect solution."*

However, the platform's deployment remains incomplete. Following the termination of the USAID-supported program, questions remain about whether the system was finalized and fully transitioned into operational use with all features.

This digital platform would address a persistent challenge in humanitarian operations - over-reliance on self-reported needs from vulnerable groups - by enabling accredited NGOs experienced with beneficiaries registered in the social protection system to validate needs and update records in coordination with the MoLSA. This should be done through standardized protocols as a legally approved collaboration mechanism between the Ministry, NGOs and vulnerable population.

### Conclusion

The 2024 flood underscored the importance of moving from short-term relief toward long-term, risk-informed recovery. While direct compensation and cash assistance were provided, their sustainability depends on being embedded within broader strategies of resilient reconstruction, such as rebuilding infrastructure to higher standards and institutionalizing risk-informed governance.

Armenia has taken important steps toward sustainability with the adoption of the new Law on Disaster Risk Management and Population Protection, which devolves responsibilities to multiple levels of governance and aligns with global best practices.

Sustainability requires bridging legal frameworks with operational capacity. Municipalities remain frontline actors but need state-level support, technical expertise, and financial resources to fulfill their mandates. Likewise, national response institutions require continuous investment in specialized equipment, training, and simulations to ensure readiness.

Equally vital is fostering a whole-of-society culture of disaster preparedness. Volunteerism, community risk awareness, and private-sector engagement are crucial for sustaining resilience. Building risk literacy through education, civic engagement, and inclusive participation will ensure disaster risk reduction becomes a shared responsibility.

Ultimately, sustainable resilience in Armenia depends on aligning legislation, institutional capacity, financial risk-sharing (including insurance), and community ownership. By transforming lessons from the 2024 flood into enduring reforms and proactive practices, Armenia can move beyond reactive recovery and strengthen a nationally owned, long-term culture of disaster preparedness and resilience.

## EXPERIENCE OF SWITZERLAND IN FLOOD-FLASH FLOOD RISK MANAGEMENT



## Historical Background and Policy Transition<sup>26</sup>

Switzerland's flood management system is among the most advanced and integrated in Europe. It evolved from a traditional 'flood defense' model focused on engineering structures to a modern risk management approach that blends prevention, spatial planning, ecological restoration, and community engagement. This shift was driven by major flood in 1987 and 2005, after which the country initiated a fundamental policy shift moving from a traditional flood defense approach, which was focused on infrastructure-based protection, to a modern flood risk management strategy. This new model emphasizes prevention, risk reduction, spatial planning, ecological restoration, and community involvement. The transition was formalized through legal frameworks, such as the Federal Act on Hydraulic Engineering and the national strategy for Natural Hazards.

### 1. Hazard Mapping and Spatial Planning<sup>27</sup>

One of the most important tools in Switzerland's flood risk management system is its standardized hazard mapping framework. Since 2005, cantons have been legally required to produce detailed hazard maps for floods, debris flows, avalanches, and landslides. These maps divide areas into zones of varying risk levels:

- ✓ **Red zones:** high hazard – construction is generally prohibited.
- ✓ **Orange zones:** moderate hazard – construction allowed under strict conditions.
- ✓ **Yellow zones:** low hazard – construction permitted with minor limitations.
- ✓ **Blue zones:** residual risk areas – flood risks

26. Leuschner et al. (2020), "Switzerland's transition from flood defense to flood-adapted risk management". <https://www.sciencedirect.com/science/article/abs/pii/S0264837718313802>

27 Assessing flood risk in Zurich – <https://www.researchgate.net/publication/307943037>; NAFIS public platform: <https://www.natural-hazards.ch/>

that exceed design levels (e.g., rare 500-year).

These maps are publicly available through the <https://www.geo.admin.ch/en> platform and are used as binding instruments in building permit procedures, land-use plans, and insurance assessments.

### 2. Data-Driven Risk Management and Forecasting<sup>28</sup>

Switzerland operates one of the most advanced national flood early warning systems in Europe. This includes:

- ✓ **NAFIS (Natural Hazards Forecast and Information System):** A centralized platform that compiles real-time hydrological, meteorological, seismic, and snow data from across the country. It supports forecasting, decision support, and multi-channel alerts (e.g., SMS, apps)
- ✓ **GIS:** Widely used for hazard modeling, vulnerability assessment, and scenario-based planning.
- ✓ **Remote sensing:** Satellite data from Sentinel-1 and Sentinel-2 is used to monitor surface water extent, soil moisture, and vegetation health.
- ✓ **Machine learning models:** Research institutions, such as the University of Bern, have developed predictive algorithms using neural networks and historical event data to estimate flood probabilities and damage scenarios.
- ✓ **Risk mapping methodology (KR-RRA):** Used in Zurich to assess flood risks across multiple assets (population, infrastructure, cultural heritage) and define spatial risk classes.

28 Flood risk: protective measures up to ten times more cost-effective than rebuilding | Swiss Re <https://www.swissre.com/press-release/Flood-risk-protective-measures-up-to-ten-times-more-cost-effective-than-rebuilding/a072a643-43b8-40e1-be62-31aa82bbc42f>

### 3. Structural and Engineering Measures

Switzerland implements a range of structural interventions to reduce exposure and mitigate the impact of flood and debris flow hazards. These measures include:

- ✓ **Retention basins:** large-scale infrastructure to store excess water temporarily during peak flows.
- ✓ **Debris flow catchers:** barriers designed to intercept rocks, soil, and woody debris carried by mountain torrents.
- ✓ **Flood diversion tunnels:** artificial underground channels redirecting floodwaters away from populated areas.
- ✓ **Reinforced riverbanks:** traditional flood control elements, often modernized and combined with ecological features.
- ✓ **Overflow zones:** designated low-lying natural areas intended to absorb excess water in extreme scenarios.

#### Case example:

The Jonenbach retention basin in the canton of Zurich, completed between 2004 and 2007, has a capacity of 392,000 cubic meters and successfully protected dozens of homes during the 2007 and 2008 storm events. It represents an integrated approach combining storage, filtration, and controlled release of stormwater.

### 4. Public Awareness, Education, and Community Involvement<sup>29</sup> [5]

Switzerland emphasizes the role of community engagement and education as pillars of disaster resilience. Authorities conduct regular awareness campaigns, school-based programs, and participatory risk mapping

29. Glaus et al. (2020) - "Flood exposure and risk perception in Swiss municipalities" <https://pmc.ncbi.nlm.nih.gov/articles/PMC7548275/>

exercises. Key initiatives include:

- ✓ **"Be Prepared" campaign by the Federal Office for Civil Protection:** Aims to inform citizens about flood risks and self-protection measures.
- ✓ **Educational curricula:** Flood and natural hazard education is embedded in primary and secondary school programs, including practical simulations and field visits.
- ✓ **Public risk mapping:** Residents are invited to identify past flood events, erosion zones, and at-risk infrastructure on interactive maps. This strengthens local knowledge and enhances trust in formal hazard assessments.
- ✓ **Voluntary civil protection units:** Local groups are trained in early response, sandbagging, temporary evacuation, and post-disaster recovery coordination.

Evidence shows that municipalities with higher public risk perception are more likely to implement integrated and preventive measures, such as green infrastructure and building restrictions, rather than relying solely on hard engineering.

#### Comparable Case - (Switzerland (Misox / Val Mesolcina, 21-23 June 2024)<sup>30</sup>

In late June 2024, the Misox / Val Mesolcina region in the canton of Graubünden experienced an intense and short-lived weather event that turned into a severe hydrometeorological emergency. Over the course of roughly 48 hours, the area received about 124 mm of total rainfall, with peak intensities reaching approximately 63 mm per hour. This extreme precipitation triggered flash floods and debris flows, particularly affecting the municipality of Lostallo, most notably the Sorte district. The force of the debris flows damaged homes, blocked

30 <https://www.straitstimes.com/world/europe/heavy-rains-trigger-floods-and-landslides-in-switzerland>  
<https://www.swissinfo.ch/eng/alpine-environment/one-dead-two-missing-after-landslide-in-switzerland/81454547>

access roads, and severely impacted the A13 motorway, the main north-south transit corridor in the valley.

The sudden onset required immediate and multi-layered emergency response. Fire and rescue services, police, and civil protection forces were mobilized within hours. Unmanned aerial vehicles (UAVs) and

helicopters supported search and rescue operations, as well as situational assessment in areas that were cut off. Residents in high-risk zones were evacuated and access to the worst-hit sectors was tightly controlled to prevent secondary incidents.

### Comparative Analysis with Armenia

Component	Switzerland	Armenia
Policy & Strategy	Fully integrated risk management framework combining prevention, spatial planning, ecological restoration, and public engagement.	Primarily focused on emergency response; preventive measures, hazard mapping, and integration into spatial planning remain underdeveloped.
Hazard Mapping	Mandatory hazard maps (zoning system) in all cantons; legally binding in building permits and land-use planning.	Some hazard and flood zoning maps exist through projects, but they do not cover the entire country and are not legally binding for all developments.
Data-Driven Management & Forecasting	NAFIS national platform integrates real-time multi-hazard data and multi-channel early warning. Uses Sentinel satellite data and machine learning for predictive modeling.	Forecasting is primarily handled by the Hydromet Service; there is no fully integrated multi-hazard national platform. Satellite and AI-based monitoring are limited.
Structural Measures	Retention basins, flood diversion tunnels, debris flow catchers, overflow zones, often combined with ecological design.	Primarily local engineering works such as riverbank reinforcement, drainage pipes, and some debris barriers; large-scale multi-functional structures are rare.
Public Awareness	Large-scale national campaigns, school-based hazard education, and ALERTSWISS notification system.	Periodic awareness campaigns exist, but mass alert systems and interactive community hazard mapping are largely absent.
Rescue Response	Coordinated federal-cantonal structure, multi-sector teams, advanced equipment, frequent drills, and simulations.	Centralized under the Ministry of Internal Affairs Rescue Service; technical resources are more limited, volunteer involvement is low, and large-scale simulation exercises are infrequent.

Summary

Switzerland treats floods as an ongoing risk, balancing prevention, preparedness, and coordinated response. Armenia primarily addresses floods as emergency events, with prevention and public engagement being secondary. Switzerland's example demonstrates the value of comprehensive hazard mapping, integration into spatial planning, advanced forecasting, and strong community participation in increasing resilience.

The recommendations outlined below are derived from the research findings and further informed by the comparative analysis conducted. Where applicable and relevant, they also take into account the strengths and good practices of Switzerland's DRR system, thereby ensuring that the proposed measures are both evidence-based and aligned with internationally recognized standards.



R

RECOMMENDATIONS



## Recommendations

The recommendations are developed through an inclusive process that incorporates the perspectives of affected populations, inputs from NGOs and international organizations, and contributions from public sector actors, combined with expert analysis to ensure relevance, feasibility, and technical soundness.

### 1. Updating and Testing Community DRM Plans

Existing DRM community plans should be comprehensively reviewed and updated to address critical gaps, particularly those concerning disaster risk reduction measures and post-disaster recovery actions that may have been overlooked in earlier versions. The revision process should be participatory, involving local authorities, emergency services, civil society, private sector, and vulnerable groups to ensure that the plans are context-specific and inclusive. Once updated, DRM plans should not remain as static policy documents. Instead, they must be treated as dynamic operational tools, regularly tested through simulation exercises, drills, and scenario-based capacity building trainings. These activities will strengthen the practical skills of municipal staff, help identify operational weaknesses, and build institutional confidence in executing the plans during real-life emergencies.

### 2. Establishing Community Resilient Development Centers

To institutionalize resilience in local governance, dedicated Community Resilient Development Centers should be established. These centers would serve as hubs for integrating climate change adaptation and disaster risk reduction principles into community development planning and act as a humanitarian and emergency response coordination platform during disasters. They would provide technical assistance to local authorities, facilitate capacity-building programs, and ensure that all development initiatives are informed by risk assessments and climate projections. Furthermore, the centers could act as platforms for public engagement, promoting awareness campaigns, fostering citizen

participation, and ensuring that resilience-building efforts are both inclusive and community-driven. They should also be capable of supporting the emergency preparedness and response efforts of the community administration, including the relevant cooperation with the respective authorities, private sectors, NGOs, international organizations that are supporting emergency response, humanitarian support and recovery actions.

### 3. Creating a Unified Information Management System

A national-to-local unified information management system should be developed to consolidate and maintain up-to-date baseline data across multiple sectors, including demographics, infrastructure, environment, and hazards. This system should integrate geospatial analysis tools, hazard mapping, and data visualization dashboards, with clear data sharing regulations per development sectors (e.g. agriculture, housing, etc.) enabling decision-makers to quickly interpret complex datasets. It should also incorporate forecasting capabilities and generate worst-case disaster scenarios to inform preparedness and response planning. Centralizing and standardizing data in this way will improve coordination between agencies, enhance situational awareness during crises, and ensure that preventive measures, emergency responses, humanitarian support and post disaster recovery are guided by the most accurate and current data available.

### 4. Modernizing Weather and Water Monitoring Networks

To enhance forecasting accuracy and preparedness for climate- and water-related hazards, meteorological and hydrological monitoring systems should be significantly upgraded. This modernization should involve installing automated weather stations, river gauge systems, and environmental sensors in strategic locations, especially within high-risk river basins. Data collected should feed into the Hydromet's centralized management system, where it can be processed in real time and shared with relevant agencies and the public. Improved monitoring will strengthen

early warning capabilities, enable timely flood and drought alerts, and support long-term water resource management, ultimately contributing to both disaster risk reduction and climate adaptation efforts through evidence-based decision making.

### 5. Using GIS and Remote Sensing for Resilient Community Development

Geospatial technologies such as GIS and remote sensing can play a transformative role in ensuring risk-informed and climate-resilient community development. It could also be used for emergency response and post disaster recovery phases, including damage and lost calculation.

Through the development of baseline data management system combined with the analysis of high-resolution satellite imagery and spatial datasets, local authorities can map hazard-prone areas, monitor environmental changes, and assess population and infrastructure vulnerabilities at the community level. This data-driven approach enables decision-makers to identify safe zones for infrastructure development, optimize land use planning, and integrate early warning indicators directly into municipal development plans. By embedding GIS and remote sensing into regular planning processes, communities can anticipate risks before they materialize and adapt proactively to climate and disaster challenges.

### 6. Implementing Functional Early Warning Systems

A fully operational Early Warning System (EWS) should be developed and deployed at all administrative levels, from the national to the community scale. The automatic system must be capable of collecting and integrating multi-source data, including meteorological, hydrological, geological, and climate forecasts, as well as real-time field observations. These inputs should be processed through advanced risk modelling tools to produce hazard-specific alerts that are accurate and location-specific. EWS should ensure timely information flow not only to decision-makers but also directly to at-risk populations through multiple communication channels, such as mobile

alerts, community sirens, local media, and digital platforms adapted to reach vulnerable groups, including those with limited access to technology. Crisis communication should be integral part of the early warning system, defined by sub-laws and relevant SOPs. By addressing multiple hazards (floods, landslides, droughts, extreme weather events, etc.), the system can shift disaster management from reactive response to proactive preparedness, thereby reducing loss of life, economic damage, and social disruption.

### 7. Risk Modelling and Nature-Based Solutions for Disaster Risk Mitigation

Given the unique topography and terrain of each community, it is essential to develop localized risk models that incorporate elevation, slope, hydrological patterns, and land cover data. Using AI-based terrain modelling and hazard simulation, planners can identify areas most vulnerable to floods, landslides, and erosion. Building on these insights, nature-based solutions, such as restoring floodplains, reforesting slopes, reinforcing riverbanks with vegetative buffers, gabion construction, and creating green infrastructure, can be designed and implemented. These measures not only reduce disaster risks but also provide co-benefits for biodiversity, water regulation, and community well-being, ensuring that resilience strategies work in harmony with the natural environment.

### 8. Promoting Science-Based Decision-Making Mechanisms in the Context of Disaster and Climate Risks

It is essential to establish and strengthen mechanisms that systematically integrate scientific evidence, climate projections, and disaster risk assessments into all levels of decision-making. This includes creating structured channels for translating research findings, hazard modelling results, and climate scenarios into actionable policies and investment plans. By institutionalizing science-based planning, decision-makers can better anticipate the cascading impacts of disasters and climate change, prioritize risk-reducing measures, and allocate resources more effectively. Such an approach ensures that community development strategies remain

adaptive, forward-looking, and resilient in the face of emerging threats.

### 9. Establishing Community-Based Volunteer Rescue Forces

Well-trained and properly equipped community - based volunteer rescue teams are critical to enhancing local emergency response capacity, especially in remote or hazard-prone areas where professional services may be delayed. These teams should be built on strong legal and institutional foundations, ensuring their official recognition, retainment mechanisms, clear mandates, and operational integration into municipal and national disaster response frameworks. Standard Operating Procedures must be developed to guide their actions during various emergency scenarios, ensuring coordination with professional responders. A certified and continuous training program should cover first aid, search and rescue techniques, evacuation procedures, and the use of emergency equipment, complemented by regular simulation exercises. Providing these teams with adequate protective gear, communication tools, and transportation means will ensure they can operate safely and effectively. Over time, these volunteer forces can also take part in community awareness programs, risk reduction activities, and preparedness campaigns, creating a stronger culture of resilience at the grassroots level.

### 10. Developing Standardized Tools for Rapid and Post-Disaster Needs Assessment

To determine the needs for post-disaster humanitarian missions and to systematize the process of distributing humanitarian assistance, it is necessary to review the MIRA assessment toolkit, localizing it for assessing the consequences of different types of disasters and digitizing it. At the same time, standard operating procedures (SOPs) and mechanisms for receiving and distributing humanitarian assistance should be developed and approved, enabling a single coordinating body to manage the assistance process effectively – covering needs identification, acceptance, storage, and distribution – along with ongoing monitoring

and reporting. This approach will make it possible to deliver assistance in a targeted, needs-based manner, engaging local NGOs, international organizations, the private sector, and others.

A set of standardized, user-friendly tools and methodologies should be created for conducting both rapid impact assessments immediately after an event and comprehensive PDNA during the recovery phase. These tools should include templates, digital data collection platforms, baseline data per sector, and analysis frameworks that allow for consistent and comparable results across different locations and events. Establishing a trained roster of assessment teams – comprising representatives from government agencies, NGOs, and technical experts – will ensure that assessments can be deployed quickly, producing actionable results that inform recovery planning, resource allocation, and donor engagement.

### 11. Expanding Disaster Risk Financing Mechanisms

Robust financial preparedness is essential for mitigating the economic impact of disasters. Governments and local authorities should introduce and expand disaster risk financing (DRF) mechanisms, including risk transfer models such as catastrophe insurance schemes, contingent credit lines, and catastrophe bonds. These instruments provide immediate liquidity following a disaster, reducing the financial strain on public budgets and enabling a faster, more organized recovery process. DRF strategies should be designed with input from financial institutions, the private sector, and international partners, ensuring that they are tailored to local risk profiles and economic conditions.

### 12. Promoting the culture of resilience and investing in human capital

It is essential to develop a sub-law on Disaster Risk Management education and public awareness, which will serve as the legal foundation for creating standardized capacity-building and awareness raising toolkits for both the population and decision-makers. This sub-law should mandate the development

of inclusive and targeted approaches that address the specific needs of different population groups, e.g. the elderly, youth, and children, as well as institutional actors at various levels of governance. Based on this legal framework, relevant educational and awareness raising tools should be implemented, including programs within educational institutions, media and social media initiatives, simulation exercises, and professional retraining programs.

Municipalities and national authorities should prioritize sustained investment in professional training, specialized expertise, and community education to ensure that disaster

preparedness, response, and recovery are guided by capable leadership and technical knowledge. Building human capacity at all levels - government, professional sectors, and communities - should be treated as a strategic priority equal to physical reconstruction, in line with international standards such as the Sendai Framework.

This approach will ensure the establishment of decentralized, professional DRM capacities across all levels of society.

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## Annex 1. Data Collection Tool

### Key Informant Interview (KII)

Hello. First of all, I would like to sincerely thank you for your willingness to participate in this interview. Your opinion is extremely important to us. We represent Acted Armenia, an international humanitarian organization committed to supporting people affected by conflicts and crises by responding to their needs and addressing their primary problems. Currently, within the framework of the Start Fund Learning Grant, Acted is conducting an impact evaluation related to the severe flood that occurred on May 26, 2024, in Lori and Tavush regions, and the subsequent humanitarian response. The evaluation aims to assess the effectiveness of emergency response, identify key successes and challenges, and draw lessons to further strengthen Armenia’s disaster management systems.

### Relevance

1. How was the process of identifying the needs of the affected population organized? How effective was the needs assessment in identifying community needs? How was it structured?
2. Were there any delays in data collection or accessing affected areas? If yes, why? What systems were applied during the response and recovery phases for data collection?
3. What approaches were used to assess the vulnerability of the affected population? Hint: How were gender issues, disability, and other vulnerability factors taken into account during assessments, and were these considerations timely?
4. How were the responses and opinions of the local population included in the needs assessment process? How were local community needs and priorities reflected in recovery plans? What specific support was provided to them?
5. What short-term solutions (e.g., shelter, water, sanitation, food) were provided to meet immediate needs (Which institutions, to whom, and how? Where can we find and read the details?)
6. Were psychosocial support programs available during the response and/or recovery phases? What types of programs were implemented and by whom?

### Challenges and Response

1. What were the main challenges in the response?
2. How were these challenges addressed, if at all?

### Coordination and Stakeholder Engagement

1. How effective was the involvement and coordination of various stakeholders? What gaps were addressed?
2. How well did stakeholders coordinate the distribution of resources to avoid overlaps?
3. Were local authorities and communities sufficiently involved in the planning and implementation of recovery efforts?
4. To what extent were stakeholders satisfied with the level of cooperation during the response? What coordination platforms were formed? What challenges did you face in coordination and cooperation? Were there issues related to unclear roles or responsibilities of stakeholders?

5. How were local organizations and leaders involved in decision-making processes for recovery? Were vulnerable groups (e.g., women, children, persons with disabilities) included in participatory processes during recovery?
6. How were stakeholders held accountable for their roles and actions during emergency response? Were monitoring and feedback mechanisms available? What mechanisms?
7. How can stakeholder engagement be improved? What other coordination mechanisms could be used?

### Capacity Building and Lessons Learned

1. What capacity-building programs were implemented to strengthen disaster response capacity in communities?
2. Do you think that as a result of this response the community is now better prepared or more resilient to future disasters? For example, through training received, increased awareness, stronger community networks, or early warning systems? If yes, which ones?
3. What steps are being taken to become more resilient in similar disastrous situations?
4. How were lessons learned from the initial response and recovery documented and shared?
5. Were changes made to the response strategy based on these lessons?

### Efficiency

1. How efficient was the response in terms of time, costs, and resources?
2. How effectively was the mobilization of resources (e.g., food, shelter, medical assistance) organized in affected communities?
3. Were there gaps in resource distribution, and if so, how were these issues addressed?
4. How were available resources (money, supplies, staff) used during the flood response?
5. Could the results of the response have been achieved with fewer resources or in a more cost-effective way?
6. Were there delays due to bureaucratic procedures or procurement processes that could have been simplified?
7. How was the number of staff and volunteers determined, and was it sufficient?

### Impact - Long-term and Short-term Outcomes

1. What long-term outcomes have been achieved as a result of the recovery process?
2. What do you consider the most significant positive change that the emergency response brought to affected communities?
3. Were there any negative or unintended impacts of the response? (Hint: Did aid distribution cause conflicts or tensions within the community? Did any group feel unfairly treated?)
4. Did the response have different impacts on different groups (e.g., women/men, different villages, socio-economic groups)?
5. Successes and Innovations: Which aspects of the response were particularly successful or innovative, making a significant difference in the field?
6. What short-term solutions were implemented to respond to immediate needs?
7. What long-term strategies have been developed for sustainable recovery and resilience?

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**Disaster Risk Reduction (DRR) and Post-Disaster Strategy**

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1. How did the National Disaster Risk Reduction Strategy (2017-2030) and its action plan influence the recovery process?
2. How was the post-disaster recovery strategy implemented in the affected areas?
3. What improvements can be made in future disaster recovery programs?
4. Were lessons learned integrated into the national strategy for preparedness and response to future disasters?

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**Sustainability of Recovery Efforts**

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1. Will the recovery actions implemented ensure sustainability in the future?
2. Are there mechanisms to measure the quality of the outcomes achieved? What monitoring mechanisms?

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**Environmental Issues in Response and Recovery**

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1. How were environmental needs and considerations, such as ecosystem damage (deforestation, soil erosion), integrated into recovery programs?
2. What actions were taken to restore local ecosystems and prevent further environmental damage?

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**Integration of Disaster Risk Reduction (DRR)**

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1. How were DRR measures integrated into the recovery process?
2. What measures were taken to ensure that the recovery process contributes to reducing risks of future disasters?
3. Were local communities involved in improving DRR strategies, especially in terms of preparedness and early warning systems?

## Annex 2. Consent Form Template

**Consent Form  
for recording the interview**

Permission to Use sound recording

Subject: 66 GER V41-Start Fund-Learning Grant for 2024 Flooding in Armenia

Location: \_\_\_Armenia, Yerevan\_\_\_

Date: \_\_\_/\_\_\_/2025\_\_\_\_\_

I hereby grant my consent to Acted Armenia, including its representatives and employees, to record my interview in connection with the above-mentioned subject. I understand that the recorded content will be used solely for internal reporting purposes related to the Start Fund's Learning Grant on the flooding in Armenia in 2024.

I acknowledge that the results of the interview, as part of the study on the efficiency of the response to the 2024 flooding in Armenia, will be summarized in a generalized format, ensuring the protection of my anonymity. The findings from this research will be compiled into a report that will be shared with relevant stakeholders and made publicly available.

I confirm that, to the best of my knowledge, the information shared during this interview is accurate, complete, and reflects the official actions and response measures taken by the organization I represent in relation to the 2024 flooding in Armenia.

I have read and understand the above:

Printed name \_\_\_\_\_

Date \_\_\_\_\_

Signature \_\_\_\_\_

