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Emerging Societal Resilience in Georgia: Strengthening Civil Protection in Response to Intensified Natural Disasters

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Abstract

Georgia remains highly vulnerable to various natural hazards, increasingly intensified by global climate change. These disaster risks threaten public well-being and hinder the country's sustainable development, resulting in severe socio-economic impacts. Therefore, the following Policy Paper examines Georgia's strategic approach towards strengthening societal resilience, with a specific emphasis on enhancing disaster risk governance and reinforcing civil protection systems. Moreover, through qualitative and comparative policy analysis, the Paper explores regional transboundary disaster risks, Global Climate Action, key European Union (EU) frameworks in civil protection, and European best practices. Accordingly, the analysis outlines Georgia's key achievements, existing challenges and needs, in alignment with the country's commitments under the United Nations (UN) Post-2015 Development Agenda and the EU-Georgia Association Agreement (EU-AA), serving as a blueprint for a more secure and resilient future. The Paper concludes with targeted policy recommendations, designed to deepen strategic partnerships, harmonise national systems with European standards, and scale up comprehensive disaster risk reduction initiatives. These findings and proposed actions seek to contribute to Georgia's ongoing efforts and future endeavours to build a more resilient community ready to withstand future disasters.

List of Abbreviations

COPs	Conference of the Parties	**INSPIRE**	Infrastructure for Spatial Information in Europe
DEMA	Danish Emergency Management Agency	**OSCE**	Organisation for Security and Cooperation in Europe
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations	**IPCC**	Intergovernmental Panel on Climate Change
DGSCGC	Directorate-General for Civil Protection and Crisis Management of France	**PPRD East**	Prevention, Preparedness and Response to Natural and Man-made Disasters Programme in the Eastern Partnership Countries
DRM	Disaster Risk Management	**SatCen**	European Union Satellite Centre
DRR	Disaster Risk Reduction	**SDGs**	Sustainable Development Goals
EC	European Commission	**Sendai Framework**	Sendai Framework for Disaster Risk Reduction 2015-2030
EECC	European Electronic Communications Code	**TAFF**	Technical Assistance Financing Facility
ERCC	Emergency Response Coordination Centre	**UCPM**	EU Civil Protection Mechanism
EU	European Union	**UN**	United Nations
EU-AA	EU-Georgia Association Agreement	**UNDRR**	United Nations Office for Disaster Risk Reduction
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites	**UNDP**	United Nations Development Programme
EWS	Early Warning System	**UNFCCC**	United Nations Framework Convention on Climate Change
EW4All	Early Warnings for All Initiative	**UNOOSA**	UN Office for Outer Space Affairs
GNSS	Global Navigation Satellite System	**UNOSAT**	UN Satellite Centre
IGSU	General Inspectorate for Emergency Situations of Romania	**USAR**	Urban Search and Rescue
INSARAG	International Search and Rescue Advisory Group	**WMO**	World Meteorological Organisation

I - Introduction

Against the backdrop of Georgia's specific geographic location, its complex hydro-meteorological and geological landscape poses substantial threats to human life, causes infrastructure damage, and other socio-economic negative impacts. Devastating landslide and glacier mudflow in Shovi 2023 (Racha Region)[1], is a stark example of the vulnerabilities the country faces today.

Thereby, the Policy Paper explores the emerging societal resilience in Georgia in response to intensified natural disasters, with a focus on strengthening national civil protection systems and their adaptive capabilities. The Paper emphasises the urgent need for targeted policy responses and advanced international collaboration, especially with the EU, to enhance Georgia's disaster risk management capacities. As a small developing state, Georgia's efforts to build a resilient community, protect its population and save more lives are constrained by limited resources and institutional challenges. Therefore, the importance of shared responsibility and strong partnerships for implementing impactful actions are outlined accordingly.

Therefore, the Paper seeks to contribute to the ongoing national endeavour by examining Georgia's progress in addressing disaster risks and identifying potential areas for further development. Recent policy analyses and assessment reports underline the significance of aligning national civil protection with the broader Global Climate Action, affirming that Georgia's policy framework adheres to fulfilment commitments undertaken under the UN Post-2015 Development Agenda and the EU-AA.

Key findings demonstrate a pressing need to further harmonise the existing regulatory framework, strengthen institutional capacities and capabilities, expand educational and knowledge-enhancement initiatives, raise public awareness and deepen strategic partnerships.

Hence, the Policy Paper overviews the regional outlook regarding multi-hazard threats, global climate governance, the EU's key civil protection policies and European best practices, Georgia's existing Crisis Management System, and national disaster risk reduction approaches. Accordingly, the Paper proposes tailored policy recommendations to strengthen the country's societal resilience with a particular emphasis on advancing EU-Georgia collaboration.

[1] Copernicus EU, Post-Disaster Landslide and Soil Erosion Analysis, EMSN161 Georgia, December 2024

II - Regional Analysis of Disaster Risks

The South Caucasus region is characterised by various natural hazards, resulting in socio-economic vulnerabilities, including serious damage to infrastructure, casualties and economic losses. Moreover, food and water security and the loss of biodiversity are among the major concerns across the region. Climate change also affects extensive mountain ecosystems and remote coastal zones.

2.1. South Caucasus Hotspots - Mapping Transboundary Disaster Risks

According to the South Caucasus subnational Inform Risk 2022 Infographic, six regions in Azerbaijan (Central Aran; Ganja-Dashkasan; Gazakh-Tovuz; Karabakh; Mil-Mughan; Shirvan-Salyan), two in Georgia (Imereti; Racha-Lechkhumi-Kvemo Svaneti) and one in Armenia (Syunik) are prone to high risk compared to the rest of the administrative units in the South Caucasus region. Overall, Azerbaijan and Georgia have more high-risk level areas and are more vulnerable compared to Armenia, where most administrative units fall within the medium and low-risk class.[2]

As for the seismic hazards in the region, the South Caucasus is prone to earthquakes and related hazards. The Racha (Georgia) earthquake in 1991 (Ms=7.0), is the largest event ever recorded in the region, caused over 2050 fatalities and about 3$ billion in damage.[3] The Spitak earthquake in 1988 (Ms=6.8) died over 25,000 people in Armenia and more than 30$ billion in damage.[4] The Baku earthquake in 2000 (Ms=6.8), caused more than 30 fatalities and over 10$ million in damage.[5]

Moreover, the 2023 Kahramanmaraş earthquake (Mw 7.8 and Mw 7.5) in Türkiye dynamically triggered seismic activity in the Caucasus region both in terms of tectonic tremors and microearthquakes. Specifically, in Azerbaijan, unusual deep tremors have been observed. Moreover, this earthquake appeared to trigger some regular earthquakes both in Azerbaijan and Georgia and more earthquake activity than usual in the Javakheti highlands near Georgia and Armenia, potentially due to the influence of mud volcanoes or volcanic formations. Overall, it

[2] European Commission Disaster Risk Management Knowledge Centre, South Caucasus Subnational Inform Risk 2022 Infographic
[3] World Bank, Global Facility for Disaster Reduction and Recovery (GFDRR), Georgia Risk Profile 2017
[4] World Bank, GFDRR, Armenia Risk Profile 2017
[5] World Bank, GFDRR, Azerbaijan Risk Profile 2017

seems that the cracks in the ground in this area are very sensitive to shaking from distant earthquakes, and can react differently.[6]

Accordingly, a particular challenge in the South Caucasus is transboundary risk, where shared natural resources, ecosystems and interconnected infrastructure increase the negative impacts of disaster risks and regional socio-economic vulnerabilities.

In this context, the regional assessment conducted within the Environment and Security Initiative, of the Organisation for Security and Cooperation in Europe (OSCE) offers security implications and the most vulnerable geographic areas in the South Caucasus.[7] More specifically, it has identified both national and regional/transboundary security hotspots by 2030, including northern Armenia and Southern Georgia, South-Eastern Armenia, northwest Azerbaijan and northeast Georgia (Alazani/Ganukh River Basin), Baku and Absheron Peninsula, etc. These areas represent high and medium-risk zones, prone to floods, flash floods, mudslides and heatwaves, followed by infrastructure damage, economic and human losses, food insecurity, land degradation and more.

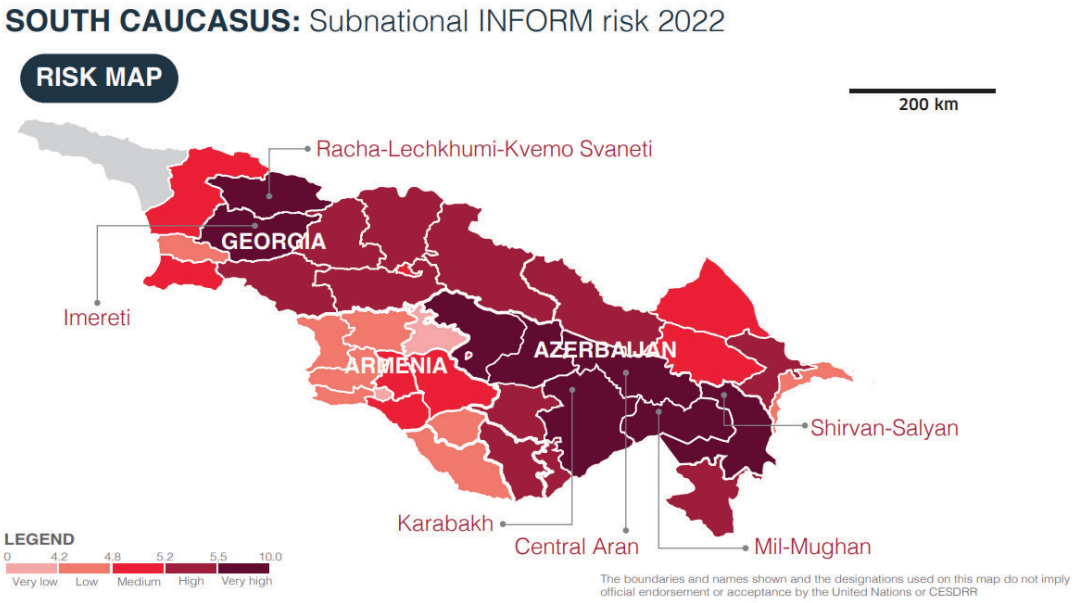
In addition, the northern region of Armenia and the southern part of Georgia hold strategic importance for both countries, particularly in terms of economic development, including agriculture, mining, and cross-border trade. Climate change and increased risks of natural disasters pose significant challenges to agricultural productivity as well as the projected decline in stream flow in the transboundary Debed-Khrami River can further deteriorate water quality.

Furthermore, northwest Azerbaijan and northeast Georgia represent the areas where agriculture plays a key role in income for the local population and significantly contributes to national economies. Due to increased temperature, a decline in stream flow of the transboundary Alazani-Ganykh River is projected, posing a major constraint on agricultural and energy development in the region. Additionally, increased risks of natural disasters (e.g., flash floods, mudflows, landslides) could further impact the security of this area.

Hence, the South Caucasus region is increasingly exposed to a range of multi-dimensional and transboundary disaster risks, underscoring the urgent need for a shared understanding of risks,

[6] Dongdong Yao, Advancing Earth and Space Sciences (AGU) Research Letter 2024
[7] OSCE, Environment and Security (ENVSEC) Initiative, Climate Change and Security - South Caucasus

deeper collaboration and coordinated actions to reduce regional vulnerabilities and build collective resilience.



2.2. Georgia's Disaster Risk Profile

Georgia (Sakartvelo - საქართველო), as specified in the Constitution, is located in the Caucasus region of Eurasia, at the crossroads of Western Asia and Eastern Europe, bounded to the west by the Black Sea, to the north by the Russian Federation, to the south by Türkiye and Armenia, and the southeast by Azerbaijan. The total area of the country is 69,700 km^2 with land boundaries of 1,839 km and a coastline of 310 km. Mountains cover about 54% of the total area, with the highest peak at 5,203 m above sea level (peak Shkhara). About 2/3 of its territory is mountainous with 26,060 rivers, 860 lakes and 725 glaciers. The climate is diverse, characterized by almost every climate zone existing on the earth, from the humid subtropical climate to the eternal snow and glaciers zone.[8] The country is ranked as a medium-risk class by the Inform Risk Index 2025.[9]

Due to its specific geographic location, complex hydro-meteorological and geological landscape and the climate change phenomena, Georgia is rather prone to various large-scale natural and

[8] National Statistics Office of Georgia, Natural Resources of Georgia and Environmental Protection, 2019
[9] European Commission, DRMKC, Inform Risk 2025

man-made disasters, such as earthquakes, floods and flash floods, glacier mudflows, landslides and avalanches, droughts and hailstorms, forest and valley fires, etc.

More specifically, Georgia is situated in one of the most seismically active regions in the Alpine-Himalayan Collision Belt. An analysis of the historical and instrumental seismology of this region shows that it is still of moderate seismicity. Strong earthquakes, with magnitudes up to 7 and macro-seismic intensity of 9 (MSK scale), have occurred in the region. For instance, during the Racha earthquake (M=7.2) in 1991 more than 200 people died and approximately 60,000 were left homeless. The 2002 Tbilisi earthquake (M=4.5) with an intensity of up to 7 (MSK scale), caused significant damage estimated 160$ million, 7 people died and several more were injured.[10]

The quantity of glaciers in Georgia is 383, occupying 377 $km^{2,}$ and their degradation process is progressing, which is a clear indicator of the ongoing climate change.[11] According to the second edition of the Caucasus Environment Outlook, the Caucasus glaciers have retreated by an average of 600 meters, with more than 11 billion tonnes of freshwater previously stored in ice having been lost since 2000.[12] Hereby, glacial melting already poses a severe flood hazard, illustrating the severe impact of climate change. In 2023, a devastating mudflow, triggered by intense rainfall and glacial melt, caused significant destruction and the loss of lives in the village of Shovi (Racha region of Georgia).[13] More specifically, natural geological and hydrometeorological events (glacier melting, rain, rock avalanches in the headwaters, landslide-erosive processes, and mudslides) collided in the Bubisskali valley, generating extreme mudflow, reached the cottages and hotel in 8-10 minutes. Consequently, 33 people died and a large part of the resort was destroyed.[14][15]

Georgia is also characterised by frequent floods and flash floods. Floods occur more slowly when prolonged rainfall or rapid snowmelt exceeds a river's capacity. In contrast, flash floods develop quickly due to heavy rainfall or the sudden release of water from an upstream obstruction, such as a dam, landslide, or glacier.[16] Over 50% of the country's territory is prone to floods, flash floods, and avalanches, threatening more than 100 populated territories.[17] The

[10] CENN, Hazard Assessment - Earthquakes in Georgia
[11] National Environmental Agency, Glaciers in Georgia
[12] UN Environment Programme (UNEP), Caucasus Environment Outlook - Second Edition, November 2024
[13] UNEP, Press Release - Caucasus Glaciers, November 2024
[14] Climate Action Network, Eastern Europe, Caucasus and Central Asia, the Shovi Tragedy: One Year Later, August 2024
[15] National Environmental Agency (NEA), Georgia, Shovi Disaster Event Analysis, Second Opinion, November 2023
[16] CENN, Hazard Assessment - Floods and Flash Floods in Georgia
[17] UNDP, Comprehensive Analysis of Climate Change Adaptation and Disaster Risk Reduction Architecture and Recommended Actions, Road Map 2018

average annual loss is above 4$ million.[18] As for the landslides and mudflows, they present a high risk to the majority of the population in mountainous areas, whereas evacuation of the population or even their resettlement in other regions is required. Moreover, as a severe impact of these disasters, numerous settlements, agricultural lands, roads, oil and gas pipelines, high-voltage power lines, hydropower and water treatment facilities, as well as mining and tourism infrastructure, have been periodically impacted.[19]

In this context, in 2015, heavy rainfall triggered a flash flood and a large landslide of about 1 million cubic metres near the village of Akhaldaba (about 10 km. West of Tbilisi). The landslide poured trees, rocks, soil and debris into the already overflowing floodwaters of the Vere River, transforming it into a destructive mudflow. This disaster caused devastating socio-economic consequences: 19 fatalities, 3 missing persons, 67 displaced families, and an impact on around 7000 individuals. Moreover, the Zoo of Tbilisi, around 40 roads, many homes and several urban infrastructure and communications systems were severely disrupted. The total economic cost amounted to 55.2 million Georgian Lari (24.3$ million) in physical damage and 9.62 million Georgian Lari (4.37$ million) in financial losses.[20][21]

Global climate change has intensified drought hazards throughout the world, including Georgia. Analysis of the historic data demonstrates that strong droughts used to occur once every 15-20 years and today the frequency of this event has increased by almost 3 times. As for hailstorms, they occur on a seasonal basis throughout the entire territory of the country, namely, from 5 to 15 cases are annually recorded and thereby from 0.7% to 8.0% of agricultural land is destroyed.[22]

In Georgia, massive wildfires can spread at several thousand hectares (e.g., in 2008, destroyed up to 1000 hectares) and presumably can cause fatalities, destruction of regional infrastructure, evacuation of the local population and long-term ecological damage (minimum for more than 5 years).[23] From 2001 to 2023, Georgia lost 1.79 kha of tree cover from fires and 10.1 kha from all other drivers of loss.[24]

[18] Central Asia Regional Economic Cooperation Region (CAREC), Country Risk Profile, Georgia, 2022
[19] CENN, Hazard Assessment - Landslides, Mudflows and Rockfalls in Georgia
[20] GFDRR, Tbilisi Disaster Needs Assessment, September 2015
[21] UNDP, World Bank, Technical Assessment Report of Events - Georgia/Tbilisi Flood Assessment Mission, 2015
[22] CENN, Hazard Assessment - Droughts and Hail Storm in Georgia
[23] CENN, Hazard Assessment - Wildfires in Georgia
[24] Global Forest Watch, Georgia

Furthermore, in February 2025, heavy snowfall affected the Western part of Georgia, especially in the Guria region, where the snow cover in some places reached 3 meters, leaving many villages cut off from essential services. Locals have been without electricity, gas, and road access for several days, as well as some house roofs collapsed under the weight and fallen trees further blocking already impassable roads.[25][26]

Considering intensified natural hazards, high-security risk zones by 2030 were identified across the country, including the capital -Tbilisi, Mtskheta-Mtianeti and Kakheti regions, Adjara and the Black Sea coast as well as the south-northern part of Georgia. In Tbilisi, with one-third of the population and a significant share of the national economy, the frequency of heatwaves has drastically increased, leading to increased health risks, damage to infrastructure, and substantial economic losses. Furthermore, the Mtskheta-Mtianeti region, which is an important transnational infrastructure hub for transportation and energy as well as one of the famous tourist destinations, is threatened by high risks of natural hazards (e.g., landslides, mudflows and avalanches). Kakheti region, best known for its wineries, also falls under the high-risk prone area. Given the region's significance for national food production and the vital role of its water resources for agriculture, is highly prone to hailstorms, flash floods, mudflows, etc. The Black Sea coastal zone is characterized by extreme weather events (e.g., strong rains, flash floods), followed by infrastructure damage, economic and human losses. Increased wildfires and glacier melting in the south-north part of Georgia are causing a major social, economic and cultural challenge as well.[27]

Consequently, Georgia's complex geographic location and highly diverse climatic conditions, make the country highly vulnerable to a broad spectrum of natural disasters, resulting in severe socio-economic consequences. Notably, high-risk zones now encompass both remote mountainous areas as well as tightly populated and economically significant regions, including the capital - Tbilisi. Therefore, further strengthening Georgia's civil protection systems, especially developing the integrated, multi-hazard Early Warning System (EWS), remains essential to safeguard more human lives, enhance community resilience, protect strategic assets and sustain the country's economic progress.

[25] UN OCHA, ReliefWeb, Impact Report: Heavy Snow in Georgia, February 2025
[26] Copernicus, Emergency Management, Service, Snowfall Impact in Guria, Georgia, February 2025
[27] OSCE, Environment and Security (ENVSEC) Initiative, Climate Change and Security - South Caucasus

III - Global Climate Governance and Georgia's Strategic Approach to Disaster Risk Management

People worldwide become highly vulnerable to extreme weather and its severe impacts, intensified by global climate change.[28] Ecological imbalances contribute to the increased frequency of natural hazards like hydrometeorological events, landslides, floods, accelerated glacial melting and rising sea levels. Moreover, human activities (e.g., burning oil, coal and natural gas for energy production, deforestation, etc.) make the greenhouse effect more powerful, accelerating the process of global climate change.[2930] As a result, global temperature has increased more than 1.5 degrees Celsius in the last century, and no single country is capable of protecting itself from its negative impacts.[31] According to the latest Global Assessment Report on Disaster Risk Reduction, annual disaster costs exceed over $2.3 trillion.[32]

Hereby, the constant development of climate diplomacy through tied international collaboration to address, mitigate and adapt existing and future disaster risks remains significant. This ambitious objective should comply with the Global Climate Agenda, centred around the UN's key conventions, agreements and initiatives. Within this framework, Georgia recognises the importance of adapting to climate change as well and acknowledges the necessity of empowering national measures to increase community resilience and reduce disaster risks.

3.1. Global Climate Action - Overview of Key Policy Frameworks

Back in the 1990s, the first steps towards an international response to climate change were illustrated by the adoption of the United Nations Framework Convention on Climate Change (UNFCCC)[33], ratified by 197 countries. The UNFCCC efforts were strengthened by the Kyoto Protocol[34], becoming a legally binding document for emission reduction targets. Following the devastating 2004 Indian Ocean tsunami, the Hyogo Framework for Action 2005-2015[35] was endorsed as the first global plan to gradually reduce disaster risks and strengthen resilience, which was replaced by the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework).[36] The 4 priorities of action and 7 targets of the

[28] European Commission Disaster Risk Management Knowledge Centre, INFORM Climate Change Risk Index
[29] University of California Museum of Paleontology (UCMP) Project, Understanding Global Change, Greenhouse Effect
[30] European Space Agency, About Greenhouse Gases
[31] NASA - What is the Greenhouse Effect?
[32] UNDRR, Global Assessment Report on Disaster Risk Reduction (GAR), May 2025
[33] What is the United Nations Framework Convention on Climate Change (UNFCCC) 1994?
[34] What is the Kyoto Protocol, 1997?
[35] Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters
[36] UNDRR, Sendai Framework for DRR 2015-2030

Sendai Framework aim to prevent new and reduce existing disaster risks and elevate states' efforts towards climate adaptation.

Furthermore, building upon the UNFCCC, at the 21st Conference of the Parties (COPs)[37] in Paris in 2015, the Paris Agreement was adopted. This Agreement aims to mitigate the effects of climate change by limiting the global average temperature to 1.5°C above pre-industrial levels by the end of this century.[38]

Since then, the COPs annually take place and represent the world's only multilateral decision-making forum on climate change where the world comes together to agree on ways to address the climate crisis, thus facilitating and overseeing the successful execution of the UNFCCC and Paris Agreement. Moreover, the Intergovernmental Panel on Climate Change (IPCC)[39] was set up as a platform to review and present the state of knowledge of the science of climate change, and its social and economic impacts.

Moreover, the adoption of the 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) and 169 targets marked another layer to promote a sustainable and prosperous future by addressing social, economic and environmental challenges, including climate adaptation actions.[40] Follow-up and review of the 2030 Agenda and SDGs is annually conducted within the High-level Political Forum on Sustainable Development.[41]

Therefore, these international frameworks are interconnected and serve as a blueprint for all stakeholders to contribute to Global Climate Action for sustainable development and reinforce societal resilience. In this context, the UN Secretary-General's decision to develop a multi-hazard EWS, by launching the Early Warnings for All (EW4All) Initiative, is fully aligned with the broader objectives of climate action. This initiative aims to ensure universal protection from extreme weather events by 2027 through the implementation of life-saving multi-hazard EWSs. While the price of establishing and maintaining this kind of system is high, the cost of lives, economic losses, and infrastructural damage underscores the cost-effectiveness of early warning tools. This Initiative has four pillars and each of the components is led by a respective International Organisation.[42]

[37] UNFCCC, Conference of the Parties (COP)
[38] UNFCCC, the Paris Agreement
[39] The Intergovernmental Panel on Climate Change (IPCC)
[40] UN Sustainable Development Goals (SDGs)
[41] UN, High-level Political Forum on Sustainable Development (HLPF)
[42] UN, Early Warnings for All (EW4All) Initiative

The promotion of climate resilience and social cohesion is an indispensable aspect of the EU's policy as well. The EU's climate agenda is defined within the EU's ambitious programme - the European Green Deal[43], launched in December 2019, which facilitates a green transition endeavour with the ultimate goal of reaching climate neutrality by 2050. It sets the blueprint to transform the EU into a clean, resource-efficient, and competitive economy with a whole-of-society approach, aligned with commitments undertaken by the Paris Agreement. The European Commission (EC) presented its assessment for a 2040 climate target for the EU in February 2024 and recommended reducing net greenhouse gas emissions in the EU by 90% by 2040 compared to 1990 levels.[44] Moreover, cohesion in policies such as the EU Emissions Trading System has strengthened the EU's global leadership in climate diplomacy, as well as cohesion in policies on biodiversity, water quality, and waste management.[45]

Additionally, the EU has developed comprehensive civil protection and resilience mechanisms aimed at strengthening disaster prevention, preparedness, response, and recovery across Member States and its partner nations. In this endeavour, the European Early Warning and Information Systems play a significant role in enabling early action both within the EU and worldwide. The EU monitors hazards globally and supports its Member States in establishing and developing national EWSs, which complement the broader European Systems. As part of the EU's Copernicus programme and in close collaboration with various research institutions, a number of specialised systems have been developed, including the European Flood Awareness System, the European Forest Fire Information System and more.[46]

In 2010, the European Commission's Civil Protection and Humanitarian Aid Operations Department (DG ECHO) integrated civil protection for better coordination and disaster response inside and outside Europe, through the EU Civil Protection Mechanism (UCPM) and the EU's Emergency Response Coordination Centre (ERCC).[47]

The UCPM aims to strengthen civil protection cooperation between the EU countries and 10 additional participating states to improve prevention, preparedness, and response to disasters. Any country hit by a disaster, in Europe and beyond, can request emergency assistance through this Mechanism. The EC plays a key role in coordinating coherent disaster response across

[43] European Commission, Policy Priorities, European Green Deal
[44] European Commission, 2040 Climate Target
[45] European Commission, EU Emissions Trading System
[46] European Commission, European Early Warning and Information Systems, April 2023
[47] European Commission, About DG ECHO

borders by ensuring the pooling of civil protection resources, tools, knowledge, and skills.[48] The Mechanism also helps coordinate disaster prevention and preparedness activities among national authorities and fosters the exchange of best practices. In 2024, the Mechanism was activated 58 times (e.g., floods in France, Czechia, Poland, Bosnia and Herzegovina, and Spain; wildfires in Europe and Latin America). Besides EU member countries, there are 10 more states that participate in the UCPM.[49]

The ERCC is the core of the UCPM. The Centre coordinates and ensures rapid delivery of assistance to disaster-stricken countries, including relief items, expertise, civil protection teams and specialised equipment. Furthermore, with the support of the EU's Early Warning and Information Systems, the ERCC monitors various hazardous events throughout the globe and provides a comprehensive early assessment of the event, thus enabling early action within the framework of EU civil protection both within the EU and worldwide. Furthermore, based on the Copernicus satellite maps, the ERCC can monitor disasters and potential disaster risks from space, assess the impact of disasters and provide maps to support recovery efforts. Likewise, a system of Galileo satellites (Europe's Global Navigation Satellite System) and ground stations provide geographic positioning information to Member States to broadcast alert messages.[50]

Moreover, in 2023, to further strengthen civilian emergency preparedness for multiple threats, including the changing disaster risk landscape, the EC adopted 5 Disaster Resilience Goals in civil protection, namely:

1. **Anticipate** - improve risk assessment, anticipation, and disaster risk management planning.
2. **Prepare** - increase risk awareness and preparedness of the population.
3. **Alert** - enhance early warning.
4. **Respond** - enhance the UCPM response capacity.
5. **Secure** - ensure a robust civil protection system.[51]

In this context, the EC intends to improve forecasting, detection, monitoring capability, and the advancement of public warning systems to ensure the timely transmission of warning messages across the national, regional, and local levels. In parallel the ERCC is developing a multi-hazard

[48] European Commission, Emergency Response Coordination Centre (ERCC), January 2025
[49] European Commission, About UCPM, January 2025
[50] European Commission, European Early Warning and Information Systems, April 2023
[51] Recommendation 2023/C 56/01 of the European Commission on Union Disaster Resilience Goals, February 2023

"dashboard" that provides European situational awareness and in-demand technical support to Member States to identify gaps and build capacities within their EWSs (Flagship Initiative: Linking Global Early Warning to Local Action in Europe).[52] Moreover, ensuring a sustainable civil protection system remains operational during and after disasters represents one of the key priorities among the Union's disaster resilience goals (Flagship Initiative: Stress-test the Emergency Operation Centres Across Europe).[53]

Furthermore, in 2024, the EC launched the Technical Assistance Financing Facility for Disaster Prevention and Preparedness (TAFF) - a new financial support instrument to enhance disaster prevention and preparedness in the EU and beyond. As part of the UCPM, the TAFF is fully aligned with the EU's disaster resilience goals and aims to strengthen the knowledge and capacities for disaster management. The TAFF encompasses 2 main components:

1. **Country-Specific Technical Assistance** - to strengthen civil protection capacity with a key focus on early warning and hydro-meteorological systems and ensure a robust civil protection system.
2. **Knowledge and Capacity Building** - to facilitate the transfer and sharing of knowledge and good practices among countries on disaster risk management.[54]

Moreover, in March 2025, the EU Preparedness Union Strategy was adopted, which aims to enhance the Union's capacity to efficiently anticipate, prevent and respond to new threats and crises, including natural disasters. Within the outlined objectives of the Strategy, timely access to space-based early warning information to disseminate direct alert messages to the population will be enhanced based on the Copernicus Emergency Management Service and the upcoming Galileo Emergency Warning Satellite Service.[55]Additionally, in May 2025, the EU's Strategic Approach to the Black Sea Region was also endorsed, which foresees the promotion of climate change resilience and civil protection as one of the key pillars of future cooperation.[56]

[52] Union Civil Protection Knowledge Network, Goal 3 - Alert
[53] Union Civil Protection Knowledge Network, Goal 5 - Secure
[54] UCPM Technical Assistance Financing Facility (TAFF) for Disaster Prevention and Preparedness, 2024
[55] European Commission, EU Preparedness Union Strategy, March 2025
[56] EU's Strategic Approach to the Black Sea Region, 28 May 2025

3.2. Georgia's National Crisis Management System

Institutional Arrangement

Georgia is part of the three-landmark global agendas, adopted by the United Nations *(Paris Agreement (UNFCCC); SDGs within the framework of the 2030 Agenda for Sustainable Development; Sendai Framework),* and acknowledges the climate emergency and a whole-of-society approach to Disaster Risk Management (DRM), aligned with the EU-Georgia Association Agreement (EU-AA).

Georgia's approach to DRM reflects a centralized National Crisis Management System[57] that empowers governmental sectors to prevent risk, respond and rapidly recover from natural and man-made disasters. The System is regulated by the Constitution and respective legal frameworks, including the Law on "The Rule on National Security Policy Planning and Coordination",[58] the Law on "Civil Protection",[59] Governmental Decree №508 on "National Civil Protection Plan",[60] etc.

Considering existing needs, the System seeks further enhancement of the respective legal and regulatory framework, as well as organisational capabilities for effective crisis management, which will be added value to the civil protection reinforcement process. Hereby, Georgia consistently continues to apply world-proven best practices, successfully fulfils international obligations and develops intense collaboration with partner nations with full use of bilateral, regional and international formats.

In this context, the country possesses a four-phased disaster risk planning and management process, which includes prevention, preparedness, response and recovery phases. The process begins with the identification of an incident's circumstances and context that form the basis for a risk assessment. The assessment involves evaluation of the level of threat, analysis, assessment and determination of the possible worst-case scenario of the expected threat. Planning and implementation of risk reduction activities are carried out once the mentioned process is completed.

Within the framework of Georgia's multi-agency cooperation format, national threats and risks are identified and analysed, by assessing the probability of occurrence (very low, low, medium,

[57] Interagency Publication - Georgia's National Crisis Management System, 2023
[58] Law of Georgia on National Security Policy Planning and Coordination, Legislative Herald of Georgia 2019
[59] Law on Civil Protection of Georgia, Legislative Herald of Georgia
[60] Governmental Decree №508 on Civil Safety National Plan, 2015, Legislative Herald of Georgia

high, very high) and possible negative impact (light, medium, serious, very serious, catastrophic) on a two-dimensional risk assessment scale. Very high, high, or medium-level hazards, which pose a threat to the national interest, will be reflected in the National Threat Assessment Document, and consequently, the worst-case scenario of natural and/or man-made disaster will be elaborated.

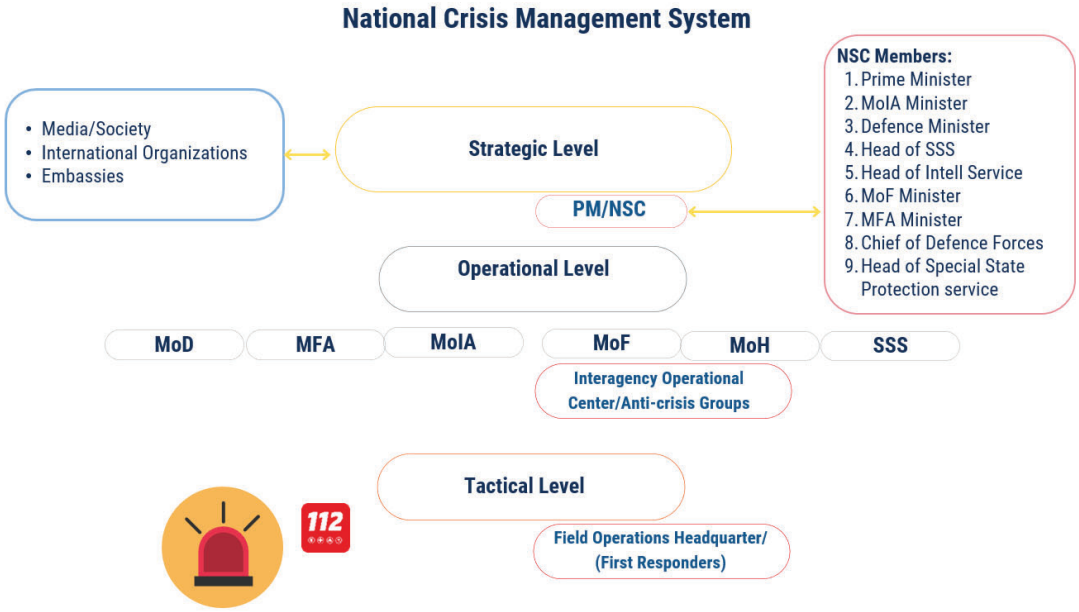
With the aim to reduce the threats identified by the National Threat Assessment Document, the National Disaster Risk Reduction (DRR) Strategy and its Action Plans(s) are being elaborated through an interagency cooperative format. The DRR Strategy aims to establish a unified disaster risk reduction system, enhance disaster preparedness and response capabilities at national and local levels, and ensure a rapid and more effective response to likely threats. Therefore, the DRR system is based on the whole-of-government approach and is fully compliant with international standards (e.g., UNFCCC, Sendai Framework, SDGs, EU-AA, etc.).

Thus, the National Crisis Management System is carried out through a three-level planning and management process - strategic, operational and tactical, which is a universal model and could be applied to any type of operation or event. At the strategic level, the Prime Minister of Georgia takes strategic decisions to effectively manage wide-scale crises and execute response measures taking into consideration recommendations of the National Security Council. The Interagency Operational Center (anti-crisis working groups) consists of representatives from different agencies, executes crisis management and coordinates recovery activities. Each working group's composition depends on the type of crisis. When it comes to the tactical level, representatives from one or more agencies (e.g., first responders) execute response activities on the ground of the incident.

The National Crisis Management Center (Department), which operates under the Office of the National Security Council, within its competency, ensures unified policy planning and coordination in the field of civil protection, facilitates interagency coordination during a large-scale crisis, coordinates the elaboration process of relevant action plans for all types of crisis, etc.[61] The State Sub-Agency of the Ministry of Internal Affairs of Georgia - Emergency

[61] Official Website of National Security Council of Georgia, Key functions of the National Crises Management Center (Department)

Management Service[62], represents the main operational force of the national system to ensure civil protection.



Achieved Progress

Georgia has made tangible progress to strengthen disaster risk governance, including institutional and legislative reforms, enhanced preparedness and response capacities at all levels, and integration of DRR into national development strategies. Georgia's DRR policy is compliant with international standards and fulfils commitments under the three interlinked post-2015 global development agenda and the EU-AA.

In this context, the Administration of the Government of Georgia has designed all 17 SDGs as national priorities and leads the national efforts in this regard. In 2016, Georgia was among the first 22 countries to present a Voluntary National Review report at the High-Level Political Forum on Sustainable Development. Moreover, in 2020, the Interagency Council on SDGs,[63] co-chaired by the UN representative, was established to strengthen the monitoring and evaluation of the SDGs agenda.[64]

[62] Official Website of Emergency Management Service of Georgia
[63] The Functions of the Council, Official Website of the National Security Council of Georgia
[64] How the UN is supporting the Sustainable Development Goals in Georgia

Georgia stands as one of the leading countries to develop the Voluntary National Report for the Midterm Review of the implementation of the Sendai Framework. The National Report was submitted in 2022 to the UNDRR Regional Office for Europe and Central Asia. Coordinated by the Office of the National Security Council, this Voluntary Midterm Report highlights the progress, challenges and recommendations for priority areas identified within the UN 2030 Agenda.[65]

Georgia reaffirms its commitment to the Paris Agreement, particularly in limiting the global temperature rise to 1.5°C. In 2020, the Government established the Interagency Council on Climate Change to ensure climate change mitigation and adaptation efforts.[66] Furthermore, to refine the regulatory framework, the Parliamentary Committee on Environmental Protection and Natural Resources initiated public consultations in 2023 by developing the Green[67] and White Papers[68]. This process aims to ensure all relevant stakeholders' engagement in the drafting process of Georgia's Climate Change Law.

Moreover, Georgia has developed the Climate Change Strategy for 2030, the Climate Adaptation Action Plan(s), and other related documents[69] outlining pathways for reducing greenhouse gas emissions, mitigating the impacts of climate change, etc.[70] This strategic framework supports the achievement of SDG 13 (climate action) and highlights Georgia's national vision for climate change mitigation aligned with its international obligations. The Strategy is fully in line with the EU legal acts considered under the EU-AA. Furthermore, an Action Plan for Managing Public Health Risks Related to Heat Waves for 2024-2030 has been adopted.[71]

As part of the EU-AA, Georgia is accountable for gradually bringing its legislation closer to the EU legislation. Chapter 22 on Civil Protection outlines cooperation in disaster prevention, preparedness and response, which represents leverage to further advance collaboration in this regard. Therefore, Georgia strives to align with EU directives and regulations on energy efficiency, air quality, and renewable energy, ensuring its Climate Action Plan is compatible with the broader reform agenda. Moreover, Annex XVIII calls for the establishment of early

[65] Georgia: Voluntary National Report of the MTR SF, October 2022
[66] Decree 54/2020 on Establishing the Climate Change Council
[67] Parliament of Georgia, Climate Law for Georgia, Green Paper Proposing the New Law, February 2023
[68] Parliament of Georgia, Climate Law for Georgia, A White Paper Proposing the New Law, November 2023
[69] LEPL Environmental Information and Education Centre of Georgia, Action Plans
[70] UN FAO Lex, Georgia's 2030 Climate Change Strategy
[71] Action Plan of Georgia for Managing Public Health Risks Related to Heat Waves for 2024-2030

warning mechanisms, while Annex XXVI requires Georgia to adopt national regulations on flood assessment, management, flood hazard and risk mapping and develop respective plans.[72]

Additionally, Georgia cooperates with specific EU structures to further enhance its disaster prevention, preparedness and response capabilities. In 2018, an Administrative Agreement was signed between the Emergency Management Service of Georgia and the DG ECHO, to build upon the successful cooperation developed through Prevention, Preparedness and Response to natural and man-made disasters (PPRD East) programmes. In parallel with other objectives, the Agreement enables Georgia to exchange good practices, have access to Copernicus, participate in different trainings and exercises, etc. Most importantly, within this framework, the EU agrees to support the enhancement of Georgia's civil protection capabilities in line with gradual alignment with the UCPM.[73]

In this context, the PPRD East 3 programme, concluded in 2024, aimed to enhance disaster resilience within Georgia, Armenia, Azerbaijan, Moldova, and Ukraine, while also supporting each country's alignment with the UCPM. Alongside other achievements, tangible progress was made to integrate Early Warning and Early Action mechanisms into emergency planning practices. The full-scale exercise TbiEx2023 strengthened coordination, adaptive planning, and tested multi-agency responses to wildfires under the UCPM activation, showcasing enhanced interoperability. The implementation report states that Georgia has a strong national civil protection legal framework, however, it needs modernisation and alignment with the programme outcomes.[74]

Consequently, building on its progress towards the UCPM membership, Georgia submitted a formal application in March 2023 to join this mechanism, followed by technical discussions with the EC. However, due to political developments, the procedure for signing the UCPM agreement has been stalled since May 2024.[75] Today, as a potential member of the UCPM, national efforts are ongoing to further advance its conceptual documents and regulatory framework, enhance its operational capacity, and adapt existing capabilities to effectively contribute to disaster management efforts.

[72] The Association Agreement between the EU and Georgia, 2014
[73] The Administrative Agreement between DG ECHO and Emergency Management Service of Georgia, July 2018
[74] Final Technical Implementation Report (2020-2024) - Phase 3 (PPRD East 3), September 2024
[75] European Commission, Communication on EU Enlargement Policy, Georgia Report, October 2024

Parallelly, the UNDP and the Government of Georgia have been implementing a 7-year programme co-financed by the Green Climate Fund as well as the Governments of Switzerland, Sweden, and Georgia, to reduce climate-driven disasters in Georgia. The programme, with a total budget of $ 74 million, encompasses 4 interconnected projects,[76] and therefore key interventions include risk assessment, early warning systems, and community-based preparedness initiatives to strengthen resilience in high-risk areas.

In this regard, nationwide progress has already been achieved, including:

- Georgia became a member of the European Centre for Medium-Range Weather Forecasts to improve forecasting capabilities.
- Construction of flood-protective infrastructure in 15 locations is being built.
- Community-Based Disaster Risk Management/Emergency Management Plans were developed, covering 45 high-risk communities across 20 municipalities in Western Georgia.
- The web-based digital agro-platform - Georgia Climate Services for Agriculture was launched to provide Georgian farmers with essential climate information and guidance. To date, the platform has registered 893 farmers.[77]
- Based on hazard maps and the socio-economic vulnerability assessment, 100 most vulnerable communities are being identified (15 already selected).
- Etc.[78][79][80][81]

Additionally, to foster a proactive approach to risk reduction education and bridge the gap between knowledge and behaviour, various respective measures have been implemented. More specifically, the DRR training and Train of Trainers (ToT) module with an inclusive approach, has been developed for the National Center for Teacher Professional Development under the Ministry of Education and Science of Georgia. Special subjects related to the DRR have been developed and integrated into the National Curriculum of General Education for the III - XII grade school students. Furthermore, the DRR learning module was developed and integrated into the curriculums of six universities across Georgia.[82]

[76] UNDP Programme - "Reducing the Risk of Climate-driven Disasters in Georgia"
[77] UNDP in Georgia, Georgia Climate Services for Agriculture – GECSA, March 2025
[78] UNDP Programme - "Reducing the Risk of Climate-driven Disasters in Georgia"
[79] UNDP Project - "Scaling-up Multi-Hazard Early Warning System and the Use of Climate Information in Georgia"
[80] UNDP Project - "Improved Resilience of Communities to Climate Risks"
[81] UNDP Project -"Strengthening Climate Change Adaptation Capacities in Georgia - Phase 2"
[82] Voluntary National Report 2022, Mid-Term Review of Sendai Framework 2015-2030, pp. 33-34

Moreover, by the end of 2025, Georgia's Urban Search and Rescue (USAR) Team is preparing to get an external classification from the International Search and Rescue Advisory Group (INSARAG). By becoming an internationally classified USAR Team, Georgia will further enhance the effectiveness of emergency preparedness and response activities to save more lives, minimise adverse impacts as well as contribute to global operational readiness.[83]

In this regard, the tangible progress in strengthening Georgia's civil protection and disaster risk management system at the central and local levels was also highlighted in the 2024 Communication on EU Enlargement Policy. The report states that preparedness and prevention measures for floods and droughts have been established. Specifically, the flood forecasting system has been expanded, a drought monitoring system was adopted, and landslide monitoring systems were installed in 11 locations. In addition, the number of hydrometeorological stations increased to 169, and geological hazard maps were prepared. While the report acknowledges efforts to enhance administrative capacities, it highlights that further improvements are needed, especially in human and financial resources.

Notably, according to the UNDP Road Map 2018 regarding Georgia's hazard mapping system, notable progress is underlined in producing meteorological forecasts, specifically developing a Flood Forecasting Early Warning System. However, similar systems are still needed in the rest of high-risk river basins to address their flood risks across the country. Therefore, the Report concludes that Georgia lacks a fully operational multi-hazard EWS. Its components exist only for some hazards and at a limited scale, which should be part of a nationwide warning system in the future.[84]

Consequently, Georgia effectively allocates its organic resources and collaborates with international donors and partner nations on a bilateral, multilateral, and regional basis to address additional needs at all levels within the civil protection area and develop target-oriented initiatives.

[83] International Search and Rescue Advisory Group, Annual Overview 2024
[84] UNDP, Assessment of Hazard Mapping System in Georgia and Recommended Actions, Road Map 2018

IV - Country-Specific Needs and Opportunities in Civil Protection

The national and regional disaster risk analysis demonstrates that intensified natural hazards threaten lives, infrastructure, and economic resilience. In this regard, examining European best practices by highlighting specific states' strategic approaches to enhancing national resilience and civil protection capabilities, including developing sufficient systems (e.g., EWS) could provide valuable insights for Georgia to learn from and apply successful approaches. This, in turn, will gradually enhance Georgia's National Crisis Management System and related capabilities, ultimately contributing to saving more lives, safeguarding infrastructure, and promoting socio-economic resilience.

4.1. Limits of Georgia's Civil Protection Capabilities

Recent analyses of extreme weather events have identified several shortcomings within Georgia's civil protection system.

- First, the efforts of responsible Governmental Agencies of Georgia to manage risks are mostly reactive, focusing on immediate and individual threats, rather than leveraging a proactive approach. Derived from past experiences various groups, institutions and organisations are potentially vulnerable to indirect and/or cascading effects of simultaneous hazards across the country. Therefore, considering the systemic nature of disasters shortfalls remain in institutional capacities and capabilities at operational and tactical levels.

- Second, the lack of qualified strategic-level subject-matter experts in different directions within the civil protection area represents a challenge. The existing regulatory framework requires revision and alignment with the European Standards (e.g., EECC), with a key focus on ensuring effective disaster risk management measures. In this context, the absence of a respective Governmental Decree on establishing integrated and multi-hazard national EWS remains critical.

- Third, Georgia lacks a fully operational multi-hazard EWS. Fragmented early warnings across the country lead to less efficient disaster risk reduction measures and underline the urgent need to timely develop an integrated and multi-hazard national EWS.

- Fourth, Georgia lacks a unified data collection methodology and centralized system for the accumulation of information regarding natural and man-made disasters of small, medium and greater scale and the data regarding the caused negative impacts. The absence of a national database for systematic collection of loss and damage data limits understanding of disaster trends and impacts.

- Fifth, Georgia has established cooperation with various geospatial centres and services (e.g., UN Satellite Center (UNOSAT), Copernicus) that upon the country's request provide satellite imagery and maps in times of crisis. However, Georgia does not have daily access to the above-mentioned data to ensure effective disaster risk management at all levels.

- Sixth, one of the key issues remains a lack of public awareness and readiness, particularly regarding how to behave during and after disasters. Limited community engagement (especially youth) in crisis preparedness and response efforts alongside insufficient resources for organising nationwide information campaigns remains a challenge.

- Seventh, despite some measures to mainstream DRR education, the need for further enhancement and modernisation of institutionalised educational programmes within the National Curriculum, as well as the absence of a formalised approach for preschool (kindergartens), remains significant.

4.2. Bridging the Gaps: Georgia's Current Early Warning System and European Best Practices

The National DRR Strategy defines the establishment of the EWS as one of the strategic objectives. Despite some existing early warning elements, Georgia lacks a fully operational multi-hazard EWS. Fragmented early warnings reduce the efficiency of prevention, preparedness and response measures, often leading to severe socio-economic impacts. Consequently, establishing an efficient EWS to address intensified climate-driven disaster risks bears the utmost importance.

In this context, the National Environmental Agency of the Ministry of Environmental Protection and Agriculture of Georgia is accountable for environmental monitoring, hydrometeorological and geological data collection, hazard assessment, and the dissemination of critical climate-related information. Within its competencies, the Agency produces short, medium and long-

range forecasts and issues warnings on expected extreme weather events by providing this information to central and local authorities and mass media. Moreover, the Agency allocates the warning information on its official website and social media, and in case of extreme events, in close coordination and collaboration with the 112 Centre, disseminates weather warning messages (SMS) to the public.[85]

Moreover, the National Environmental Agency is responsible for collecting hazard maps, performing multi-hazard risk assessments, and maintaining geospatial databases. However, current data systems are fragmented, and maintained in paper or non-standard electronic formats, leading to challenges in creating comprehensive hazard maps for all disasters. While the Agency has achieved progress in producing meteorological forecasts - exemplified by the Rioni Flood Forecasting Early Warning System - Delft-FEWS, developed under the UNDP project - similar systems are still needed. Additionally, key developments include the installation of the Debris Flow Detection System near the Vardzia cultural monument (developed by GEOTEST, Switzerland) and a landslide EWS in the northern part of Georgia (Devdorak-Amal gorge), following fatal events and damage to a transit gas pipeline from Russia to Armenia. Furthermore, automatic meteorological and water level measurement posts were installed in the Vere River basin after the 2015 Tbilisi disaster.[86]

Moreover, up to 86% of Georgia's territory is covered by hydrometeorological and geological hazard monitoring systems that comply with the WMO's standards. Furthermore, based on the Memorandum of Understanding signed in 2024 between the National Environmental Agency of Georgia and the Finnish Meteorological Institute[87], Finland provides tangible support in capacity enhancement, including the development of a modern mobile application designed to deliver more localised weather-related information.[88]

According to Rusudan Kakhishvili, Director of the National Crisis Management Center (Department) of the Office of the National Security Council of Georgia - the dynamic and evolving nature of climate-induced hazards necessitates a proactive approach and continuous enhancement. Therefore, the Government of Georgia has made the establishment of a nationwide Early Warning System (EWS) a strategic priority.

[85] Key Functions of the National Environmental Agency of Georgia
[86] UNDP, Assessment of Hazard Mapping System in Georgia and Recommended Actions, Road Map 2018
[87] NEA, a MoU signed with the Finnish Meteorological Institute, September 2024
[88] Business Media, population will be warned by Mobile App, April 2025

Ms. Kakhishvili stated that the envisioned EWS is not limited to natural disasters alone, it addresses a wide spectrum of threats, including man-made incidents. The EWS is considered as a life-saving instrument, essential for protecting the population from disaster risks and ensuring timely dissemination of warnings and enables risk-informed decision-making at all levels.

The formulation of a comprehensive legal framework is currently underway as Georgia advances the development of a multi-channel EWS, designed to address a broad spectrum of threats. This process is being carried out through an interagency working group that engages private sector stakeholders, including mobile network operators, and is informed by international best practices. The initiative is further supported by the expertise of the UNDP, contributing to the development of a comprehensive and effective EWS. Through these steps, Georgia aims to establish a resilient, inclusive, and future-ready EWS, one that not only meets international standards but also protects lives and livelihoods across the country.

European Best Practices Regarding Civil Protection

The development of resilient national civil protection bears of the utmost importance for mitigating the impacts of hazardous weather events and other emergencies. The EU acknowledges that alerting the population and emergency services is a priority to save lives, protect jobs and preserve the environment. The Union's early warning tools complement national early warning systems and support Member States' efforts to efficiently assess hazards by contributing to early analysis and action.[89]

Furthermore, considering economic divergence and geopolitical security dynamics among the EU Member States, strategic approaches vary based on national security policy priorities to further advance their crisis management systems and civil protection capabilities. In this regard, Member States spare no effort to align their national policy to the EU Directive 2018/1972, establishing the European Electronic Communications Code (EECC).[90] This Directive mandates that all Member States implement robust EWSs to enhance the protection of citizens, visitors, and tourists during natural disasters and other crises. The EECC serves as a baseline to harmonize telecommunications regulations, strengthen consumer protections, and standardise requirements of warning systems, thus bolstering emergency response capabilities.

[89] European Commission, European Early Warning and Information Systems, April 2023
[90] Directive 2018/1972, of the European Parliament and of the Council of 11 December 2018 on establishing the European Electronic Communications Code, December 2018

Accordingly, the Member States have 2 options:

1. **Implement a Mobile Phone-Based Warning System:** Develop a system that uses phone-based technology for imminent or developing major emergencies or disasters, sending geo-located mass alerts directly to the mobile devices of all individuals within the affected area.
2. **Deploy an Alternative Electronic Communication Service:** Adopt another service that demonstrates equivalent efficacy and is easy for the public to receive warnings as the first choice.

Moreover, the EECC outlines the importance of the efficient planning of public early warning, specifically related to the content, method, timing, and channel. Emergency alerts must be clear, accessible and delivered through proper and reliable platforms. Accordingly, the Directive defines means of communication, encompassing voice communication services, Short Message Service (SMS), video transmissions, real-time text, relay services, etc. In addition to SMS and mobile-based emergency apps, public warning dissemination should be diversified through non-mobile electronic communication services, broadcasting, and internet-independent channels. Operators must also be granted access to public infrastructure (such as street furniture, traffic systems, and transport facilities) to ensure timely and reliable alert delivery, free of charge, to both residents and visitors within the affected areas.

Thus, according to the specific EU member states' EWSs, they combine digital and traditional communication methods to ensure broad reach and redundancy. The EWS elements such as cell broadcasting, electronic sirens, geo-localized SMS, and app-based alerts have proven effective in delivering timely early warnings to the public. The success of these systems relies on robust partnerships between government authorities, mobile network operators, and other relevant stakeholders. Moreover, the analyses have revealed that some states have also been developing civil protection/defence shelters to protect people from different kinds of threats during both war and peacetime.

France

Among the best exemplary models in developing efficient public EWSs is France. The Directorate-General for Civil Protection and Crisis Management (DGSCGC), within the Ministry of Interior of France, is responsible for anticipating and monitoring crises,

implementing civil security policy and coordinating crisis management efforts. In addition, as one of the parts of the DGSCGC, the Interdepartmental Crisis Management Operational Centre supports the civil protection system by coordinating civil security crises involving several areas, managing an inter-ministerial crisis unit during a crisis, defining national emergency regulations (training, planning, operations), being the national contact point for the UCPM, etc.[91]

Accordingly, France has developed an integrated Public Alert System, which is a key component of its civil protection direction. The DGSCGC relies on these predictive analyses to pre-position itself in the event of the occurrence of a hazard or a proven risk. It collaborates with METEO France and other relevant stakeholders for climatic phenomena, tsunami warnings, and earthquake forecasting. It also has a network of siren warnings to populations - RNA, the SENTINELLE network for health warnings, the GALA network for municipal warnings, and the CEDRE network for accidental pollution.[92]

Moreover, the FR-Alert represents a new Public Alert and Information System that has been operational nationwide since 2022. The system enables anyone with a mobile phone to be alerted in real-time of their presence in a danger zone, accompanied by a specific sound signal, even if the mobile phone is in silent mode.[93] The system provides information on the nature and location of a danger or threat and indicates the actions to protect against these dangers or reduce possible exposure to the effects of these threats.[94]

France has chosen to use both location-based SMS and cell broadcasts. By combining these two technologies, the coverage rate reaches 95% of the French population and makes it possible to manage a wider variety of situations. The alert messages are broadcast in the form of radio waves by telecommunication antennas and not by SMS to avoid overloading the network in the event of sending to a large number of persons. It is not necessary to register in advance to receive alerts or to download a mobile application. The FR-Alert complements the public Alert and Information System, which includes more than 2,000 sirens connected to remote triggering software, the mobilisation of television and radio stations for the dissemination of alert messages and the dissemination of institutional accounts on social networks, integration into the Galileo satellite system, etc.[95]

[91] Ministry of Interior of France, the French General Directorate for Civil Protection and Crisis Management - Civil Protection Modernization Act No. 2004-81, August 2004
[92] European Civil Protection and Humanitarian Aid Operations, National Disaster Management System - France, June 2022
[93] Gouv.fr, About FR-Alert
[94] Gouv.fr, FR-ALERT, Wow Does it Work? October 2022
[95] Cardona, Charlotte: FR-Alert, a European reference combining Cell Broadcast and Location-Based SMS, October 2022

Denmark

The Ministry of Defence of Denmark holds the responsibility, delegated to the Danish Emergency Management Agency (DEMA), to prepare society for and prevent crises and disasters alongside assisting the police, the municipal fire and rescue services and other authorities accordingly. More than 50% of DEMA's operations are in support of the municipal fire and rescue services, while the remaining are in support of police or other authorities.[96] As of 2022, there are 32 municipal fire and rescue services in addition to DEMA's 6 national fire and rescue centres. DEMA offers a wide range of training courses, and exercises, and develops the National Risk Profile.[97]

Currently, public shelters are not being actively prepared for use in Denmark. The municipalities are responsible for public shelters. However, making safe rooms ready for use is the responsibility of the owner of a building, under the supervision of the municipalities.[98]

As for the EWSs, they are related primarily to weather conditions (e.g., extreme rainfall, nuclear and radiological emergencies, etc.) and include different types of warnings. Warnings and alerts to the public are posted on the responsible authorities' websites and apps. There is also a public warning system consisting of a nationwide siren system and a direct line to national broadcasters. Furthermore, the hearing-impaired are informed and alerted via an SMS alert service.[99]

Furthermore, in 2023, Denmark developed a mobile-based warning system - S!RENEN via cell broadcast technology, as an addition to the existing public EWSs. The technology allows the authorities to transmit a warning directly from telecom cells to smartphones in an area where people are exposed to danger. S!RENEN is run by the DEMA in cooperation with the Danish National Police, which sends out a warning to the mobile network operators who automatically relay the warning to the relevant cells in the danger zone.[100][101]

[96] Brs.dk, Danish Emergency Management Agency
[97] Brs.dk, Danish Emergency Management Agency, National Risk Profile 2022
[98] Ministry of Foreign Affairs of Denmark, Information about Shelters and Safe Rooms, 2022
[99] European Civil Protection and Humanitarian Aid Operations, National Disaster Management System - Denmark, January 2023
[100] Brs.dk, S!RENEN Public Warnings by Phone, 2023
[101] Ministry of Foreign Affairs of Denmark,S IRENEN - Denmark's New Mobile-based Public Warning System, April 2023

Finland

In Finland, the Department for Rescue Services under the Ministry of the Interior holds primary responsibility for the national coordination and organisation of rescue services. It provides strategic guidance and oversight for rescue operations, facilitates inter-ministerial and cross-sectoral coordination, and makes decisions about international assistance. At the regional level, 22 independent rescue departments are in place to provide urgent help in the event of an accident or natural hazard.

An essential part of Finland's preparedness strategy is its extensive civil defence shelters, with more than 50,000 with the capacity to accommodate about 4.8 million people. The highest number of shelters is found in Helsinki, where the number of places is 34% higher than the population.[102]

Furthermore, Finland possesses a robust system to warn its population that integrates multiple channels, including sirens, broadcasting services, and specialized systems for natural disasters. The LUOVA system - the main EWS in the field of natural disasters, provides natural disaster warnings across Finland and abroad. The Finnish Meteorological Institute works as LUOVA's main information provider and produces real-time situation awareness pictures with comprehensive information on hazardous events.[103]

Warning methods are various and the most important one is an emergency warning, which is always issued as the public warning signal goes off. The emergency warning is read out on the radio and displayed on Reletext page 112 and, if necessary - on TV. The emergency warning is also published through the 112 Suomi mobile app and the Finnish Broadcasting Company news feed. Densely populated areas are equipped with stationary sirens and loudspeakers. These systems are maintained by the regional rescue services and mainly intend to warn people who are outdoors that the sound may not be loud enough to be heard.[104]

In this context, Finland's Security Strategy for Society 2025, outlines a comprehensive security framework and emphasises maintaining situational awareness and communication systems as key parts of preparedness and response strategies.[105]

[102] Ministry of the Interior Report, Finland has Civil Defence Shelters for About 4.8 Million People, 2023
[103] European Civil Protection and Humanitarian Aid Operations, National Disaster Management System - Finland, April 2022
[104] Ministry of the Interior of Finland, Department for Rescue Services, Alarm Signal
[105] Finnish Government, Security Strategy for Society 2025

Lithuania

The Civil Protection System of Lithuania operates under coordination with a multi-level structure comprising 10 entities, including the Government, the Ministry of Interior, the Fire and Rescue Department, municipal commissions and economic entities. According to the Law on Civil Protection, the public EWS should ensure emergency signal transmission and real-time public information dissemination about threats, as well as shelters are categorised into several types based on their purpose and functionality (e.g., military threats, environmental hazards).[106][107]

The Fire and Rescue Department of the Ministry of Interior manages activities of the civil protection system, coordinates implementation of emergency prevention, plans national preparedness, etc.[108]

The current civil protection infrastructure covers more than 3.3 thousand shelters with the capacity to accommodate 912,000 inhabitants of Lithuania, which constitutes 31% of the population.[109] The Government recently announced that almost 80 million euros will be allocated, and by the end of 2025, 300 shelters are to be renovated and 1,000 by 2030, which could accommodate about 40% of the country's population.[110]

Residents shall be warned and informed not only by turning on sirens but also by using cell broadcast technology, radio and TV when messages are sent to residents' mobile phones. Depending on the scale of the emergency, civil protection signals can be issued by economic entities or municipal administration directors. At the national level, the signal shall be declared by the Fire and Rescue Department. The LT72 is a website intended to prepare Lithuanian residents and enhance their knowledge of how to behave during emergencies, etc.[111] In total, 1,143 alert sirens operate across the country, reaching about 1.6 million people (54%) of the population. It is planned to upgrade the public alert system by 2029, with 275 new sirens to be installed and at least 600 existing ones to be connected to a centralised control system.[112]

[106] Law on Civil Protection of Lithuania, amended on 22 December 2009 – No XI-635
[107] Fire and Rescue Department under the Ministry of the Interior of the Republic of Lithuania, Collective Protection Structures, Shelters and Cellars
[108] Fire and Rescue Department under the Ministry of the Interior of the Republic of Lithuania, Main Objectives
[109] Institute of Central Europe, Shelters in Lithuania, 2024
[110] Valiauskaitė Aistė, Tizenhauzienė, Vesta: Lithuania Still Lacks Shelters to Accommodate Half of the Population 2025
[111] Fire and Rescue Department under the Ministry of the Interior of the Republic of Lithuania, LT72 - Emergency Website
[112] Lithuanian National Radio and Television (LRT), Lithuania tests public alert sirens and information system, November 2024

Romania

The General Inspectorate for Emergency Situations (IGSU) under the Ministry of Internal Affairs of Romania coordinates prevention activities at the national level. The IGSU is authorised to develop regulations in the field of risk management and planning, overseeing public and private institutions, as well as economic operators (private companies) that need to have contingency plans for the identified risks.[113]

Forecasts and warnings are provided by the National Meteorological Administration to both public authorities and private companies working in different fields of activity. In the private sector, the Meteorological Administration stipulates contracts for providing tailored forecasts and messages for a fee. The National and Regional Forecasting Centres work 24/7 on three main activities: forecast, monitoring and warning. Monitoring is performed 24/7 using data from a surface measurement network, a meteorological radar network and satellite imagery products from the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).[114]

In Romania, EWSs include detection stations outfitted with analytics software, alarm stations, as well as email, fax, and phone alerts for local authorities. Additionally, they feature cell broadcast message systems, television, radio, and alarm sirens. In this context, the RO-ALERT warning system is implemented by the Ministry of Internal Affairs through the IGSU, with technical support from the Special Telecommunications Service. The system utilises cell broadcast technology, allowing mobile communication antennas in the designated area to transmit warning messages to all mobile phones within their coverage. A smartphone or the installation of applications on mobile devices is not necessary to receive warnings from RO-ALERT, and the service is free of charge.

As for the emergency shelters, out of a total of 5,072 civil protection shelters, both public and private, 2,543 are non-operational (50.14%), which further necessitates additional national efforts in the future.[115]

[113] European Civil Protection and Humanitarian Aid Operations, National Disaster Management System - Romania, January 2020
[114] Union Civil Protection Mechanism – Peer Review Programme for Disaster Risk Management, Peer Review Report - Romania 2023
[115] Dumitrescu, Radu: Report: Report: Civil protection shelters in Romania in poor state, could only fit 600,000, April 2025

V - Policy Solutions

Against the backdrop of Global Climate Action and disaster risk reduction efforts, it is agreed internationally that one of the key pillars represents the development of life-saving multi-hazard EWSs and related societal resilience-building measures. In this endeavour, the Government of Georgia acknowledges the importance of building resilient communities by strengthening civil protection to efficiently mitigate and respond to future shocks and crises. In this endeavour, a close partnership with the EU would add significant value to national efforts to develop DRR capabilities and civil protection systems across the county, including the establishment of an integrated and multi-hazard national EWS, tailored to Georgia's needs.

5.1. Conclusion - Call to Action

Georgia is vulnerable to both small- and large-scale disasters. The intensity and scale of natural hazards, driven by global climate change, have significantly increased in recent years. Due to the multidimensional nature of hazards, disasters occur unpredictably causing severe human, economic and social impacts. This challenge extends beyond national borders and demands a coordinated and unified regional and international response.

The EU also recognises the importance of building a culture of preparedness and structural resilience. During 2024, storms, floods, and heatwaves affected approximately 413,000 individuals across Europe, resulting in an estimated €18 billion in damages.[116] Hereby, within the European Preparedness Union Strategy growing pressure from the negative impact of climate change and the nexus of climate, environment and security dimensions is clearly emphasised.[117]

According to this Strategy, the human, economic and social costs of extreme weather outcomes represent a growing challenge, which is also demonstrated by disruptions in trade routes and global supply chains. Therefore, the EU considers further enhancement of the structural capacity of societies to manage disaster risks. In this context, the Strategy also outlines the enhancement of resilience with partner nations through tailored and mutually beneficial cooperation. More specifically, as one of the key actions of the Strategy, the EU will reinforce mutual resilience with candidate countries by involving them in relevant preparedness initiatives and crisis

[116] Frost, Rosie: Deadly floods, storms and heatwaves: Europe Suffered the Serious Impacts of Climate Change in 2024
[117] European Commission, the European Preparedness Union Strategy, March 2025

management frameworks in line with the enlargement policy and their gradual integration process. The targeted cooperation will be enhanced in key areas such as preparedness, resilience, crisis management, etc.

Additionally, the recently adopted EU's new strategy for a secure, prosperous and resilient Black Sea region should be highlighted. The strategy sets 3 major pillars for future EU-Black Sea cooperation, including the promotion of environmental protection, climate change resilience and preparedness, as well as civil protection.[118]

Hereby, it is essential to explore opportunities for deeper EU-Georgia collaboration and identify potential areas for further development with particular emphases on societal resilience and civil protection.

In parallel, Georgia's aspiration to join the UCPM represents a key foreign policy priority, aligned with Georgia's national civil protection objectives to better safeguard public good and societal resilience. Moreover, by attaining a future membership in the UCPM, Georgia will further reinforce its position as a proactive contributor to regional resilience, thereby strengthening its position as a strategic partner of the EU in the Black Sea and South Caucasus regions. The possible failure of this strategic objective will leave Georgia reliant only on bilateral ad hoc assistance, which will further increase the vulnerability of regional stability when disasters strike unpredictably.

Therefore, a practical solution lies in extending EU-Georgia cooperation through targeted assistance (e.g., technical support, expertise sharing), joint crisis management exercises and alignment of required operational standards to comply with the UCPM criteria. Bolstering Georgia's civil protection systems serves the EU's strategic interest as well. This cooperation will further strengthen the Union's presence in the Black Sea and South Caucasus regions while promoting public welfare, long-term resilience, and a more secure future in the face of increased disaster risks.

Moreover, sharing the best European practices, expertise, and targeted financial support is essential to enhancing Georgia's early warning capacities, institutional capabilities, and public knowledge and awareness. Accumulation of Allied support(s) to reduce disaster risks by

[118] EU's Strategic Approach to the Black Sea Region, 28 May 2025

developing modern, scientifically approved, innovative programmes shall lead to better prevention, efficient preparedness, and rapid response.

5.2. Recommendations

Hence, to address the existing shortcomings and move forward towards maintaining constant preparedness and resilience to various natural hazards, the following recommendations should be considered:

- **Recommendation I** - It is imperative that the Government of Georgia and EU decision-makers express readiness to renew Georgia's accession process in the Union Civil Protection Mechanism (UCPM) by taking the necessary steps to conclude and sign the membership agreement.

- **Recommendation II** - Georgia must harmonise its legal framework with European standards (e.g., EU Directive - EECC), which shall leverage by sharing European best practices regarding the development of civil protection systems and adopt new Governmental Decrees, including a Decree on the Early Warning System (EWS).

- **Recommendation III** - In parallel with adopting a legal framework for establishing integrated and multi-hazard national EWS, Georgia should further intensify cooperation with its partners to seek constant expertise and financial assistance to develop and sustain adaptive early warning capabilities.

- **Recommendation IV** - Drawing on best practices, Georgia must develop a unified data collection methodology to establish a centralised national database for accumulating information on loss and damage data from natural and man-made disasters. It represents an essential part of ensuring better prevention, mitigation and preparedness measures.

- **Recommendation V** - It is essential to design and launch civil resilience programmes without delay, aligned with the outlined objectives of the EU-Georgia Association Agreement (EU-AA), the EU's Preparedness Strategy and the newly adopted EU's Strategic Approach to the Black Sea Region. This could encompass institutional capacity enhancement initiatives, including procuring and sustaining specific technical tools such as pumps, drones, sirens, anti-flood constructions, mudslide barriers, etc.

- **Recommendation VI** - In close collaboration with the EU, Georgia must explore opportunities for formal integration into the pan-European initiative for disaster risk - "PreparEU Programme". As one of the beneficiaries of this programme, Georgia will be able to efficiently build a culture of risk prevention and preparedness, hereby elevating public awareness and readiness across the country.

- **Recommendation VII** - By sharing European best practices, it is essential for Georgia to institutionalise the consistent integration and modernisation of disaster risk knowledge across all levels of education, from preschools to universities. Furthermore, this approach should include the expansion of nationwide knowledge-enhancement initiatives and youth programmes (e.g., UNDP - "Green Camp Climate Ambassadors"), as well as continuous professional development of educational staff.

- **Recommendation VIII** - Georgia and the EU must ensure the continuation of the Prevention, Preparedness and Response to Natural and Man-made Disasters in the Eastern Partnership Countries (PPRD East 4) programme by launching its next implementation phase. This will sustain and further deepen Georgia's civil protection capabilities and promote regional cooperation in this direction.

- **Recommendation IX** - It bears utmost importance to enhance cooperation with the geospatial centres/services to guarantee timely and uninterrupted access to space-derived and satellite imagery early warning data for efficient disaster risk management (e.g., UN Office for Outer Space Affairs (UNOOSA); UN Satellite Centre (UNOSAT); European Union Satellite Centre (SatCen); Copernicus Emergency Management Service; Europe's own Global Navigation Satellite System (GNSS); European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), and others).

- **Recommendation X** - To ensure the successful implementation of the Law on the National Spatial Data Infrastructure of Georgia, it is imperative to strengthen cooperation with the EU and enhance alignment with the EU's Infrastructure for Spatial Information (INSPIRE). Strengthening this partnership will not only facilitate the integration of Georgia's National Spatial Data Infrastructure into the European system but will significantly improve geospatial interoperability, assisting Georgia's capacity for efficient crisis management.

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