MOUNTADAPT
ELEVATING HEALTHCARE CLIMATE ADAPTATION

Disaster Preparedness Checklist for Health Systems in Mountain Areas

May 13, 2025

Agenda

About Mountadapt

About CRIMEDIM (UPO)

Disaster Preparedness Checklist: rationale

Disaster Preparedness Checklist: target audience and usage

Disaster Preparedness Checklist: methodology

Pilot and next steps

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About Mountadapt

MOUNTADAPT is a Horizon Europe project aiming to boost the **community-driven resilience** of the health system in European mountain areas, **mitigating the impact of climate change on public health**.

Leveraging the expertise of **27 partners**, including healthcare facilities, public authorities, innovators, and researchers, MOUNTADAPT aims to develop solutions and strategies to enhance healthcare climate adaptation and **safeguard the health and well-being of communities living in mountain regions**.

27 partners　　**4 pilot sites**　　**3 replication sites**　　**11 resilience solutions**

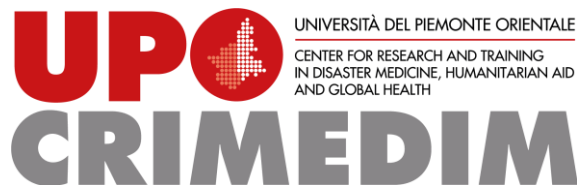MOUNTADAPT

About CRIMEDIM

CRIMEDIM is is a university-wide academic center that conducts research, education and training in the field of **disaster medicine**, **humanitarian aid** and **global health.** The center is committed to promote innovative research projects and to foster learning and training programs using state of the art technologies to enhance the resilience of health systems in emergency, disaster and humanitarian crisis.

CRIMEDIM vision is to make health systems able to effectively protect people's health from disasters and humanitarian crises, saving lives, minimizing deaths, injuries, disabilities and human suffering with competent and professional workforce.

WHO collaborating centre

Several educational programmes

Experience with European projects

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UPO CRIMEDIM

UNIVERSITÀ DEL PIEMONTE ORIENTALE
CENTER FOR RESEARCH AND TRAINING
IN DISASTER MEDICINE, HUMANITARIAN AID
AND GLOBAL HEALTH

Disaster Preparedness Checklist: rationale

Rationale

There is a notable **lack of practical, user-friendly tools** for conducting rapid assessments of disaster preparedness, and for outlining evidence-based guidance for emergency management in case of Extreme Weather Events. These tools are beneficial to health systems for periodically monitoring the state of preparedness and identifying areas that require investment in anticipation of future Extreme Weather Events, as well as for setting user-friendly guidelines that can enhance emergency management, especially in vulnerable regions such as mountain areas.

Purpose

To facilitate the monitoring of the health system's preparedness status and provide guidance to decision-makers aiming to enhance health emergency management in the context of Extreme Weather Events. The tool is not designed to positively or negatively assess the system's readiness at the time of completion, but rather **to identify weaknesses and areas needing improvement**. Additionally, it **offers guidance on actions to enhance the preparedness** of various health system components considering the increasing frequency of climate change-induced Extreme Weather Events.

This Checklist is not intended to replace periodic review and monitoring processes that each health system routinely undergoes but rather serves as a consolidated instrument that compiles information on health system preparedness and health emergency management practices, which might be difficult to obtain otherwise.

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Disaster Preparedness Checklist: target audience and usage

Target audience

The target audience for this Checklist includes **health sector professionals, authorities, policymakers, health managers** (such as hospital directors), and **others interested in evaluating health system preparedness** for Extreme Weather Events in mountain areas.

Usage

Health professionals or health system representatives can complete this Checklist, potentially consulting experts for specific sections (e.g., pre-hospital, pharmacies). Each site completes one collaboratively, adapting items as needed. The yes/no questions often include action points suggesting proactive solutions. This tool can also serve as standalone guidance, with action points acting as evidence-based implementation guidelines.

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Disaster Preparedness Checklist: methodology

Leveraging existing resources

This phase involved collecting 28 existing health system disaster preparedness checklists from databases and organizational websites. The research team then grouped the items from these checklists into seven thematic areas to inform the development of a preliminary version of a new checklist.

Expert validation

Five researchers and professionals with disaster management expertise were identified and agreed to critically review the checklist. Their feedback was then used to develop a second version of the tool.

ID	Area of expertise
Expert 1	Primary care disaster preparedness
Expert 2	Disaster medicine in mountain areas
Expert 3	Hospital disaster preparedness
Expert 4	Disaster medicine in mountain areas
Expert 5	Rescue operations and evacuations in mountain areas

Co-creation activities for context validation

Context validation was ensured through a questionnaire sent to demonstration sites to gather information on their health emergency management practices, and a structured feedback process including a workshop and follow-up exchanges. The survey revealed varying levels of preparedness for across sites, highlighting the need for tailored plans and monitoring systems; the subsequent feedback led to the final version of the Checklist.

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Disaster Preparedness Checklist

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Disaster Preparedness Checklist and Guidance

⚠️ **Your feedback matters!**
After using the Checklist, take a quick 3-minute survey to help us shape the future of this product. You can answer the questions by clicking this link:
https://forms.gle/EAESByzdjg4GgC1F7

1

Table of Contents

2

Disaster Preparedness Checklist

Primary care and elderly care systems

DISASTER PLANNING AND COORDINATION	YES	PARTIALLY	NO
The primary care and elderly care systems are equipped with periodically updated disaster plans.	☐	☐	☐

Include in the plan:
- Process to activate surge capacity (incl. plan to extend working hours)
- Crisis standards of care (incl. phone triage or telehealth)
- Instructions for medication stockpiling and distribution
- Plan for occupational health and safety
- Instructions on managing an influx of patients (incl. paediatric)
- Post-disaster recovery instructions

Ensure that the experiential knowledge of local stakeholders, such as mountain guides and mountain refuge keepers, is integrated into planning processes.

The primary care and elderly care disaster response systems are part of a larger disaster response mechanism at the regional and national levels.	☐	☐	☐

Participate in coalitions to promote interdisciplinary collaborations for disaster response.

The primary care and elderly care systems are equipped with periodically updated evacuation plans.	☐	☐	☐

Include in the evacuation plan:
- An updated registry of vulnerable patients incl. medically fragile individuals with pre-existing conditions (e.g., disabilities, chronic illnesses, and mental health disorders), as well as those who are socioeconomically or culturally vulnerable and individuals facing challenges related to housing, location, or transportation
- Procedures for sheltering patients, volunteers and staff
- Facility-wide and ward-specific triggers to signal the need for evacuation
- Contingency plans for access and egress during a disaster for both staff and patients (incl. Specific considerations for fragile patients)
- Procedures for transferring critical equipment and supplies, staff, and patients to another facility, secure storage or unit receiving relocated patients
- Contracts with transportation providers for vehicle supply
- Options for alternative vehicles' use for evacuations (incl. helicopters, off-road vehicles and snowmobiles), considering the possibility of narrow paths and heavy snow

The primary care and elderly care systems periodically conduct Hazard Vulnerability Assessment.	☐	☐	☐

Promote:
- Mapping of risks to the facility's structural and non-structural elements
- Using these assessments to prioritise measures to reduce risk

STAFF TRAINING AND HUMAN RESOURCES

The primary care and elderly care systems have active, functional disaster response committees with clearly defined roles.	☐	☐	☐

Designate alternates/backup personnel for each role

	YES	PARTIALLY	NO
The primary care and elderly care systems' staff attend training and simulations to test protocols and surge capacity procedures in case of a disaster.	☐	☐	☐

Include in the training:
- Exercises and drills on evacuation procedures and alternate routes
- Paediatric surge capacity exercises and drills
- Lessons learned from after action reviews of past disasters
- Psychological first aid educational materials for staff
- Modules on occupational safety and health (incl. Post-Traumatic Stress Disorder management)
- Modules on public health and climate change hazards
- Modules on managing hazardous chemicals during disasters
- Procedures for utilising supplies and accessing alternative sources
- Cross-training to address staff shortages and expertise backup
- Triage, basic or advanced life support, bleeding control and management of disaster-specific injuries or diseases
- Infectious disease outbreaks, Infection Prevention and Control standards, surveillance/early warning, and case management for relevant public health threats
- Cross-training for handling medical equipment and alternative methods for care delivery in resource-limited settings

The primary care and elderly care staff are involved in planning and preparing for disasters. For instance, they collaborate to develop disaster plans or their subsequent periodical revisions.	☐	☐	☐
The primary care and elderly care systems have family support programs for staff and a post-disaster employee recovery assistance program to activate in case of need.	☐	☐	☐

Establish:
- A system to determine if staff have been affected by the disaster and to assess individual staff needs (incl. shelter, transportation, food and hygiene, childcare, funding, flexible schedules)

The primary care and elderly care systems have a structured workforce retention strategy to ensure staff continuity.	☐	☐	☐

Include in the strategy:
- Details on workers' competencies, contact information, availability, and roles non-physicians can assume in case of need.
- A roster of volunteers who can support health promotion, outreach and preventive measures

INFRASTRUCTURE AND RESOURCE MANAGEMENT

The primary care and elderly care facilities are structured and designed to minimise structural vulnerability to the impacts of disasters.	☐	☐	☐

Implement the following measures:
- Relocate generators, fuel pumps, and related electrical equipment out of basements
- Pre-design evacuation areas with secure access
- Establish a safe storage location for healthcare waste
- Ensure the facility has separate spaces for lower-priority and critical patients

The primary care and elderly care systems have a strategy to address disruption to critical utilities (incl. backup energy solutions).	☐	☐	☐

Make sure this strategy encompasses the following:
- A backup generator capable of covering at least all critical service areas and equipment during and after a disaster
- Identification of priority areas within the facility that require emergency power during and after a disaster
- A disaster plan to ensure the availability of adequate lighting, communication and information systems (e.g., analogic backup, satellite and radio systems)
- Instructions on how to provide and maintain adequate cleaning and disinfection supplies for water safety
- Instructions for the maintenance and restoration of waste management systems
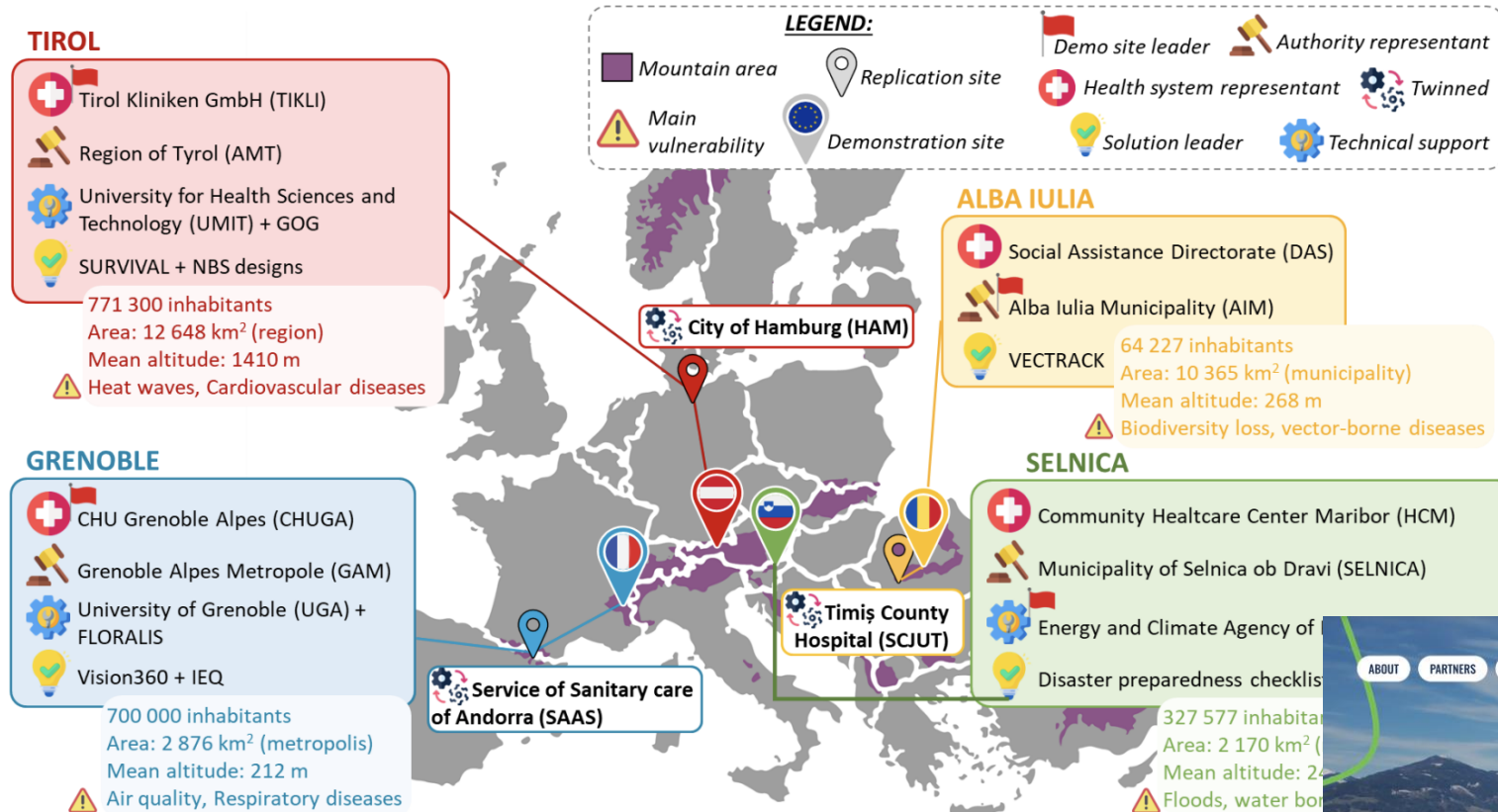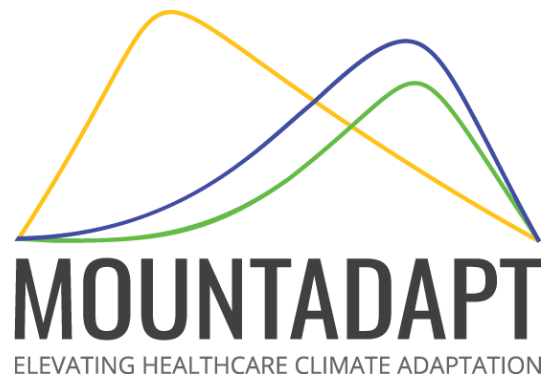
Pilot and next steps

Figure 1.1: Project's demonstration and replication sites

TIROL
- Tirol Kliniken GmbH (TIKLI)
- Region of Tyrol (AMT)
- University for Health Sciences and Technology (UMIT) + GOG
- SURVIVAL + NBS designs

771 300 inhabitants
Area: 12 648 km² (region)
Mean altitude: 1410 m
⚠ Heat waves, Cardiovascular diseases

GRENOBLE
- CHU Grenoble Alpes (CHUGA)
- Grenoble Alpes Metropole (GAM)
- University of Grenoble (UGA) + FLORALIS
- Vision360 + IEQ

700 000 inhabitants
Area: 2 876 km² (metropolis)
Mean altitude: 212 m
⚠ Air quality, Respiratory diseases

Service of Sanitary care of Andorra (SAAS)

LEGEND:
- Mountain area
- Replication site
- Demo site leader
- Authority representant
- Main vulnerability
- Demonstration site
- Health system representant
- Twinned
- Solution leader
- Technical support

City of Hamburg (HAM)

ALBA IULIA
- Social Assistance Directorate (DAS)
- Alba Iulia Municipality (AIM)
- VECTRACK

64 227 inhabitants
Area: 10 365 km² (municipality)
Mean altitude: 268 m
⚠ Biodiversity loss, vector-borne diseases

SELNICA
- Community Healtcare Center Maribor (HCM)
- Municipality of Selnica ob Dravi (SELNICA)
- Energy and Climate Agency of
- Disaster preparedness checkli

327 577 inhabitant
Area: 2 170 km² (
Mean altitude: 24
⚠ Floods, water bor

Timiș County Hospital (SCJUT)

ABOUT   PARTNERS   NEWS AND EVENTS   MOUNTADAPT   RESOURCE HUB   CONNECT

ADVANCING HEALTHCARE CLIMATE RESILIENCE IN EUROPEAN MOUNTAINS

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**Co-funded by
the European Union**