

D6.4 - Revised Data Management Plan



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D6.4: Revised Data Management Plan	
Deliverable type	DMP – Data Management Plan
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Dissemination level	Public
Due date	30/11/2025
Actual delivery date	26/11/2025
Version no.	V2
Work Package no.	6

Document history		
18/11/2024	First version of D6.2 (V1) drafted by ENERGAP with the overall structure and content.	ENERGAP
27/11/2024	Second version (V2) of D6.2 was consolidated with feedback from reviewers.	ENERGAP
28/11/2024	Final version of D6.2 (V3) consolidated by ENERGAP.	ENERGAP
13/10/2025	First version of Revised document (D6.4, V1) drafted by ENERGAP	ENERGAP
20/11/2025	Final version of Revised document (D6.4, V2) consolidated with feedback from reviewers.	ENERGAP

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Project partners

Acronym	Full Name of Organisation
AIM	Municipality Of Alba Iulia
AMT	Amt Der Tiroler Landesregierung
ARIA	Aria Technologies Sas
CHUGA	Centre Hospitalier Universitaire De Grenoble
CRISISOFT	Crisisoft
CSTB	Centre Scientifique Et Technique Du Batiment
CTP	Consortio De La Comunidad De Trabajo De Los Pirineos
DAS	Directia De Asistentia Sociala
ENERGAP	Energetsko Podnebna Agencija Za Podravje
EQY	Euroquality
FLORALIS	Floralis
GAM	Grenoble-Alpes-Metropole Metro
GOG	Gesundheit Osterreich Gmbh
HAM	Freie Und Hansestadt Hamburg
HCWHE	Health Care Without Harm Europe
HCM	Zdravstveni Dom Dr Adolfa Drolca Maribor
HWWI	Hamburgisches Weltwirtschaftsinstitut Gemeinnutzige Gmbh
IRIDEON	Irideon SI
NCSR	National Center For Scientific Research "Demokritos"
SAAS	Servei Andorrà D'atenció Sanitària
SELNICA	Obcina Selnica Ob Dravi
SCJUT	Spitalul Clinic Judetean De Urgenta Pius Brinzeu Timisoara
TIKLI	Tirol Kliniken Gmbh
UDEUSTO	Universidad De La Iglesia De Deusto Entidad Religiosa
UGA	Universite Grenoble Alpes
UMIT	Umit Tirol - Private Universitat Fur Gesundheitswissenschaften Und Technologie Gmbh
UPO	Universita Degli Studi Del Piemonte Orientale Amedeo Avogadro

Abbreviations List

API	Application Programming Interface
CDW	Clinical Data Warehouse
CoP	Community of Practice
CSV	Comma-Separated Values

DMP	Data Management Plan
DOI	Digital Object Identifier
DPO	Data Protection Officer
ETL	Extract, Transform, Load
EWE	Extreme Weather Events
FAIR	Findable, Accessible, Interoperable, and Reusable
GDPR	General Data Protection Regulation
IPR	Intellectual Property Rights
JSON	JavaScript Object Notation
KPI	Key Performance Indicator
NCD	Non-Communicable Diseases
PI	Principal Investigator
SPSS	Statistical Package for the Social Sciences
WP	Work Package
XML	Extensible Markup Language

1. Introduction

1.1 Project Overview

MOUNTADAPT is a Horizon Europe project focused on enhancing resilience to climate change in mountain regions across Europe, with a particular emphasis on public health adaptation. By leveraging collaborative efforts from 27 partners—including healthcare facilities, research institutions, local authorities and technology innovators—MOUNTADAPT seeks to address the growing health impacts of climate change. Through adaptation solutions, real-time monitoring systems, and data-driven strategies, the project will support communities in mountain areas to mitigate and adapt to climate-related health risks.

1.2 Purpose of the Data Management Plan (DMP)

The primary purpose of this Data Management Plan (DMP) is to provide MOUNTADAPT consortium members with guidelines for handling, processing, and sharing project data responsibly. This document is aligned with FAIR (Findable, Accessible, Interoperable, and Reusable) principles and complies with GDPR requirements for data protection. The DMP will be regularly updated throughout the project to address evolving data needs and to ensure data sustainability and compliance. The first DMP document (D6.2) was delivered in M6.

This Data Management Plan has been prepared in line with the Horizon Europe guidelines, following the Horizon Europe DMP template. It was initially based on the responses collected from the project partners at the start of the MOUNTADAPT project and, in this revised version, has been updated to reflect the practical experiences gained from data analysis during the implementation of project tasks in the first half of the project.

1.3 Key Objectives and Scope of Data Management

This DMP aims to:

- Standardize data practices across all MOUNTADAPT consortium partners.
- Ensure that all data management activities comply with ethical standards, FAIR principles, and GDPR regulations.

- Facilitate transparent data sharing and accessibility, while respecting privacy and intellectual property rights.
- Promote sustainable long-term preservation strategies to secure project data for future use beyond MOUNTADAPT's lifecycle.

This DMP is a living document, regularly updated to accommodate new data requirements and to address the evolving landscape of data management best practices.

The first version of MOUNTADAPT's Data Management Plan (DMP) – D6.2 (M6) provides comprehensive guidance to all consortium members on managing research and innovation data in alignment with the FAIR data principles (Findable, Accessible, Interoperable, and Reusable) and strict General Data Protection Regulation (GDPR) compliance for personal data protection. The DMP will be regularly updated to reflect the project's evolving needs and ensure ongoing compliance with relevant standards.

The revised version of the MOUNTADAPT Data Management Plan – D6.4 (M18) builds on the first version by integrating practical experiences from the project's implementation phase. It provides insights related to some delays on the data provided from WP6 to the WP2 for statistical (HWWI) and AI models (DEUSTO) in Task 2.1, where several challenges were encountered, and also provides initial insights into how the different solutions tested within the project can be articulated together from a data perspective.

2. Partner Organizations and their primary roles

Partner - Organisation	Acronym	Country	WP Leader	Solution providers	Experts (universities/ reserch centres)	Demo site (DS) cluster			Replicator
						Public Authority	Health system represent.	Local technical support	
EUROQUALITY SAS	EQY	FR	WP6						
NATIONAL CENTER FOR SCIENTIFIC RESEARCH "DEMOKRITOS"	NCSRD	EL	WP1	x	x				
ARIA TECHNOLOGIES/SUEZ	ARIA	FR	WP2	x					
CRISISOFT	CRISISOFT	FR		x					
IRIDEON	IRIDEON	ES		x					
HAMBURG INSTITUTE OF INTERNATIONAL ECONOMICS	HWWI	DE			x				
HEALTH CARE WITHOUT HARM EUROPE	HCWHE	BE	WP5						
SCIENTIFIC AND TECHNICAL CENTRE FOR BUILDING	CSTB	FR		x	x				
UNIVERSITY OF DEUSTO	UDEUSTO	ES			x				
UNIVERSITY OF EASTERN PIEDMONT	UPO	IT		x	x				
TIROL KLINIKEN GMBH	TIKLI	AT					x (DS leader)		
AMT DER TIROLER LANDESREGIERUNG	AMT	AT				x			
UMIT TIROL - PRIVATE UNIVERSITÄT FÜR GESUNDHEITSWISSENSCHAFTEN UND TECHNOLOGIE GMBH	UMIT	AT		x	x			x	
SPITALUL CLINIC JUDETEAN DE URGENTA PIUS BRINZEU TIMISOARA	SCJUT	RO	WP4						x
DIRECTIA DE ASISTENTA SOCIALA	DAS	RO					x		
MUNICIPALITY OF ALBA IULIA	AIM	RO				x (DS leader)			
UNIVERSITY OF GRENOBLE	UGA	FR		x	x			x (DS leader)	
CENTRE HOSPITALIER UNIVERSITAIRE DE GRENOBLE	CHUGA	FR					x		
GRENOBLE-ALPES MÉTROPOLE	GAM	FR				x			
UGA FILIALE	FLORALIS	FR	WP3						
ENERGY AND CLIMATE AGENCY OF PODRAVJE	ENERGAP	SI						x (DS leader)	
COMMUNITY HEALTHCARE CENTRE DR. ADOLF DROLIC MARIBOR	HCM	SI					x		
MUNICIPALITY OF SELNICA OB DRAVI	SELNICA	SI				x			
CONSORCIO DE LA COMUNIDAD DE TRABAJO DE LOS PIRINEOS	CTP	ES							
FREE AND HANSEATIC CITY OF HAMBURG	HAM	DE							x
GESUNDHEIT ÖSTERREICH GMBH	GOG	AT						x	
SERVEI ANDORRÀ D'ATENCIÓ SANITÀRIA	SAAS	AD							x

3. Data Summary

3.1 Existing data re-use in MOUNTADAPT

In the MOUNTADAPT project, data types and sources are carefully selected to support the project's goals of assessing climate-related health impacts and developing adaptive solutions for resilience in mountain regions. The following table summarizes the data types and sources that partners use or generate, illustrating how these data contributions align with project objectives and the specific considerations for data security and compliance. The table was prepared based on the partner responses received.

Table 1: Table for Data Types and Sources

Partner	Data Types and Sources	Purpose in MOUNTADAPT	Data Reuse	Notes on Access and Compliance
HWWI	Weather data (Copernicus, NASA, NOAA), Health data (Eurostat, EHI, survey)	Used to analyze climate impacts on non-communicable diseases (NCDs)	No (explicitly stated)	Health data is restricted with legal and deletion requirements post-project; weather data is publicly accessible.
UPO	Scientific literature, survey data on local disaster management practices at demo sites	Gathers baseline insights on preparedness levels, informing local adaptation strategies	Yes (project-specific data, inferred)	Collected from demo site representatives to assess current disaster management protocols.
UDEUSTO	Weather and climate data (past and projected), clinical data,	AI models	No (explicitly stated)	Collected from demo site representatives in WP6 according to

	socio-demographic indicators, regional statistics provided from WP6.			defined specific case for AI forecasting
HCWHE	Metrics on website visits, engagement with public resources	Tracks the impact of MOUNTADAPT's outreach activities, providing KPIs on public engagement	No (explicitly stated)	Public data uploaded to the project website; no re-use of personal data for privacy reasons.
UGA/CHUGA /FLORALIS	Clinical health data (from CDW at Grenoble Hospital), environmental data (ATMO, INSEE)	Links environmental factors to health outcomes, informing adaptive health strategies	Yes (GDPR compliant, inferred)	Data adheres to GDPR standards; environmental data calibrated through certified sensors to ensure data quality.
CRISISOFT	Crisis response and personnel data for emergency management	Supports real-time monitoring and emergency response capabilities in demo sites	No (explicitly stated)	Data stored on secure servers with restricted access under GDPR compliance.
NCSR	Original climate-health data generated for baseline indicators	Establishes baseline health and climate indicators for monitoring resilience	No (explicitly stated)	No re-use of pre-existing data; original data is generated to ensure relevance to specific project requirements.

IRIDEON	IoT data from VECTRACK mosquito monitoring system	Provides data on disease vectors, aiding health risk forecasting and adaptation strategies	No (explicitly stated)	Field data processed on secure IRIDEON servers; access restricted to authorized partners.
ARIA/SUEZ	Environmental data (air quality, pollen, temperature, wind) collected via sensors	Real-time environmental monitoring to tailor adaptation solutions	No (inferred)	Data accessible through a REST API; securely stored on cloud platforms and accessible to project partners.
SCJUT	Anonymized health data, weather and air quality reports from Timisoara Municipality	Conducts health analysis on the impact of climate on respiratory issues, aiding replication in WP4	Yes (Anonymized public data, inferred)	Anonymized health data; additional data sourced from public government reports and relevant scientific literature.

Demonstrators are mainly focusing on gathering relevant existing data and supply it to solution providers/technical partners to facilitate the implementation of their solutions at the demonstration sites in Austria, Romania, France and Slovenia.

3.2 Generated data in MOUNTADAPT

In MOUNTADAPT, data types and formats vary widely across work packages, reflecting the diverse nature of project activities, from environmental monitoring to health impact assessments and stakeholder surveys. The following table summarizes the primary data types and formats generated or reused by each partner, aligning with specific project work packages. The table was prepared based on the partner responses received.

Table 2: Overview of Partner Data Types, Formats, and Relevant Work Packages

Partner	Data Types	Data Formats	Relevant Work Package(s)
HWWI	Health data from three waves of cross-sectional surveys; weather data	Tabular (dataframe) for health data; geocoded formats (.nc, .hdf) for weather data	WP1 (Sub-tasks 1.3.2, 1.3.3)
UPO	Disaster preparedness checklist; publicly available literature on preparedness	Checklist in fillable PDF; literature in varied formats	WP1
UDEUSTO	Survey data (quantitative)	Tabular (.csv)	WP1 (T1.4)
	Co-creation workshop data (qualitative)	docx, .txt, .pdf	WP2 (T2.4)
	Moodle platform data (learning analytics)	csv, .json, .xlsx	WP3 (T3.2)
	Interviews with local health managers	.docx, .txt	WP1 (T1.4)
	Derived / analytical datasets	csv, .xlsx, .rds, .pdf	WP1, WP2, WP3
	Documentation and metadata	.pdf, .md, .txt, .r	WP1, WP2, WP3
HCWHE	Website engagement metrics (e.g., analytics data)	Analytics format	WP5
UGA / FLORALIS / CHUGA	Patient care data, environmental and socio-demographic data, sensor data (environmental and health)	Tabular (.csv) for environmental data; multiple formats for CDW data and health sensors	WP2, WP3 (PR5.2)
CRISISOFT	Personnel and staff information for	Tabular (.xls, .xlsx)	WP2, WP3

	emergency management tools		
NCSR	Reports, data entries for baseline indicators	.xml, .pdf for reports; .json for data entries	WP2, WP3
IRIDEON	Mosquito monitoring data (raw and classified)	Raw data in .json; classified data in .csv and .xls	WP2, WP4
ARIA / SUEZ	Environmental data on air quality, pollen, temperature, and wind	Time series data in .csv, accessible via API; maps via API	WP2, WP4
UMIT	Vector and climate data integrated with survival solution	R dataset or .csv	WP2
SCJUT	Health impact reports and environmental data from local sources	.xls, .pdf for reports	WP4
Demonstration sites clusters	Raw data as well as revised, already-structured data	e.g. excel	WP1, WP2, WP3

Key Insights:

- **Diverse Data Types Aligned with Project Goals:** MOUNTADAPT leverages a wide range of data types, from health survey data and environmental metrics to emergency management information, all tailored to support climate adaptation strategies. Each data type directly contributes to key objectives, such as monitoring health impacts, assessing environmental conditions, and evaluating preparedness levels.
- **Consistency and Standardization Efforts:** Standard formats like .csv and .xls are widely used across partners for tabular data, ensuring compatibility and ease of integration across project systems. For environmental and sensor data, formats such as .nc and API-based data access provide flexibility and interoperability, allowing data to be shared and reused seamlessly among partners and tasks.
- **Enhanced Accessibility Through API and Platform Integration:** Partners like ARIA/SUEZ are using API access to facilitate real-time data sharing for air quality, pollen, and temperature metrics, enhancing the ability of all partners to access up-to-date information critical for real-time adaptation measures. IRIDEON is using API access to facilitate near real-time data sharing of geo-positioned mosquito counts, dynamics, temperature and humidity for each positive detection event of an insect vector, with high temporal resolution (1 second) tags.

- **Data Security and Compliance:** With health data and personnel data involved, partners are implementing GDPR-compliant formats and storage practices (e.g., anonymization for sensitive data), which align with project requirements for data privacy and secure handling, particularly for patient and personnel data.

3.2.1 Purpose of data generation

In MOUNTADAPT, each partner's data generation and reuse activities are directly aligned with the project's core objectives, focusing on assessing climate impacts on health, enhancing preparedness, and developing adaptive solutions across demonstration sites.

Further information for specific partner is provided below. This section was prepared based on the partner responses received.

- **HWWI:** The health and weather data collected are integrated to develop a comprehensive dataset that assesses the impact of climate change on non-communicable diseases (NCDs). This aligns with MOUNTADAPT's goal to improve health resilience by identifying climate-related health risks.
- **UPO:** By gathering information on the current preparedness levels of each demonstration site, UPO develops and pilots a standardized checklist, which provides baseline insights for evaluating and improving local response strategies.
- **UDEUSTO:** The datasets generated within the Mountadapt project serve distinct but complementary purposes, all directly linked to the objective of designing, implementing, and evaluating an online educational programme for healthcare professionals in Alpine regions on the health impacts of climate change.
 - The survey data are collected to establish a baseline understanding of residents' knowledge, perceptions, and attitudes toward climate-related health risks and the preparedness of local healthcare systems. These data enable the identification of regional knowledge gaps and inform the initial design of the educational materials and learning objectives.
 - The co-creation workshop data are gathered through participatory sessions conducted in different Alpine areas. Their purpose is to identify locally relevant training needs, validate the proposed educational content, and ensure that the course design, examples, and language are culturally and contextually appropriate. Feedback collected during these sessions directly shapes the structure and delivery format of the training modules.

- The Moodle platform data—including participant demographics, activity logs, quiz scores, and satisfaction surveys—are generated to evaluate the effectiveness of the online course. These data allow the project team to monitor engagement levels, learning progress, and user experience, providing an evidence base for improving the course content and technical functionality in subsequent iterations.
- The interview data gathered from local health managers and dissemination partners aim to assess how the training programme is promoted, adopted, and implemented across different regions. These interviews provide qualitative insights into dissemination strategies, local barriers, and opportunities for scaling the training to other mountain health systems.
- The derived or analytical datasets are produced as a result of the integration and analysis of the various data sources described above. Their purpose is to generate aggregated, pseudonymised outputs that support the project's evaluation, reporting, and scientific publications, while ensuring no personal data are disclosed.
- Finally, documentation and metadata are created to guarantee transparency and reproducibility of the research process. This includes methodological descriptions, codebooks, data dictionaries, and consent templates that ensure compliance with the FAIR principles and provide essential contextual information for any future reuse of the data.
- **HCWHE:** The KPI for website visits tracks MOUNTADAPT's outreach effectiveness, reflecting the project's objective of raising public awareness and engaging stakeholders in climate-health adaptation initiatives.
- **UGA/FLORALIS/CHUGA:** Clinical data, alongside environmental data, are used to explore links between climate change and public health. This supports MOUNTADAPT's aim to leverage clinical research insights for designing health resilience strategies, especially in vulnerable mountain regions.
- **CRISISOFT:** Data on key personnel are used to implement the emergency management tools, enabling rapid communication and staff mobilization during crises. This is critical for strengthening local capacities to respond to climate-induced emergencies.
- **NCSRD:** Vulnerability and risk assessment data inform health infrastructure planning in WP2, while ongoing monitoring data help evaluate the effectiveness of adaptation solutions implemented in WP3, directly supporting project outcomes.
- **IRIDEON:** Field-collected mosquito data contribute to MOUNTADAPT's health risk forecasting models by tracking disease vector prevalence, essential for

health adaptation planning in mountain regions already affected, or potentially affected in the future, by vector-borne diseases.

- **ARIA/SUEZ:** Environmental parameters, including air quality, pollen, and temperature data, are used to develop localized adaptation strategies, ensuring the environmental data align with real-time health and climate needs at demonstration sites.
- **SCJUT:** Analysis of climate impacts on allergic diseases in Timis county, Romania, provides insights into local health vulnerabilities. SCJUT also participates in WP4 to replicate successful adaptation solutions, extending project benefits to broader regions.
- **Demonstration side partners:** Successfully implementing all solutions tested at each demonstration site improves climate adaptation.

Each partner's data efforts contribute to building a robust foundation for MOUNTADAPT's climate-health adaptation strategies. From assessing local preparedness to tracking environmental and health risks, these data activities support the project's objectives to increase health resilience and preparedness in response to climate change. This coordinated data approach also facilitates monitoring, evaluation, and scalability of adaptive solutions across various mountain regions.

3.2.2 Estimation of size

Table below was prepared based on the partner responses received.

Table 3: Expected Data Sizes and Storage Requirements by partner

Partner	Expected Data Size	Number of items	Details and Notes
HWWI	Approx. 100 GB	~50,000 data points	Includes raw, intermediate, and final analysis data from health and weather datasets; estimate may adjust post-analysis.
UPO	Minimal	~4 checklists	Around 4 checklists with 50–60 items each, completed by demo sites; data size expected to be small.
UDEUSTO	Moderate (approximately 7 to 14 gigabytes)	Quantitative survey data Estimated size: 0.05–0.1 GB	The quantitative survey dataset, derived from approximately 1,000 respondents, is expected to generate around 50–100 MB

		2. Qualitative workshop and interview transcripts Estimated size: 1–2 GB 3. Moodle platform data (user logs, quiz results, satisfaction surveys) Estimated size: 5–10 GB 4. Derived analytical datasets Estimated size: 0.5–1 GB 5. Documentation and metadata Estimated size: ~0.5 GB	of structured data in .csv and .xlsx formats. The qualitative data from co-creation workshops and interviews, consisting of anonymised written notes and transcripts, are estimated to occupy approximately 1–2 GB. The Moodle platform data, which will include user registration details, learning activity logs, quiz results, and satisfaction survey responses, are expected to reach approximately 5 GB during the first implementation phase and up to 10 GB after the second deployment of the course, depending on participant numbers and system usage. The derived analytical datasets, along with supporting documentation and metadata, will add an additional 500 MB to 1 GB of storage, including analysis outputs, codebooks, and methodological information.
UGA, FLORALIS, CHUGA	Undetermined yet	TBD	Data volume will depend on clinical and environmental data requirements; clarification on specifics needed.
CRISISOFT	Minimal	~100 records	Expected to primarily involve personnel information stored in Excel, requiring minimal storage capacity.
NCSR	Up to 500 MB	~1,000 records	Includes vulnerability assessments, risk assessments, and baseline data entries in XML and JSON formats.

IRIDEON	30 MB per trap per year	~15 traps/year	Field data from VECTRACK mosquito monitoring; total size varies based on trap quantity and activity duration.
ARIA/SUEZ	Undetermined yet	TBD	Will include environmental parameters (air quality, pollen, temperature), possibly requiring API-accessible storage.
SCJUT	Undetermined yet	TBD	Data size pending further information on health and environmental data needs for Timis county analysis.
HAM	Undetermined yet	TBD	
Demonstration sites clusters	Undetermined yet	TBD	

The data volume expectations vary widely across MOUNTADAPT partners, with some datasets remaining flexible to accommodate project developments. These preliminary figures will help in planning scalable storage solutions capable of managing both small and large datasets effectively.

3.3 Data origin/provenance of the data in MOUNTADAPT

Table below was prepared based on the partner responses received.

Table 4: Data Origin and Provenance by Partner

Partner	Data Origin/Provenance	Details
ARIA/SUEZ	Generated by ARIA/SUEZ, with possible data contributions from AtmoAURA	Environmental data, including air quality and weather parameters, is generated in-house, potentially supplemented by AtmoAURA.
UPO	Data collected from demo sites	Information on disaster preparedness collected from site-specific checklists filled out by representatives at demo sites, mainly for internal assessment and publication in an anonymous format.

HCWHE	Website analytics data	Visit metrics originate from analytics tools tracking engagement with MOUNTADAPT's online public resources.
UGA, FLORALIS, CHUGA	Clinical data from patient care activities, environmental data from ATMO and INSEE, and data generated by sensors	Clinical data is produced during patient care and processed through ETL into the Clinical Data Warehouse (CDW). Environmental data is sourced from French databases (ATMO, INSEE) and generated by field sensors.
CRISISOFT	Human Resources (HR) system	Personnel information sourced from CRISISOFT's internal RH system for emergency management solutions.
NCSRD	Crowd-sourcing and open online databases	Data on climate and risk is crowd-sourced or drawn from publicly accessible online databases.
IRIDEON	VECTRAK mosquito traps developed by IRIDEON	Data is generated in the field by IoT-enabled traps that detect mosquito counts, species, and environmental data using optical sensors and bio-acoustic identification, processed in a cloud server.
SCJUT	Data generated by SCJUT and re-used from Timisoara Municipality reports and scientific literature	Data includes health impact reports and local government records, supplemented with scientific literature.
Demonstration sites clusters	Online open databases, national/regional statistics,	Environmental, climate and health data from online open databases, national statistics and other institutions (e.g. environmental agencies, public health institutes)
UDEUSTO	All data generated by our institution within the Mountadapt project originate	Each dataset is newly collected or produced within the framework of the project and is fully

	directly from activities implemented and coordinated by our research team. No pre-existing or secondary datasets are reused.	traceable to its source activity, ensuring transparency and reproducibility throughout the data lifecycle. A more detailed explanation can be found in the following section of the text.
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UDEUSTO detailed explanation: The **survey data** originate from responses collected directly from approximately 1,000 residents of Alpine regions through structured questionnaires designed and managed by our institution. Participants provide informed consent prior to completing the survey, and all responses are stored in secure digital format on the university's servers.

The **co-creation workshop data** derive from participatory sessions organised in various Alpine communities. These workshops were facilitated by local Mountadapt members who were trained by the University of Deusto team. This approach ensured that facilitators were fluent in the local languages and culturally familiar with the participants, allowing for more authentic engagement and context-sensitive dialogue. The data consist of written notes and anonymised transcripts summarising participants' contributions, observations, and suggestions for improving the educational programme.

The **Moodle platform data** originate from users registered on the online training platform developed and hosted by our university. These datasets include user registration details, learning activity logs, quiz outcomes, and satisfaction surveys. All data are automatically recorded and timestamped by Moodle's internal analytics tools, ensuring precise provenance and version control.

The **interview data** stem from semi-structured interviews conducted by our team with local health managers and dissemination partners across the Alpine regions. The interviews are documented through detailed written notes and subsequently anonymised for analysis and secure storage.

The **derived analytical datasets** originate from the processing and integration of survey results, co-creation outputs, Moodle analytics, and interview findings. These datasets are produced by our researchers using documented analytical workflows and version-controlled scripts to ensure complete traceability from raw to processed data.

Finally, the **documentation and metadata** are internally produced by our institution as part of good research data management practice. These materials include methodological descriptions, codebooks, data dictionaries, consent templates, and metadata records that document the provenance, structure, and context of each dataset.

3.4 Data utility beyond MOUNTADAPT

Table below was prepared based on the partner responses received.

Table 5: Data Utility for External Stakeholders

Partner	Potential External Users	Intended Data Use
HWWI	Researchers in climate-health fields	Supports replication studies and adaptation research across different regions and scenarios.
UPO	Scientific community	Anonymous data may be used in publications to report preliminary findings of a pilot of the checklist.
UDEUSTO	Researchers and educators to policymakers and regional authorities	Useful for designing training modules specific to climate change and health adaptation needs.
UGA, FLORALIS, CHUGA	Interested parties adhering to GDPR, including local government and public health entities	Provides insights into the links between climate change and public health, with utility for local governance.
CRISISOFT	Not applicable	No identified external utility.
NCSR	Policy makers, climate-health experts, project replicators	Assists in policy formation, risk assessment, and replication of adaptation models.
IRIDEON	Public health authorities	Mosquito monitoring data aids in vector control and disease prevention strategies.
ARIA/SUEZ	Not yet identified	
SCJUT	Municipalities, policy makers, public health authorities	
Demonstration sites clusters	Healthcare institutions, municipalities, policy makers, general public	Useful for awareness rising and capacity building materials

MOUNTADAPT's data holds significant value for a range of external stakeholders, particularly those involved in climate-health policy, public health, and education. Data utility spans from informing local government policy to assisting researchers and health educators in designing region-specific climate adaptation strategies.

3.4.1 Practical example: Demonstrating data utility beyond MOUNTADAPT

The datasets about training generated by UDEUSTO within Mountadapt hold significant potential value for a wide range of external stakeholders in both the health and climate adaptation domains. While all datasets will undergo anonymisation and will be shared only in aggregated or pseudonymised form, they represent valuable resources for applied research, policy development, and educational innovation in climate–health resilience.

The survey data will be particularly useful to public health authorities, environmental policymakers, and academic researchers, as they provide empirical evidence on the population’s awareness, perceptions, and preparedness regarding the health impacts of climate change in Alpine regions. These data can inform the design of regional awareness campaigns, preparedness plans, and future adaptation strategies for similar mountainous environments.

The co-creation workshop data offer valuable insights for education specialists, community organisations, and participatory research practitioners. The qualitative findings can support the development of locally adapted training programmes, participatory communication strategies, and frameworks for community engagement in climate and health initiatives.

The Moodle platform data—particularly the aggregated analytics on user engagement, completion rates, and satisfaction—can inform digital learning developers, training institutions, and e-health educators about effective approaches to online education in remote or resource-limited contexts. These insights may guide the design of future e-learning platforms and blended learning models in the health sector.

The interview data with local health managers provide valuable qualitative information for regional health authorities and policymakers, as they capture the practical challenges and opportunities in implementing educational interventions at the local level. These data can contribute to improving health system preparedness and coordination in response to climate-related risks.

The derived analytical datasets, integrating results from surveys, workshops, Moodle analytics, and interviews, will be highly relevant to scientific researchers and policy analysts. They provide consolidated, anonymised evidence suitable for comparative studies, meta-analyses, or cross-regional benchmarking of adaptation strategies in health systems.

Finally, the documentation and metadata will serve as a key resource for research data managers, educators, and future EU-funded projects seeking to replicate or build upon the Mountadapt methodology. The inclusion of data dictionaries, consent templates,

and methodological notes ensures that external users can understand and reuse the data in compliance with FAIR principles.

In summary, the data generated by UDEUSTO will support a broad spectrum of external stakeholders – from researchers and educators to policymakers and regional authorities – by providing empirically grounded, well-documented, and reusable evidence on health, climate adaptation, and capacity building in mountain regions.

Table 6: Overview of Main Datasets in MOUNTADAPT

Dataset ID	Title	Type	Format	Volume	Sensitivity
D1	Health and Climate Impact Data	Health metrics, weather data	.nc, .hdf, .csv	Approx. 100 GB	High – Contains sensitive health data
D2	Preparedness Checklist Data	Disaster preparedness checklist	Fillable PDF, .csv	Small	Low – Anonymized survey data
D3	Training Needs Assessment Data	Survey and interview responses	.csv	Moderate	Medium – Anonymized feedback
D4	Website Engagement Metrics	Analytics data	Analytics format	Minimal	Low – Public data only
D5	Clinical and Environmental Data	Patient records, environmental metrics	.csv, database	Variable (undetermined)	High – Sensitive patient data
D6	Mosquito Monitoring Data	Vector data (counts, species)	.json, .csv, .xls	30 MB per trap/year	Medium – Field monitoring data
D7	Environmental Monitoring Data	Air quality, pollen, temperature, wind	.csv, API	Variable	Low – Environmental data
D8	Crisis Response Personnel Data	Staff profiles, contact details	.xls, .xlsx	Minimal	High – Contains personal information

D9	Climate and Vulnerability Data	Climate-risk assessments	.xml, .json	Up to 500 MB	Low – Public data
D10	Allergic Disease Impact Data	Health impact data on allergies	.xls, .pdf	Small to moderate	High – Contains health impact data

3.5 Data repositories

To streamline data management practices, the following repository policies will be adhered to:

- **Public Datasets:** Datasets designated as public will be uploaded to Zenodo, ensuring compliance with FAIR principles and enabling broad accessibility.
- **Restricted Datasets:** Sensitive or proprietary datasets will be stored in secure institutional repositories with access permissions aligned to GDPR and intellectual property requirements.
- **Metadata and DOI Assignment:** All datasets will include rich metadata and, where applicable, a DOI to ensure findability and reusability.

3.6 Practical approaches: Preparing data for AI models and articulating MOUNTADAPT solutions

This chapter presents practical experiences from the project's implementation phase. It provides insights related to the data provision of the demosites to the WP6, that will be prepared to be sent to the WP2, in particular for the data analysis for the models in Task 2.1, where several challenges were encountered, and also provides initial insights into how the different solutions tested within the project can be articulated together from a data perspective.

3.6.1 A practical approach to data management: Preparing and analysing WP6 data for AI-based models in Task 2.1: insights and challenges

ENERGAP is the leader of Task 6.3, ensuring coordination with the demonstrator sites and supporting the practical aspects of data collection and preparation to be sent to WP2, Task 2.1. The work carried out in Task 2.1 provided important insights into how

data and the output variable to be predicted need to be prepared and applied for AI-based climate–health forecasts. The process unfolded in several stages and was grounded in close collaboration between ENERGAP, the demosites and UDEUSTO.

First, two joint online meetings with all demonstration sites were organized to introduce the overall concept, define the scope of AI-based forecasts, and identify the priority health issues linked to climate change at each site. These meetings also served to discuss the data requirements and availability for developing robust models.

Following the joint meetings, each demonstration site was asked to define specific cases for forecasting (input available data and output variable to be predicted on each demosite) and the datasets needed to support them. The required data included climate information (past and projected), clinical data, socio-demographic indicators, and regional statistics, ideally covering at least the past 10 years. Considerable attention was paid to ethical and legal requirements, especially regarding clinical datasets.

To support data preparation, an “Excel template” to be completed by every demo site was provided to partners, including examples illustrating how datasets should be structured, cleaned, and pre-processed by them before being included as “provided data” in WP6 that will be delivered to WP2 to be usable in AI models. This step was critical for ensuring consistency and quality across sites.

Finally, recognising the diversity of contexts and capacities, individual consultations were conducted with each demonstration site. These one-to-one exchanges helped address site-specific challenges, clarify data gaps, and guide partners in preparing reliable datasets. This collaborative and iterative approach has proven effective and remains the preferred strategy for ensuring that data used in Task 2.1 meets the requirements of statistical and AI-based modelling for all demo sites except Grenoble, which encountered problems with data provision and delivering the established template format with the data, and a contingency plan was carried out using open data for mountain areas in France.

Regarding data curation and protection, each demonstration site was responsible for ensuring that the datasets they provided were already anonymised or pseudonymised in accordance with GDPR and national regulations. Sensitive health data were anonymised by the demonstrators in collaboration with their institutional Data Protection Officers (DPOs) before transfer to ENERGAP and WP2. ENERGAP performed an additional quality check to ensure that no personal identifiers remained and that datasets followed the required structure and formatting. For non-sensitive datasets (e.g., publicly available climate or environmental data), no anonymisation was required, but partners were responsible for verifying completeness, variable consistency, and temporal alignment before submission. This workflow ensured that data entering WP2 were ethically compliant, high-quality, and ready for AI-based analysis.

Key lessons learned and challenges: The experience in data provision faced challenges in WP6 to be delivered to Task 2.1, highlighted the importance of early joint discussions with demonstrators to align on relevant health issues, while subsequent individual consultations proved essential to address site-specific needs. Key challenges were linked to the heterogeneity of datasets, the effort required for harmonisation and pre-processing, and the constraints imposed by GDPR on health data. Providing clear templates and practical guidance significantly improved data quality, but differences in capacity and data availability across demosites remain an important consideration for future modelling and collaboration activities.

3.6.2 Articulating the different solutions tested within the project from a data perspective

The MOUNTADAPT project tests a wide range of adaptation solutions that generate diverse datasets, including clinical health records, environmental monitoring data, preparedness checklists, survey responses, mosquito monitoring outputs, emergency management information, etc. While datasets differ in type, scope, and sensitivity, their articulation from a data perspective is important for enabling cross-site comparison, integrated analysis, and replication of solutions across demonstration sites.

Integration opportunities identified in the first half of the project, with possibilities for further exploration:

- Environmental and health data: Environmental indicators (e.g., air quality, pollen, and IEQ parameters collected by ARIA/SUEZ, CSTB and demonstration sites) can be integrated with clinical datasets from UGA/CHUGA/FLORALIS, SCJUT, TIKLI and HCM to explore relationships between exposure and health outcomes. This supports evidence-based strategies for healthcare facilities adapting to climate-related risks.
- Preparedness and response: Checklists piloted in Demonstration sites by UPO provide structured data on local preparedness, which can be combined with CRISISOFT's personnel and crisis response data to evaluate institutional readiness and capacity for rapid action.
- Surveillance and forecasting: IoT-based mosquito monitoring through IRIDEON's VECTRACK solution generates high-resolution vector data that can be aligned with climate-health models from UDEUSTO and HWWI and clinical observations at demonstration sites, improving forecasting of vector-borne disease risks.
- Early Warning and Response System (MEWRS): The development of MEWRS (D2.2) demonstrates how multiple technological solutions – including VECTRACK, IEQ, SURVIRAL, and Sentinel-based climate observations – are

integrated into an interoperable ecosystem. From a data perspective, this integration highlights the importance of harmonising heterogeneous datasets and provides a pathway for combining environmental, clinical, and surveillance information into a coherent decision-support tool for local adaptation planning.

- **Capacity building and behavioural change:** UDEUSTO's training survey data, when considered together with climate-health vulnerability data from HWWI and NCSRD, can provide insights into how knowledge gaps align with exposure to climate risks. Data from training needs assessments and workshops with healthcare professionals (UDEUSTO, healthcare facilities at demo sites) provide insights into knowledge gaps. When articulated with climate-health vulnerability data from HWWI and NCSRD, these datasets highlight how capacity building responds to the specific risks faced by mountain communities.
- **Cross-site comparability:** By aligning data structures across demonstration sites (Austria, France, Romania, Slovenia), MOUNTADAPT enables comparative analyses that identify common indicators for resilience, making solutions transferable and scalable.

From a data perspective, these articulation pathways enable the project to go beyond isolated solutions and build a shared evidence base. This strengthens the comparability of results across demonstration sites, facilitates the identification of common indicators for monitoring adaptation progress, and supports the transferability of tested solutions to other mountain regions.

4. FAIR Data

4.1 Making Data Findable

4.1.1 General guidelines for data handling

All project participants, including demonstration sites, replicators, and solution providers, must align their data management practices with the principles outlined in this DMP. Specifically:

- Demonstration sites and replicators should ensure that data collected during project activities are securely stored, processed, and, where possible, shared in alignment with GDPR and FAIR principles.

- Solution providers are required to handle their datasets consistently with the guidelines provided, ensuring traceability and secure access to sensitive or proprietary data.
- Dataset identified as open or public will be deposited in a trusted repository, Zenodo, following the repository's metadata and access protocols. Access permissions must reflect the sensitivity and intellectual property of the data.

4.1.2 Persistent identifier

For MOUNTADAPT, persistent identifiers (PIDs) are selectively implemented to support traceability where applicable. Key approaches include (upon partner responses received):

- **DOI Use:** Partners like UDEUSTO uses DOIs for datasets published through research papers or stored in open-access repositories, facilitating long-term identification.
- **System-Generated PIDs:** CRISISOFT assigns unique, persistent identifiers within its system for each new data entry, ensuring traceability of data elements in emergency management.
- **Pseudonymized PIDs:** UGA/FLORALIS/CHUGA uses pseudonymized PIDs within the Clinical Data Warehouse (CDW) to manage patient data securely while maintaining identification for internal tracking purposes.
- **HAM:** For urban data sets, Hamburg's Urban Data Platform (UDP_HH) provides PIDs for machine-readable sharing across applications.
- **Demonstrators:** data sources are specified, persistent identifier will be used whenever possible.

Other partners, such as SCJUT, HWWI, and UPO, have not planned for persistent identifiers, either due to limited data re-use or because data is directly accessible through the project systems.

4.1.3 Metadata

MOUNTADAPT partners recognize the importance of rich metadata to facilitate data discovery, enhance reusability, and align with disciplinary standards. The following standards and approaches are implemented.

Disciplinary Metadata Standards:

- UDEUSTO utilizes DDI (Data Documentation Initiative) for social sciences data and SDMX (Statistical Data and Metadata Exchange) for quantitative social data, ensuring detailed documentation of survey and behavioral data.

- UGA/FLORALIS/CHUGA follows healthcare standards for clinical data, including:
 - OMOP CDM for mapping health variables,
 - FHIR for healthcare interoperability,
 - ICD-10 for disease classification, and
 - LOINC for lab data coding.
- Environmental Data Standards: Environmental metadata from UGA/FLORALIS/CHUGA can be shared using Dublin Core (DCMI), with XML formatting to align with international standards.
- HAM: Operates the MetaVer metadata portal, a geoinformation search engine aligned with INSPIRE Directive requirements. This portal supports data discovery for urban data by making metadata accessible across specific states.

4.1.4 Metadata searchability

Partners like UDEUSTO and UGA includes key search keywords to optimize data discoverability, particularly for indexed metadata in open-access platforms.

ARIA/SUEZ and IRIDEON provide metadata accessible via API, allowing MOUNTADAPT data to be searchable for authorized users within the consortium.

Metadata Accessibility:

- For sensitive clinical data, UGA restricts metadata access according to task-specific permissions, maintaining compliance with GDPR and hospital policies.
- SCJUT's data remains restricted, but metadata can be accessed upon request from authorized personnel, adding a layer of controlled discoverability.
- HAM: MetaVer enables geoinformation metadata harvesting, supporting accessibility and compliance with European spatial data standards.

MOUNTADAPT's data findability strategy balances discoverability with privacy, using persistent identifiers where feasible and providing metadata that adheres to disciplinary standards. Through a combination of DOIs, API-accessible metadata, and recognized standards (e.g., DDI, OMOP, FHIR), the project facilitates efficient data discovery, while sensitive data remains protected by restricted access and pseudonymization practices.

4.2 Making Data Accessible

4.2.1 Repository

MOUNTADAPT partners are committed to storing data in secure, trusted repositories to ensure both accessibility and compliance with ethical and legal standards (upon partner responses received):

- **Zenodo Repository:** IRIDEON deposits mosquito classification data from Demos, and UDEUSTO deposits training survey data in Zenodo, a trusted repository that assigns each dataset a unique DOI, making it discoverable and accessible upon publication of the corresponding research articles.
- **Azure Cloud:** ARIA/SUEZ store environmental data on a secure AZURE cloud platform, which provides controlled access and high-level security.
- **Public Data Repositories:** HWWI deposits publicly sourced weather data from platforms like Copernicus, NASA, and NOAA into a repository that offers persistent identifiers, while protecting health data from the European Health Interview (EHI) database, which has legal restrictions and must be deleted after use.
- **Project-Specific Repositories:** Some partners, such as UGA/FLORALIS/CHUGA/TIKLI store data in a secure and trusted repository for pseudonymized health data, maintaining high standards for confidentiality and patient privacy. UMIT's data are stored on a server linked to the MOUNTADAPT portal for access by project partners.
- **Restricted Access Data:** Certain data, such as CRISISOFT's personnel data, remain stored on a secure internal server, accessible only to authorized users, while SCJUT does not deposit any data in public repositories due to confidentiality.
- **HAM:** Data are stored on a secure server, with controlled accessibility as per local regulations and project needs.
- **Demonstrators:** specific information and data are shared with project partners through Sharepoint. Survey/interview results collected as part of MOUNTADAPT are anonymized and securely managed by technical partners.

At the Mountadapt project level Zenodo community was created. Datasets designated as public will be uploaded to Zenodo, ensuring compliance with FAIR principles and enabling broad accessibility.

4.2.1.1 Example of Practical approach

UDEUSTO'S example of repository strategy within the Mountadapt Training solution:

During the active research phase, all data – including surveys, co-creation workshop materials, Moodle analytics, interviews, and derived analytical outputs – will be stored securely on the **institutional servers of the University of Deusto**, which provide

encrypted storage, access control through university credentials, and automated backup procedures. These servers are maintained by the university's IT services and meet both **GDPR** and **EU data security standards**.

For long-term preservation and open access, **anonymised and aggregated datasets** will be deposited in an **open, certified repository** such as **Zenodo** (operated by CERN and OpenAIRE).

Each dataset will include a detailed metadata record describing the origin, structure, methodology, and any applicable restrictions or embargoes. Where appropriate, datasets will be released under a **Creative Commons licence (CC BY or CC BY-NC)** after the embargo period required to safeguard planned scientific publications.

The documentation and metadata files will be made openly available immediately, while datasets containing personal information will only be shared in fully **anonymised** form, ensuring compliance with **GDPR Articles 6(1)(a) and 9(2)(j)**.

This repository strategy ensures that all data produced by our institution remain secure during collection and analysis, and openly accessible for reuse after publication, fulfilling both FAIR and ethical data management obligations under Horizon Europe.

4.2.2 GDPR-Compliant handling of sensitive health data

In accordance with GDPR requirements, the following protocols will apply to the handling of sensitive health data:

- **Storage Protocols:** Sensitive health data must be stored on secure, encrypted local servers with no internet access. Cloud-based solutions or data sharing over unsecured connections are strictly prohibited.
- **Access Control:** Access to sensitive health data will be restricted to authorized personnel only. Access permissions will be managed on a case-by-case basis and must utilize secure methods such as physical hard drives or encrypted data transfer protocols.
- **Data Sharing:** Sharing sensitive health data will require explicit consent from all relevant stakeholders and compliance with GDPR. All data transfers must be encrypted, with logs maintained for audit purposes.
- **Anonymization:** Where feasible, sensitive data will be pseudonymized or anonymized to further protect privacy while maintaining data usability.

4.2.3 Open data / availability

MOUNTADAPT's data accessibility policy balances open-access commitments with necessary restrictions due to data sensitivity and compliance with GDPR (upon partner responses received).

Open Access Data:

- **Publicly Accessible Data:**
 - IRIDEON's mosquito classification data will be openly available on Zenodo with the authorization of the Demo site partners.
 - HAM data is openly available while ensuring the protection of personal data.
 - UDEUSTO will make available, in open access, the anonymised datasets generated through the project once the related scientific publications have been released and any applicable embargo period has ended. These will include aggregated and fully anonymised training questionnaire data, Moodle learning analytics, and satisfaction survey results, together with the corresponding methodological documentation, metadata, and data dictionaries that enable understanding and reuse of the data. All openly shared datasets will be deposited in Zenodo, a trusted open-access repository operated by CERN and compliant with OpenAIRE and FAIR data principles. Each dataset will be assigned a persistent DOI and accompanied by detailed metadata following the DataCite schema. Openly shared data will contain no personal or sensitive information and will be fully anonymised in accordance with GDPR and the project's ethical approvals. Documentation and metadata will be made openly available immediately upon publication, while anonymised datasets will be released under a Creative Commons licence (CC BY or CC BY-NC) after the embargo period required to protect the project's planned scientific outputs.
- **Open-Source Weather Data:** HWWI will make weather data from open platforms (Copernicus, NASA, NOAA) accessible, supporting public utility and transparency.

Restricted Access Data:

- **Sensitive Health Data:** UGA/FLORALIS/CHUGA's clinical data will only be accessible under strict conditions, including legal and ethical guidelines, scientific review, and contractual agreements with CHUGA. CRISISOFT's personnel data will remain restricted for GDPR compliance. TIKLI: Tirol clinical data is restricted to use within the project, for specified purposes, and exclusively by direct project partners. Any further sharing or use of this data requires formal consent from TIKLI. After project completion, TIKLI data must be deleted. It's important to stress that ownership of these datasets remains with TIKLI. Certain datasets collected by UDEUSTO within Mountadapt are classified as Restricted Access Data due to containing personal or potentially re-identifiable information. This includes raw survey responses, Moodle platform user data, and interview or workshop transcripts. These data will be stored securely on internal university servers, with access limited to authorised project staff. Only fully anonymised and aggregated derivatives will be shared publicly after the embargo period, in compliance with GDPR and ethical research standards.

- **Partner-Only Data:** ARIA/SUEZ will share environmental data exclusively with project partners during the project to maintain security and support collaboration while protecting data from unrestricted public access.
- **Anonymized Project Data:** SCJUT's anonymized health data may be accessible to project partners, while its weather data, already public, is accessible to all.

Embargo and IP Protections: HWWI's health data must be securely deleted post-use, and some partners may apply embargo periods for IP protection.

MOUNTADAPT's data accessibility strategy ensures that publicly useful data is openly accessible where possible, while safeguarding sensitive data under GDPR-compliant conditions. Through a mix of open and restricted access, MOUNTADAPT enables collaboration within the consortium and supports public research utility while maintaining necessary privacy protections.

4.2.4 Data access protocol

In MOUNTADAPT, data accessibility protocols vary based on the data type, sensitivity, and the technical means of access provided by partners (upon partner responses received):

- **IRIDEON:** The mosquito classification data from field trials will be accessible publicly through Zenodo, utilizing Zenodo's standardized access protocol to ensure broad usability and ease of access.
- **ARIA/SUEZ:** Environmental data managed by ARIA/SUEZ is available via a REST API, allowing consortium partners authorized access through this standardized and secure protocol.
- **UDEUSTO:** Training data will be accessible through Zenodo's standard access protocol, ensuring compatibility with open-access requirements once the research articles are accepted for publication.
- **UGA/FLORALIS/CHUGA:** Given the sensitivity of health data, no free or open access is provided. Access is restricted and managed through secure, compliant channels in line with GDPR.
- **CRISISOFT:** Data stored by CRISISOFT is accessible only to system administrators or authorized personnel, with no open or standardized public access protocol.
- **UMIT:** The data generated by UMIT's survival solution is not freely available for download.
- **SCJUT:** No public access protocol is provided, as data access is restricted due to data type and sensitivity.
- **HAM:** UDP_HH uses standards from the Open Geospatial Consortium (OGC) and ISO to provide standardized access. Real-time and event-based data can be

integrated through APIs, ETL tools, and other secure methods. HAM's UDP_HH also offers options such as MQTT brokers for real-time data and FTP servers for secure file storage, providing robust data integration and access pathways.

4.2.4.1 Example of Practical approach

UDEUSTO'S example of data access protocol regarding the data generated for the solution of the Mountadapt Training course.

Main characteristics:

Summary – Data Accessibility Protocol (University of Deusto, Mountadapt)

Purpose

To define how data collected and generated by the University of Deusto (UDEUSTO) in the Mountadapt project are accessed, shared, and preserved in accordance with the GDPR, FAIR principles, and Horizon Europe Open Research Data policy.

1. Data Access Categories

Open Access Data:

Includes anonymised and aggregated datasets such as training questionnaire results, Moodle analytics summaries, and satisfaction surveys, along with methodological documentation and metadata.

Deposited in Zenodo (OpenAIRE-compliant repository) with a persistent DOI.

Released under CC BY or CC BY-NC licence after an embargo period (typically 12–18 months post-publication).

Metadata are publicly visible immediately.

Restricted Access Data:

Includes raw survey data, Moodle user information, and workshop/interview transcripts containing personal or contextually identifiable details.

Stored on secure University of Deusto internal servers with access limited to authorised project staff.

External access only via formal request, subject to ethics approval and a Data Access Agreement (DAA).

2. Embargo and Publication Policy

Embargo applies until related scientific outputs are published.

Metadata remain publicly visible during embargo.

Ensures balance between open science and protection of participants' privacy and project publications.

3. Access Request Procedure

External user submits a Data Access Request Form specifying purpose and dataset.

Request reviewed by the Data Controller and Ethics Committee.

If approved, a Data Access Agreement is signed defining permitted use and confidentiality.

Data shared securely through encrypted or traceable transfer systems.

4. Security and Retention

All data stored on encrypted servers with password-protected and role-based access.

Regular backups maintained by UDEUSTO IT services.

Open data preserved for at least 10 years in Zenodo; restricted data retained for at least 5 years post-project completion.

5. Roles and Responsibilities

Data Controller: University of Deusto (Principal Investigator).

Data Protection Officer (DPO): Ensures GDPR compliance.

Data Stewards / Researchers: Apply anonymisation and security procedures.

Ethics Committee: Oversees approval for restricted data access.

6. Review

The Data Accessibility Protocol will be reviewed annually and updated as necessary to maintain alignment with GDPR, Horizon Europe requirements, and institutional ethical standards

4.2.5 Access policy of restricted data

Access restrictions apply to many MOUNTADAPT datasets, primarily to protect sensitive information. Partners has outlined specific access provisions:

- **HWWI:** Individuals interested in restricted data, such as health data, must independently apply for access in compliance with legal and institutional requirements.
- **UDEUSTO:** Restricted datasets – including raw survey responses, Moodle user data, and co-creation or interview transcripts – are stored securely on the university's internal servers. Access is limited to authorised project staff who require it for legitimate research purposes and have signed confidentiality agreements. External access may be granted only upon written request and after approval by the Data Controller and the Ethics Committee. Approved users must sign a Data Access Agreement (DAA) specifying the intended use, data protection measures, retention period, and secure deletion procedures. No

restricted data will be made publicly available or transferred outside the European Economic Area without appropriate safeguards and legal basis.

- **UGA/FLORALIS/CHUGA:** Restricted access to health data is provided to relevant project partners and sub-task actors, with a controlled data transfer process that aligns with legal and ethical requirements. Data will be securely archived for 10 to 15 years after the project concludes.
- **CRISISOFT:** Only authorized personnel or system administrators can access restricted data, following GDPR compliance.
- **UMIT:** The data used by UMIT's solution is openly available, with no access restrictions.
- **SCJUT:** Access to restricted data will be possible by request through an authorized individual, maintaining control over sensitive data and ensuring secure access.
- **TIKLI:** kliniken data (including infrastructure data, management data, contact information) may only be used within the scope of the project, only for a specific purpose and only by the direct project partners. It is mandated that the data must not be accessed or utilized by any other parties, ensuring the integrity and confidentiality of the information entrusted to us. Information from management plans – whether it regards building or disaster plans – is shared to the necessary extent with specific partner to co-develop and implement adaptation solutions.

4.2.6 Data access committee in MOUNTADAPT

Most partners have determined that a formal data access committee is unnecessary, relying instead on internal protocols to verify access and maintain security:

- **ARIA/SUEZ** and **UMIT:** No data access committee is needed, as data is not restricted to the level requiring committee oversight.
- **UPO:** The disaster preparedness checklist and survey will not collect personal information, and data shared will be anonymous.
- **UDEUSTO:** Given the limited scale and clearly defined scope of the data handled by the University of Deusto within the Mountadapt project, the establishment of a formal Data Access Committee is not necessary. All data governance functions are already effectively covered by existing institutional and project structures. Access to restricted data is strictly regulated under the procedures described in the Data Accessibility Protocol, requiring written requests, ethical approval, and the signing of a Data Access Agreement (DAA). Oversight of these processes is ensured by the Principal Investigator (as Data Controller), the University's Data Protection Officer (DPO), and the Ethics Committee, in full

compliance with GDPR and Horizon Europe requirements. This framework provides adequate control, accountability, and transparency for all data access decisions, making a separate Data Access Committee redundant.

- **UGA/FLORALIS/CHUGA:** A data access committee is unnecessary due to existing compliance with the CERGA ethical protocol. Data access restrictions are validated through French ethical standards and project agreements.
- **CRISISOFT:** Data access is validated by authorized management personnel within the organization, ensuring a controlled and compliant access process.
- **SCJUT:** A data access committee is not required, as data is anonymized or public. For any restricted access, user identity is verified based on institutional affiliation.
- **TIKLI:** Data access is validated by the organization's data privacy officers and existing committee, top and middle management, or any department authorized to grant access.

Table 7 provides an overview of datasets, their storage locations, access protocols, and expected licenses or access permissions used for publication. This table clarifies where and how each dataset will be stored, the level of accessibility, and any license or restriction applied. Prepared upon partner responses received.

Table 7: Overview of Dataset Locations, Access Protocols, and Access Permissions

Dataset	Storage Location	Access Protocol	Expected License or Access Restrictions
Health and Climate Impact Data	Trusted repository for weather data	Zenodo (weather data), restricted for health data	Open-access (weather) / Restricted (health) due to GDPR
Disaster Preparedness Checklist	Project-specific SharePoint per demo site	Internal access	Internal access only for project partners
Training Needs Assessment Data	Secure internal servers at UDEUSTO; anonymised datasets deposited in Zenodo with a DOI	Restricted data accessible only to authorised staff; external access requires ethics approval + DAA; anonymised datasets openly available after embargo	Open-access datasets under CC BY / CC BY-NC; restricted data GDPR-protected; only anonymised/aggregated data shared externally

Dataset	Storage Location	Access Protocol	Expected License or Access Restrictions
Website Engagement Metrics	MOUNTADAPT project website https://mountadapt.eu/	Analytics access	Public data, no restrictions
Clinical and Environmental Data	Secured EU-compliant repository	Restricted access	Access only with legal/ethical approvals, archived for 10-15 years post-project
Mosquito Monitoring Data	Zenodo	Zenodo access protocol	Open-access on Zenodo
Environmental Monitoring Data	AZURE cloud	REST API	Project partner access during project duration
Crisis Response Personnel Data	Internal secure server	Administrator access only	Restricted to authorized personnel, no open access
Climate and Vulnerability Data	Public data repository	General access	Publicly accessible through open sources
Allergic Disease Impact Data	Not specified (internal access)	Authorized access via institutional requests	Restricted to project partners; anonymized where applicable

4.2.7 Metadata

To ensure accessibility, MOUNTADAPT partners have established protocols for metadata availability, with public domain licensing applied where feasible. For sensitive data, metadata availability is restricted to protect privacy and meet GDPR requirements. The table below summarizes partner's approach to metadata licensing and accessibility. Prepared upon partner responses received.

Table 8: Metadata Availability, Licensing, and Access Information by Partner

Partner	Metadata Availability	Public Domain Licensing (CC0)	Access Information Included
UDEUSTO	Openly available	Yes	Metadata publicly available on Zenodo; datasets assigned a persistent DOI. Open datasets accessible under CC BY/CC BY-NC; restricted datasets shared only via DAA and ethical approval.
ARIA/SUEZ	Restricted to project partners	No, due to data sensitivity	Limited to internal partners only
UGA/FLORALIS/CHUGA	Restricted, GDPR-compliant	No, due to GDPR and medical data restrictions	Metadata access controlled for project partners
CRISISOFT	Restricted to authorized personnel	No, internal policy restrictions	Available only to authorized users
UMIT	Included with original dataset	Follows original dataset's license	Access according to original dataset's terms
SCJUT	Available by request	Not specified	Available to approved users on request
HAM	Openly available via MetaVer	Yes	Metadata is openly accessible through the MetaVer portal, in line with INSPIRE Directive requirements.

Table 8 provides a snapshot of metadata availability across partners, clarifying licensing and access protocols.

4.2.8 Availability and findability time of data

MOUNTADAPT partners have tailored data and metadata availability to ensure discoverability during and, in some cases, beyond the project duration. For datasets with sensitive information, availability is limited to the project's lifespan or as long as the data remains relevant. The table below provides an overview of partner's data and metadata availability plans. Prepared upon partner responses received.

Table 9: Data and Metadata Availability by Partner

Partner	Data Availability Duration	Metadata Availability After Data Lifecycle	Notes
UDEUSTO	Project duration; anonymised and aggregated datasets become openly accessible after completion of main publications (12–18-month embargo)	Metadata publicly available in Zenodo with persistent DOIs as soon as datasets are created; metadata persist beyond project end	Data stored on secure UDEUSTO servers with access restricted to authorised staff; ensures discoverability and compliance with GDPR and FAIR principles
ARIA/SUEZ	Project duration	Metadata does not persist beyond project	Limited access for active project use
UGA, FLORALIS, CHUGA	During sub-task activity	Metadata retained while data is relevant	Access aligned with GDPR requirements
CRISISOFT	As long as solution is in use	Metadata available during solution's lifespan	Supports internal use by authorized users
UMIT	As long as server is online	Metadata persists with server uptime	Long-term accessibility for project needs
SCJUT	By request (during and after project)	Metadata accessible by request	Available to approved individuals

This varied approach helps maximize the project's impact while respecting privacy and data usage timelines.

4.2.9 Software documentation or reference policy

To support data usability, MOUNTADAPT partners provide software documentation and references where needed. Open-source solutions are used where possible, while

proprietary software remains limited to internal project use. The table below outlines software documentation and availability by partner.

Table 10: Software Documentation and Availability by Partner

Partner	Software Documentation	Software Availability	Notes
UDEUSTO	Detailed documentation provided	Not open-source	Includes version, requirements, and usage
ARIA/SUEZ	REST API documentation included	Not open-source	For project partners' use
UGA, FLORALIS, CHUGA	Virtual machine with software options	Limited to project use	Supports data analysis needs
CRISISOFT	User training documentation only	Source code proprietary	Access limited to authorized users
UMIT	No specific documentation needed	Uses open-source tools (e.g., R)	CSV format accessible with standard software
SCJUT	Not applicable	No specific software requirements	Data format requires no special software
HAM	Masterportal documentation available	Open-source	The Masterportal is an open-source geoportal, available without licensing costs, developed by Hamburg as a device-independent, web-based platform for geospatial data access.

This approach ensures that relevant software tools are accessible to project partners, allowing for secure and effective data analysis.

4.3 Making Data Interoperable

MOUNTADAPT partners recognize the importance of data interoperability to facilitate re-use and integration across disciplines. Each partner has adopted specific standards

or practices, ensuring that data remains compatible with external research and project systems where applicable:

- **ARIA/SUEZ:** Data is made accessible through a REST API, a standard protocol that allows secure, structured access across systems, ensuring interoperability for environmental data.
- **UDEUSTO:** To ensure semantic interoperability, UDEUSTO uses the Data Documentation Initiative (DDI) for social science metadata, alongside Medical Subject Headings (MeSH) for health data and the Global Change Master Directory (GCMD) vocabulary for climate data. These standards align with community-endorsed practices, enabling data re-use and interdisciplinary integration.
- **UGA/FLORALIS/CHUGA:** Interoperability is supported through established data formats as outlined in their technical documentation, including compliance with healthcare and environmental standards.
- **CRISISOFT:** Although no specific interoperability standards are planned, CRISISOFT acknowledges that use cases for interoperability may arise during the project, and relevant best practices will be considered as needs evolve.
- **SCJUT and UPO:** No specific interoperability standards are applied, as these partners' data is either restricted or not designed for external exchange.
- **HAM:** Follows the FAIR principles to support data sharing and re-use, ensuring alignment with interoperability best practices.

This approach ensures interoperability where applicable, allowing data to be integrated across research contexts while respecting data privacy for sensitive datasets.

- **UDEUSTO:** If unique terms or project-specific vocabularies are generated, UDEUSTO will provide a list of terms and create mappings to more commonly used ontologies, promoting reusability and refinement by others.
- **ARIA/SUEZ, UGA/FLORALIS/CHUGA, CRISISOFT, SCJUT:** These partners do not plan to generate unique ontologies, as their data relies on widely used standards or remains restricted to internal use, limiting the need for external vocabulary mapping.

This strategy minimizes the use of unique vocabularies, favoring common standards and facilitating data alignment across related research.

To enhance data context and traceability, certain partners plan to include qualified references to internal and external datasets:

- **UDEUSTO:** Qualified references, including persistent identifiers (e.g., DOIs) are included to link relevant datasets, both internal and external, ensuring traceability and ease of re-use for future research.
- **ARIA/SUEZ, UGA/FLORALIS/CHUGA, CRISISOFT:** These partners may include internal references as needed but have not planned extensive external referencing due to the specific nature of their data.

By integrating references and established standards where appropriate, MOUNTADAPT's interoperability approach supports data sharing, re-use, and cross-disciplinary integration in a structured and accessible way.

4.4 Increase data re-use

4.4.1 Documentation provision

To ensure that data generated in MOUNTADAPT can be validated, reproduced, and re-used, each partner has committed to providing structured documentation. This documentation includes key methodological information, variable definitions, and, where applicable, data cleaning and analysis protocols. By offering clear and comprehensive documentation, partners facilitate both internal and external re-use of data, adhering to best practices for transparency and data management.

The table 11 summarizes the types of documentation partners will provide, highlighting the critical elements that enable data re-use and validation. Prepared upon partner responses received.

Table 11: Documentation Provided for Data Validation and Re-Use by Partner

Partner	Documentation Provided	Details and Purpose
ARIA/SUEZ	Feedback documentation in Deliverable 2.2	Details are outlined in project deliverables, offering transparency on data methodologies and findings.
HWI	Data source information and analysis code documentation	Includes data sources and related code, retaining original documentation to ensure traceability and reproducibility.
UPO	Methodology description in scientific publication	A developed publication describes the checklist development and testing methods, enhancing transparency and validation.

Partner	Documentation Provided	Details and Purpose
UDEUSTO	Full documentation suite: Readme file, Codebook, Data Cleaning, and Analysis files	A developed publication will describe: - Readme: Project overview, methodology, file structure, and usage instructions. - Codebook: Definitions, data types, and units (mostly categorical data). - Data Cleaning: Steps for data handling, transformation, exclusions, and software use. - Analysis: Description of statistical tests, parameters, and interpretation guidance.
UGA, FLORALIS, CHUGA	Aggregated descriptive statistics for clinical and environmental data	Provides summaries of data characteristics, supporting data re-use by highlighting key statistical features.
SCJUT	Report with clinical and environmental descriptive statistics	Contains data summaries to offer context and facilitate re-use by providing transparency into dataset characteristics.

By providing robust documentation, MOUNTADAPT partners ensure that datasets are not only accessible but also easily validated and interpretable. This approach includes essential methodological information and data handling notes, allowing both project collaborators and external researchers to re-use data confidently. Each partner's documentation efforts support a unified, transparent data management framework, which aligns with MOUNTADAPT's goals for cross-disciplinary integration and lasting impact.

4.4.2 Licensing

MOUNTADAPT partners take different approaches to data accessibility, balancing the need for public domain access with compliance and data sensitivity:

- **ARIA/SUEZ** and **UGA/FLORALIS/CHUGA**: Data will not be made publicly available due to project-specific confidentiality requirements and GDPR restrictions on sensitive information.
- **UDEUSTO**: Data access depends on the scope of the task; however, where feasible, data will be licensed under standard re-use licenses in line with the

Grant Agreement. Openly accessible datasets will be licensed under Creative Commons (CC BY or CC BY-NC), allowing reuse with attribution and, where appropriate, for non-commercial purposes only. Restricted datasets containing personal information will not carry open licences and will be shared only under a Data Access Agreement (DAA).

- **UMIT (survival solution):** Data is freely available for download, maximizing accessibility. The model behind the data is also emphasized as a resource for external use.
- **CRISISOFT:** Data will be made available in TXT or CSV format, contingent on pilot site permissions.
- **SCJUT:** Public domain access is not applicable, as data re-use decisions will depend on project and partner needs.
- **UPO:** Not applicable, as UPO's contributions are primarily internal and don't involve data intended for public re-use.
- **HAM:** follows public domain practices for data accessibility, with compliance to open data standards where possible.

This ensures that data is made available in the public domain where possible while respecting privacy and partner-specific restrictions.

Several partners have considered third-party re-usability, with particular focus on tasks that involve publicly relevant research:

- **UDEUSTO:** Data will be reusable by third parties, provided proper attribution to the original dataset is maintained. In relation to data derived from the Training programme development, fully anonymised and aggregated datasets will be made openly available in Zenodo under CC BY or CC BY-NC licences, ensuring proper attribution and ethical reuse. Access to restricted data containing personal information may be granted to qualified researchers under a Data Access Agreement (DAA) and ethical approval. This policy promotes open science while safeguarding participant privacy and data integrity.
- **CRISISOFT:** Third-party use is allowed with authorization from the pilot site, facilitating further application where permitted.
- **UMIT (survival solution):** Data remains accessible for third-party use, supporting long-term use of the model developed for climate-health adaptation.
- **UGA/FLORALIS/CHUGA and ARIA/SUEZ:** Data re-use is restricted to identified partners due to sensitivity and confidentiality considerations.
- **SCJUT:** Data re-usability has not been finalized and will be determined based on post-project requirements.
- **UPO:** Not applicable, as UPO's focus is on internal project outcomes rather than external data sharing.

This approach aligns with MOUNTADAPT's goals for data sharing while observing necessary limitations for privacy and sensitivity.

4.4.3 Provenance of data

Comprehensive documentation and quality assurance practices are in place to ensure high data integrity across MOUNTADAPT:

- **ENERGAP** in cooperation with **UDEUSTO**: Provides detailed provenance documentation, including data creation, sources, processing steps, versioning, and tools/software. Quality assurance practices include input validation, error correction, reproducibility tracking, and peer review to ensure accuracy and consistency. Within the Mountadapt project, the University of Deusto team responsible for developing the training programme on climate change and health in mountain regions ensures that all datasets related to this activity are fully documented, accurate, and traceable. Each dataset — including surveys, co-creation workshops, Moodle learning analytics, and satisfaction evaluations — will include data dictionaries, methodological notes, and clear records of data processing and anonymisation.
- **ARIA/SUEZ**: Data provenance is documented following project standards, supporting traceability and transparency.
- **UGA/FLORALIS/CHUGA**: Adheres strictly to GDPR standards, ensuring data handling meets compliance requirements.
- **CRISISOFT**: Staff data undergoes validation by the pilot site to ensure data integrity.
- **SCJUT**: Confirms data provenance with quality control standards in place to maintain reliability.
- **UPO**: Not applicable, as data provenance documentation requirements are limited to internal use without public data sharing.
- **HAM**: Provenance documentation practices are under consideration and will align with project requirements as needed.

Through these practices, MOUNTADAPT ensures that data provenance is well-documented, supporting reliability and compliance across the project.

5. Other research outputs

Beyond data management, MOUNTADAPT partners are generating and re-using various research outputs essential to achieving the project's climate-health adaptation goals. These outputs encompass both digital resources (e.g., software models, workflows, protocols) and potential physical resources (e.g., samples or observational data). Consistent with FAIR principles, each output is planned with accessibility, re-usability, and interoperability in mind to maximize impact across research and applied

Management and Sharing of Other Research Outputs

In line with the FAIR principles, MOUNTADAPT partners will ensure that all research outputs are accompanied by documentation and, where possible, made accessible for re-use. Key considerations include:

1. **Documentation and Accessibility:** Each digital resource, such as software or models, will include usage documentation and be hosted in accessible repositories (Zenodo) when feasible. Outputs like workflows or protocols will be shared with contextual explanations to support re-usability by other researchers.
2. **Licensing and Re-Use Permissions:** To facilitate open access, research outputs will be licensed appropriately, allowing others to freely use, modify, or adapt them. For sensitive or proprietary outputs, access will be restricted to project partners or made available through controlled access procedures.
3. **Interoperability and Compatibility:** By following community-recognized standards, such as file formats and metadata requirements used in relevant disciplines, MOUNTADAPT will ensure that research outputs are compatible with other datasets and research tools. Where unique methodologies are developed, partners will strive to align these with commonly used ontologies or standards.

Through this comprehensive management plan, MOUNTADAPT supports the sustainable sharing and re-use of its research outputs, ensuring that they contribute to ongoing research in climate-health adaptation and related fields.

6. Allocation of resources

Effective data management in MOUNTADAPT requires careful financial planning to meet FAIR principles, covering expenses related to storage, security, archiving, and public access. Partners have identified anticipated costs based on their tasks and data outputs, aligning these with Horizon Europe grant eligibility criteria.

Anticipated Costs and Funding Coverage for FAIR Data Compliance

- **Storage and Archiving:** Costs include hosting fees for public repository Zenodo for open-access data and secure storage solutions for sensitive data. These expenses ensure reliable, long-term data accessibility.
- **Data Security and Compliance:** For sensitive data, costs associated with GDPR compliance—such as secure storage and restricted access protocols—are included. Monthly costs for data backup and secure access are also anticipated to maintain data integrity.
- **Public Access:** Open-access data, where feasible, incurs minimal additional costs if manageable within existing resources. For larger datasets or specialized repositories, fees are covered under the project budget.

Funding and Coverage: All costs are eligible under the Horizon Europe grant, as per the Grant Agreement. The project's data management and infrastructure allocation comprehensively cover FAIR data requirements, ensuring effective resource management, compliance, and sustainable data access throughout the project lifecycle. This allocation strategy efficiently supports MOUNTADAPT's FAIR compliance and long-term data accessibility objectives.

Each organisation in the project defines data champion who is responsible for ensuring that their institution's data is FAIR. These champions will be overseen by the project data manager. The data manager and data champions are given in the table below. Prepared upon partner responses received.

Table 12: MOUNTADAPT Data champions

Consortium member	Data champion
ENERGAP	Branka Mirt, Vlasta Krmelj
IRIDEON	João Encarnação
ARIA/SUEZ	Emilie Launay
HWWI	Prasanta Kumar Roy
UPO	Giulia Facci
UDEUSTO	Ana Herrán
CHUGA	Audrey Rabier
UGA/FLORALIS	Sébastien Letout
CRISISOFT	Guillaume Despierres
SCJUT	Carmen Panaitescu
DAS	Simona CIUMAŞ
HAM	Magalie Michalak

TIKLI	Dagmar Rubatscher, Katharina Weiss
HCM	Helena Blažun Vošner
SELNICA	Suzana Prajnc
HCWHE	Gabriella Abruzzo
AMT	Felicitas Schöpf
AIM	Popa Oprean Larisa
EQY	Charlotte François
NCSR	Stelios Karozis
GAM	Giorgia Sorbo, Céline PELLORCE
SAAS	Jonathan Ferriz
CSTB	Wenjuan Wei
UMIT	Bernhard Pfeifer
CTP	Paty Nakhle
GOG	Andrea Schmidt

Each partner appoints a responsible data manager, or "data champion," to ensure that all data-related activities comply with the FAIR principles and MOUNTADAPT's DMP. This includes appropriate licensing of data, provision for long term storage of data created at the institution and ensuring data is stored in an interoperable manner.

6.1 Preservation of data

Long-Term Preservation

MOUNTADAPT partners have established a structured strategy for the long-term preservation of valuable project data, balancing accessibility, sustainability, and cost-effectiveness to ensure data remains useful beyond the project's lifecycle.

Preservation Duration and Storage

To ensure continued access, MOUNTADAPT data will be preserved based on its type, value, and future research potential:

- **Duration:** Key datasets will be retained for a minimum of five years post-project, high-value datasets, particularly those related to project outcomes, will be retained for a period of 10–15 years. To clarify this broad range, the criteria for determining the retention period will include:
 - The dataset's scientific value and potential for reuse.
 - Ethical and legal constraints, particularly for sensitive health data.
 - Availability of storage resources and associated costs.
- **Storage Locations:** Trusted repositories (Zenodo) and secure cloud storage platforms are used, ensuring robust archiving with compliance for sensitive data.

Where no restrictions apply, datasets may be retained beyond the specified timeframe to ensure long-term accessibility for the scientific community and the public. These decisions will be documented and periodically reviewed to align with evolving best practices.

Decision-Making and Resources

The MOUNTADAPT coordination team, with task leaders, will determine which datasets to preserve based on their research utility. This process involves:

- **Resource Allocation:** Costs related to repository fees, long-term storage, and secure backups are included in the project's budget, supporting sustainability without straining financial resources.
- **Preservation Formats:** Data will be stored in open, non-proprietary formats (e.g., CSV) to prevent obsolescence and facilitate compatibility for future use.
- **Long-Term Value Consideration:** Priority is given to data types—such as clinical, environmental, and training data—that have potential for re-use in subsequent research or applications related to climate adaptation and health.

This approach ensures that MOUNTADAPT maintains a balance between data accessibility and cost-efficiency, supporting data integrity and reusability well beyond the project's end.

7. Data security

MOUNTADAPT partners have implemented comprehensive security protocols to protect data integrity, control access, and ensure recoverability, particularly for sensitive information. These practices align with the EU's General Data Protection Regulation (GDPR) and other relevant standards, safeguarding data from unauthorized access and ensuring data continuity throughout the project lifecycle.

Summary of Data Security Provisions

To maintain robust data security across all project datasets, MOUNTADAPT employs:

- **Secure Storage Solutions:** Partners utilize platforms like Azure Cloud and secure internal servers that meet rigorous security standards. Data is stored securely with encryption and controlled access, ensuring only authorized personnel have access to sensitive information.

- **Redundancy and Recovery:** Backup protocols and data redundancy measures are in place to facilitate data recovery in case of system failures. These measures include regular integrity checks, multi-server backups, and encryption, which protect against data loss and maintain data availability.
- **Compliance with GDPR and Other Standards:** Sensitive datasets, particularly health data, are managed according to GDPR and local data protection laws (e.g., LOPDGDD in Spain), ensuring ethical and compliant data handling.
- **Anonymization and Reduced Risk:** Where applicable, data is anonymized or stored in ways that minimize risk exposure, such as separating data models from raw data and using firewall-protected servers for secure access.

This unified approach to data security across MOUNTADAPT reflects a strong commitment to ethical data management, safeguarding both sensitive and non-sensitive data effectively throughout the project.

7.1 Data preservation and curation

MOUNTADAPT partners are committed to securely storing project data in trusted repositories or secure environments that meet long-term preservation and regulatory requirements. These repositories and storage solutions are selected based on data sensitivity, compliance with relevant regulations, and accessibility needs.

Partner-Specific Long-Term Storage Plans

- **IRIDEON:** VECTRACK data is securely stored on IRIDEON's servers with established security protocols. Mosquito classification data from field trials will be made publicly accessible through Zenodo, a trusted repository managed by MOUNTADAPT, ensuring long-term accessibility and adherence to FAIR principles.
- **ARIA/SUEZ:** Data will be stored in a trusted, secure repository, ensuring long-term preservation. ARIA/SUEZ adheres to project data curation protocols, ensuring that environmental data remains accessible and secure throughout the project lifecycle.
- **UPO:** As no sensitive data is collected, UPO's outputs do not require specialized repositories for preservation. Data shared with demo sites will be kept on project SharePoint.
- **UDEUSTO:** Deliverables and anonymized survey and interview data will be stored in a trusted repository, Zenodo, when approved by project partners and published as research articles. This allows for safe, long-term curation while enabling open access to anonymized data to support future research. Restricted

data containing personal information will remain stored internally for a minimum of five years after project completion. All datasets will be curated with complete documentation and metadata to guarantee integrity, traceability, and future reusability.

- **UGA/FLORALIS/CHUGA:** Data will be shared in a secured repository compliant with French and European regulations (GDPR, CNIL). Medical data storage and sharing require authorization from CNIL (French Data Protection Authority), while environmental and health sensor data comply with the French Reference Methodology of the CNIL and GDPR. This approach guarantees legal compliance and secure storage for sensitive datasets.
- **CRISISOFT:** Data is securely stored in a repository that meets project standards and long-term preservation needs, with access controlled to ensure security throughout the project duration.
- **UMIT (Survival solution):** Data collected by UMIT is anonymized and stored on a firewall-protected server. Although the data does not require GDPR compliance, UMIT ensures secure storage. UMIT notes that the model itself is the primary resource, while data can be freely downloaded as needed.
- **SCJUT:** Long-term storage in a trusted repository is not applicable, as data collected by SCJUT will not require specialized repository storage for post-project preservation.

Summary of Long-Term Preservation Approach

MOUNTADAPT partners prioritize trusted repositories and secure storage solutions tailored to data type, sensitivity, and regulatory compliance. For data requiring long-term accessibility, Zenodo will ensure safe storage. Sensitive medical and health data, where applicable, will adhere to strict regulatory standards, such as CNIL authorization in France, to maintain security and accessibility beyond the project lifecycle. This approach supports project-wide compliance and ensures data remains safely preserved for future research and reference.

This structured plan guarantees that MOUNTADAPT's data is stored securely and in trusted repositories, fulfilling both project and regulatory requirements for long-term preservation and curation.

8. Ethics

MOUNTADAPT partners are attentive to potential ethical and legal issues related to data sharing, especially when data includes personal or sensitive information. Ethical

considerations ensure compliance with data protection standards, informed consent, and transparency with participants, aligning with GDPR and other relevant regulations.

MOUNTADAPT partners address ethical and legal considerations through specific protection requirements, participant consent, and compliance with GDPR and local regulations. Ethical deliverables, including NDAs and consent processes, ensure transparency and accountability, particularly for health and personal data. This ethical framework reinforces MOUNTADAPT's commitment to responsible data management, safeguarding both data integrity and participant rights throughout the project.

Ethical issues that can have an impact on data sharing are addressed in the project deliverable Ethics requirements report (D6.3) under the Task 6.4 Ethics requirements.

MOUNTADAPT partners recognize the importance of informed consent when dealing with personal or sensitive information. Where applicable, partners have integrated informed consent to ensure participants understand how their data will be used, shared, and preserved.

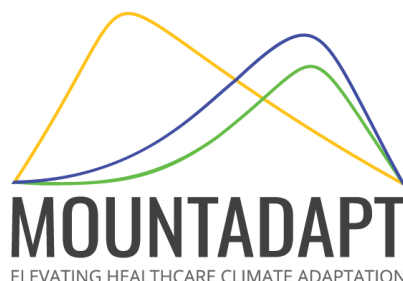
Summary of Informed Consent Practices

- **Informed Consent for Personal Data:** In cases where personal data is collected, informed consent is incorporated to cover all aspects of data usage, sharing, and long-term preservation. This ensures compliance with GDPR and ethical standards, providing participants transparency on data handling practices.
- **Non-Personal or Anonymized Data:** For data that is environmental or anonymized, such as data collected by ARIA/SUEZ, UMIT, and SCJUT, informed consent is not required as no personal or sensitive information is involved. These practices align with data protection standards while minimizing privacy concerns.

This approach ensures that MOUNTADAPT adheres to ethical guidelines by applying informed consent selectively and responsibly, aligning with the project's commitment to transparency and secure data management.

9. Other issues

Currently, the project does not make use of other national/ funder/ sectorial/departmental procedures for data management.



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.



**Co-funded by
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Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.