



EDUCATIONAL MATERIALS FOR INCREASED REGIONAL CC RESILIENCE V2

ClimEmpower Work Package 4, D4.2, v2

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List of Acronyms

Term	Definition
AI	Artificial Intelligence
AIT	Austrian Institute of Technology
API	Application Programming Interface
C3S	Copernicus Climate Change Service
CC	Climate Change
CDS	Copernicus Climate Data Store
CIC	Climate Interaction Context
CINEA	European Climate, Infrastructure and Environment Executive Agency
CORDIS	Community Research and Development Information Service
EDU	Educational Library / Resources
FER	Faculty of Electrical Engineering and Computing (University of Zagreb)
GenAI	Generative Artificial Intelligence
IPCC	Intergovernmental Panel on Climate Change
LLM	Large Language Model
PU	Public (Dissemination Level)
SO	Strategic Objective
SPI-6	Standardized Precipitation Index (6-month)

Glossary

Term	Definition / Description
Climate Impacts	The consequences of realized risks on natural and human systems resulting from the interaction of climate-related hazards, exposure, and vulnerability.
Hazard (H)	The potential occurrence of a climate-related physical event or event series.
Exposure (E)	The presence of people, livelihoods, assets, or ecosystems in settings that could be adversely affected.
Vulnerability (V)	The susceptibility or sensitivity to harm, combined with a limited ability to cope and adapt.
Risk (R)	The potential for adverse consequences resulting from the interaction of Hazard, Exposure, and Vulnerability.
Knowledge Bites	Short, accessible materials (such as policy briefs, factsheets, and infographics) designed to communicate key climate facts concisely.
Learning Units / Manuals	In-depth learning modules explaining methods, climate risk frameworks, and practical output applications.
Knowledge Hubs	Selected external platforms and repositories providing trusted climate adaptation and resilience resources.
Hazard-Sector Matrix	A navigational tool mapping educational resources across combinations of climate hazards (e.g., floods, droughts) and socio-economic sectors (e.g., agriculture, health).
User-Dimension Matrix	A navigational view matching target audience roles (e.g., planners, farmers) with climate dimensions (e.g., governance, infrastructure).
Risk Map Factsheets	Compact visual summaries detailing hazard, exposure, and vulnerability indicators, scoring, and formulas to serve as practical calculation aids.

Executive summary (publishable)

The purpose of Deliverable D4.2 is to make climate-related knowledge, project results, tools, and data more **accessible, understandable, and practically useful** to a broad range of target groups—including the general public, educators, decision-makers, planners, scientists, implementers, farmers, and businesspeople. Classified in the Grant Agreement as an “**OTHER**” deliverable rather than a conventional report, the core output consists of the educational resources themselves, their online organization, and the mechanisms for accessing and using them.

While substantial climate-change information is publicly available, users often struggle to identify content relevant to their specific role and regional context. Deliverable D4.2 addresses this challenge by combining curated educational content with a dedicated navigation architecture. The ClimEmpower educational library brings together project-developed short **Knowledge Bites**, fully fledged **Courses and Manuals**, over **200 third-party educational materials**, external **Knowledge Hubs**, and more.

Users can navigate the library by browsing structured catalogues, filtering by climate hazard and socio-economic sector via the **Hazard–Sector Matrix**, or matching target group roles with climate resilience domains through the **User–Dimension Matrix**.

Furthermore, D4.2 explores AI-supported learning approaches. Selected project deliverables and learning units are accompanied by alternative AI-generated formats—including **summaries, mind maps, infographics, slides, video presentations, audio interviews/podcasts, flashcards, and quizzes**—providing diverse entry points for different learning styles without replacing the core technical documents. To simplify knowledge discovery and consumption, it also offers search and chatbot tools.

Beyond the project lifetime, the educational library provides a durable foundation for continued capacity building, knowledge transfer, and wider uptake of ClimEmpower results across and beyond the five case study regions.

About this document

This document is deliverable D4.2 “Educational materials for increased regional Climate Change resilience v2”.

This document follows the template developed for ClimEmpower educational materials, rather than the standard deliverable template. This approach is intended to make the material more useful to end users and to facilitate the uptake and further use of the project’s rich portfolio of results.

The deliverable presents the structure, content, and use of the ClimEmpower educational resources developed and collected to support regional climate-change adaptation and resilience. It explains what resources are available, who they are intended for, and how users can find and access relevant materials.

The ClimEmpower educational resources are available through the ClimEmpower web site (<https://climempower.eu>) and through ClimEmpower Zenodo channel (<https://zenodo.org/communities/climempower/>).

After completing this material, readers will be able to:

- **Understand the range of climate-change adaptation and resilience resources** available through ClimEmpower and their relevance to different audiences and needs.
- **Identify relevant knowledge, tools, data, and educational materials** using the different navigation and search pathways provided by the ClimEmpower educational library.
- **Apply the available resources** to further develop their knowledge, support capacity building, and inform climate-resilience planning and action in their own area of responsibility.

1 Introduction

1.1 Why should I read this document?

There is an abundance of freely available content on climate change, and the project has generated a substantial number of tools, datasets, and educational materials as well. To efficiently use and benefit from these resources, an effort has been made to:

Find and present the most relevant freely available external resources.

Develop reusable educational resources that help users understand and make practical use of relevant knowledge, tools, and project results.

Significant effort has been undertaken to provide a variety of views on the educational materials, tailored to specific segments of the target audience as well as their specific needs.

The target audience has been segmented into: General public, Educators, Decision-makers, Leaders, Strategic planners, Scientists, Implementers, Farmers, and Businesspeople.

Special focus in organizing and presenting educational materials has been placed on: Climate risks, Climate hazards, Resilience, Socio-economic sectors, Climate dimensions

This document describes the architecture of the educational resources presented on the project website. It enables users to understand how the educational content is organized and navigate it intuitively.

1.2 The Challenge

The underlying challenge addressed by the work summarised in this deliverable is to present information about climate change, hazards, and resilience in a manner that is **understandable, relevant, and useful** to a broad range of audiences, especially those who can directly influence awareness and resilience.

This challenge is particularly important in an information environment where the abundance of available information does not necessarily translate into greater understanding or informed action. Reliable, evidence-based knowledge competes with misinformation, unsubstantiated claims, and conflicting narratives. Some stakeholders have become distrustful of science, experts, and public institutions, while others primarily rely on information sources that reinforce existing beliefs rather than established scientific evidence.

Simply making more information available is therefore not sufficient. Users need to be able to **find relevant and trustworthy resources**, understand their purpose and context, and identify actionable information that supports informed decision-making.

The work presented in this deliverable addresses this challenge by organising relevant educational resources according to different target groups, climate hazards, risks, sectors, and resilience dimensions, and by providing multiple pathways to discover and access them. This includes curated external content as well as reusable project-developed resources such as **Knowledge Bites** and **Courses and Manuals**, that support users in applying climate knowledge, tools, and results in practice.

1.3 What will I learn?

By reading this document, readers will learn how the ClimEmpower educational resources are organised and how to navigate them according to their interests, needs, and role. They will also learn how the resources were selected and produced, including carefully selected existing third-party materials, resources produced by consortium members, and alternative formats generated or supported by AI tools.

After reading this document, readers will be able to:

- **Understand the structure and purpose** of the ClimEmpower educational environment.
- **Identify educational resources** relevant to their target group, interests, hazards, sectors, and climate-resilience dimensions.
- **Use the educational library and its different navigation pathways** to access relevant knowledge, tools, data, and learning units within the **Courses and Manuals**

2 ClimEmpower Educational resources

ClimEmpower has produced a wide range of project results. While some are specifically designed for educational use, others can be used in educational contexts to support learning and capacity building.

The educational resources developed and curated by the project include:

- **Short “Knowledge Bites”** providing concise, accessible information on climate risks, resilience and adaptation.
- **Fully fledged Learning Units and Manuals** providing more in-depth learning and practical guidance, including materials on the application of ClimEmpower results as well as more generic topics such as climate risk assessment and the use of artificial intelligence.
- **A curated library of educational materials**, consisting primarily of relevant resources produced by third parties and selected by the ClimEmpower team.
- **Other supporting and visual learning materials**, including presentations, booklets and other resources developed to make climate-related knowledge accessible to different audiences.

Note: These resources are available through at least one of the entry points on the ClimEmpower website, including Results (<https://climempower.eu/results/>), Education (<https://climempower.eu/edu/>) and Downloads (<https://climempower.eu/downloads/>). When necessary, different presentations of materials may be available on more than one of these entry points. Materials that were considered “highly valuable and reusable” by ClimEmpower team are also available through the ClimEmpower Zenodo community (<https://zenodo.org/communities/climempower/>).

The ClimEmpower team has invested substantial effort in making both the educational resources and the wider project results accessible through different formats and entry points. This includes AI-generated supporting materials such as mind maps, infographics, videos and podcasts for selected project deliverables, Learning Units and Manuals. In addition, the ClimEmpower chatbot facilitates the discovery and interactive exploration of the project's educational resources and results.

2.1 Knowledge Bites

Knowledge Bites are short, easy-to-read learning materials designed to communicate key facts and concepts related to climate risks, resilience and adaptation in a simple and accessible format. They are intended for users who want to quickly gain a basic understanding of a topic without engaging with a full learning unit.

The collection includes the “**Did you know?**” series as well as short **policy briefs, factsheets and infographics** covering topics such as climate risks, resilience and adaptation. The materials can be used as standalone learning resources or as an accessible introduction to topics covered in greater depth by the ClimEmpower Learning Units.

The Knowledge Bites are available through the **Downloads** section of the ClimEmpower website (<https://climempower.eu/downloads/>).

2.2 Courses and Manuals

The **ClimEmpower Courses and Manuals** provide more in-depth learning than the short *Knowledge Bites*. They explain key concepts and approaches, introduce relevant ClimEmpower results and methodologies, and provide guidance on their practical application.

To increase their visibility and accessibility, they are integrated at two locations on the website:

1. **Results/Learning Units:** <https://climempower.eu/results/>
2. **Education:** <https://climempower.eu/edu/>

All courses and manuals are also available on ClimEmpower Zenodo channel (<https://zenodo.org/communities/climempower/>).

On the **Results/Learning Units** page, they are complemented by AI-generated mind maps, infographics, slides, video presentation, audio interview/discussion, flash cards and quizzes. These additional formats, described in more details in section 2.4.1, make the content more accessible and engaging and allow users to explore the same knowledge in different ways (Figure 1) .

Educational material for project results	
Introduction to Climate Risk Assessment (v1.0)	     
Polytope Feature Extraction on the CDS: API, Design, and Implementation	     
TBD	     

Figure 1 ClimEmpower Courses and manuals presentation on Results/Learning Units page

Individual learning units cover different topics and are designed for audiences with different levels of knowledge, skills and responsibilities. They range **from strategic-level materials aimed at policymakers and decision-makers** to practical, **hands-on guidance for technical audiences** such as data scientists and software developers.

The learning units cover two complementary types of content. Some provide **practical guidance on how to use and apply ClimEmpower project outputs beyond the project context**, for example the new Copernicus data access library or the resilience assessment methodology. Others address **more general topics relevant to climate adaptation and resilience**, such as climate risk assessment and the use of artificial intelligence. This is still a work in progress. Several examples of finalised learning units are shortly presented hereafter.

2.2.1 Introduction to Climate Risk Assessment Learning Unit

Introduction to Climate Risk Assessment provides a high-level introduction to applying the IPCC framework for climate risk assessment (Figure 2).

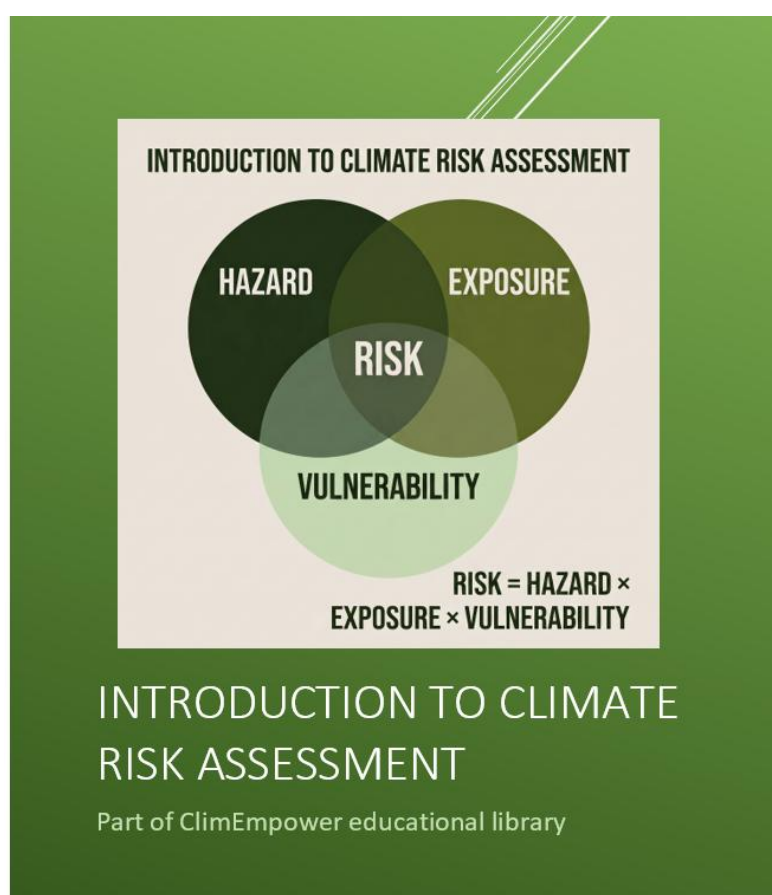


Figure 2: Introduction to Climate Risk assessment learning unit

Intended target audience is:

- Regional planners and disaster management authorities,
- Consultants advising on climate resilience strategy, and
- Policymakers interpreting risk maps for decision-making

Anticipated learning outcomes are:

- **Understand** the key concepts and challenges of climate risk assessment.
- **Explain** how the IPCC risk framework works and why it is relevant for adaptation planning.
- **Apply** the framework to real-world scenarios at conceptual level.

2.2.2 Polytope Feature Extraction on the CDS: API, Design, and Implementation Learning Unit

Polytope Feature Extraction on the CDS: API, Design, and Implementation provides a hands-on tutorial on using the newly developed Polytope library and API to access data hosted on the Copernicus Climate Change Service (C3S).



Figure 3: Polytope feature extractions learning unit

Intended target audience

- Developers and data scientists working with climate data and data-driven applications.

Anticipated learning outcomes

- **Understand** the key concepts, challenges and principles of data access in ClimEmpower through feature extraction;
- **Explain** how data access via Polytope DS2 works and why it is relevant for developers, scientists and regions; and
- **Apply** Polytope Feature Extraction in their own context to access climate data and build applications and services for their regions.

2.2.3 Introduction to Climate Risk Assessment Learning Unit

From Indicators to Action: Assessing Regional Climate Resilience to Enable Targeted Action provides a practical methodology for assessing regional climate resilience using indicators. (Figure 4).

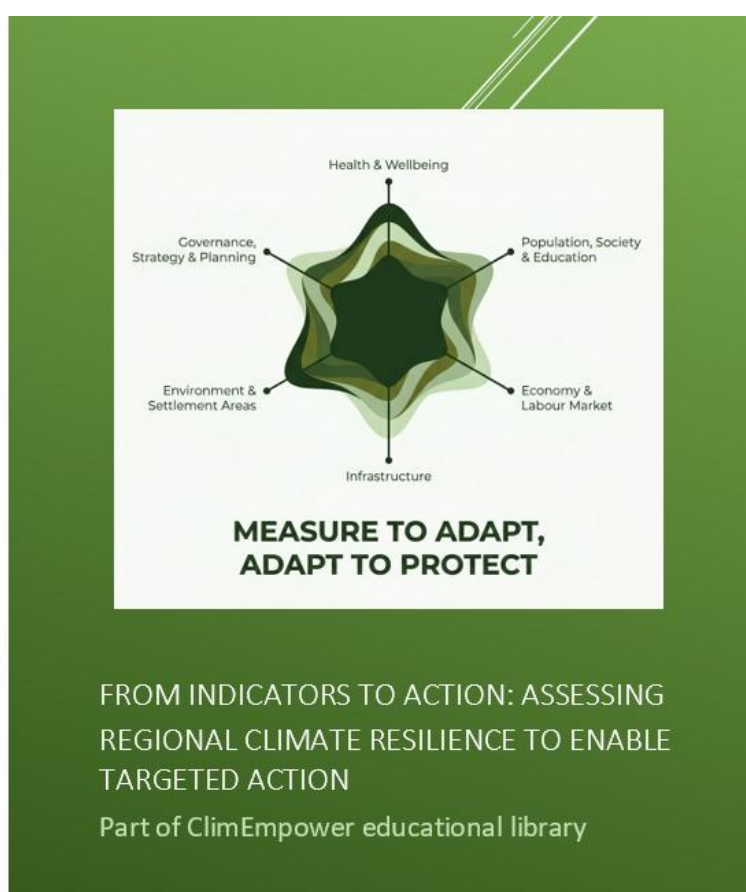


Figure 4: From Indicators to Action learning unit

Intended target audience is:

- regional and municipal decision makers,
- climate resilience practitioners,
- consultants,

ClimEmpower deliverable

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- researchers and data specialists

Anticipated learning outcomes are:

- **Understand** the key concepts, challenges, and principles related to regional climate resilience assessment, including resilience dimensions, indicator characteristics, data requirements, and the role of local knowledge.
- **Explain** how the ClimEmpower resilience assessment approach works and why it is relevant for regional planning and climate adaptation.
- **Apply** the indicator-based resilience assessment approach in their own context to select relevant resilience indicators, identify and evaluate suitable datasets, involve local stakeholders, identify data gaps, calculate indicators where possible, and use the results to identify priorities for strengthening regional resilience.

2.2.4 Converting climate risks into actionable land-use plans Learning Unit

“Converting climate risks into actionable land-use plans” introduces the Hazard-Sector Translation Framework (HSTF) as a structured way to bridge the gap between scientific information and practical implementation of climate adaptation projects (Figure 5).

Intended target audience is:

- Senior policymakers, mayors, regional directors, lead planners, and other public officials who influence land-use and investment decisions.

Anticipated learning outcomes are:

- **Distinguish** between a simple list of hazards and a hazard pathway that explains how damage may occur.
- **Identify** which people, places, infrastructure, ecosystems, and economic activities may be affected.
- **Organise different climate risks under five shared land-use domains:** Buildings, Agriculture, Blue-Green Infrastructure, Transportation, and Protected-Area Conservation.
- **Apply the six steps of the HSTF** to connect scientific evidence with a practical planning recommendation.
- **Identify the legal, regulatory, administrative, or financial instruments** needed to implement a recommendation.
- **Explain the specific resilience function** expected from an action, such as reducing exposure or maintaining an essential service,

- **Assess whether the responsible authorities have** the legal powers, funding, institutional responsibilities, stakeholder support, and long-term maintenance arrangements needed to proceed.

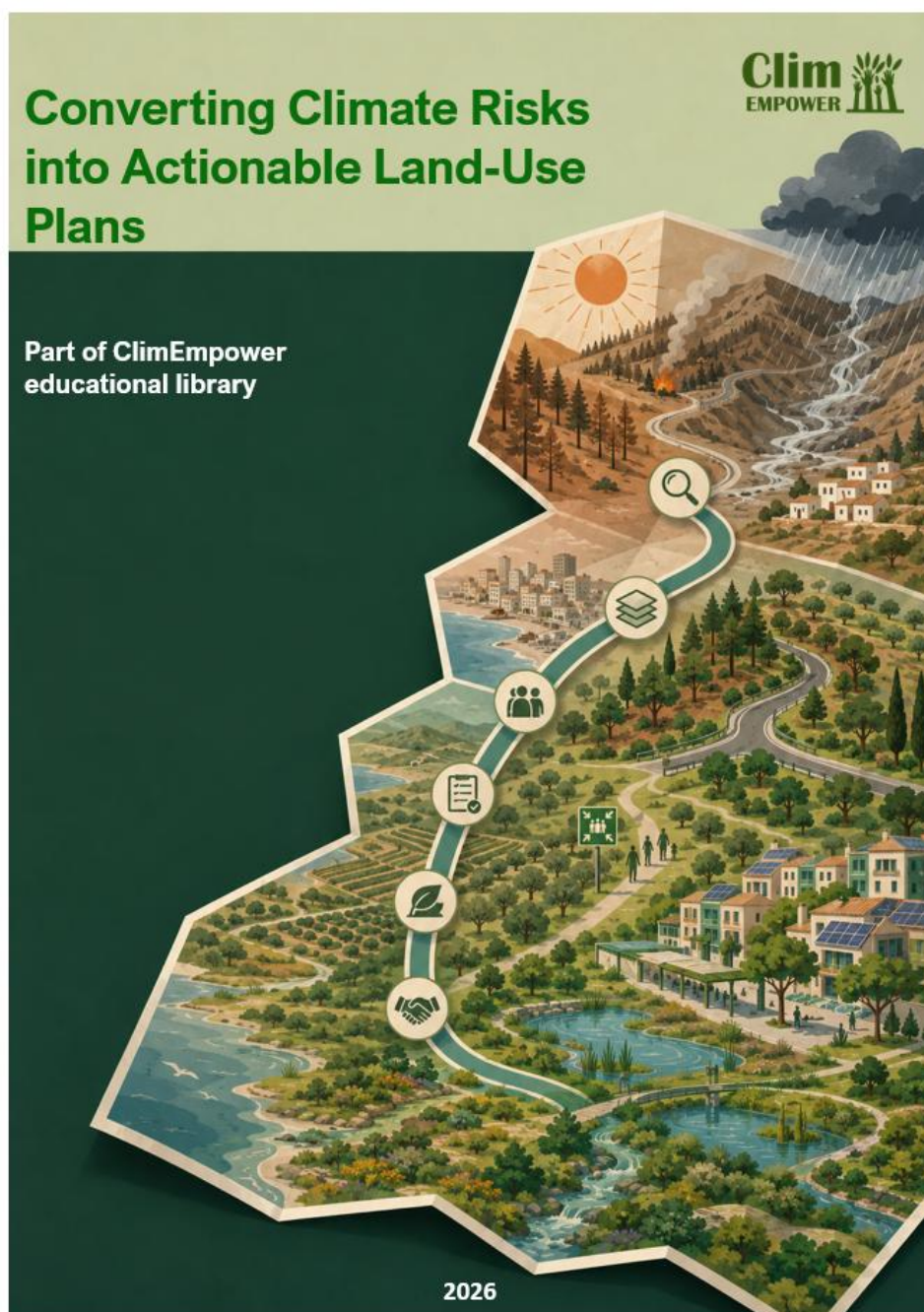


Figure 5: Converting climate risks into actionable land-use plans learning unit

2.3 Curated library of educational materials

Under the “EDU” menu item [<https://climempower.eu>] a relevant collection of third-party educational materials, more than 200, was carefully selected and compiled by project consortium partners. In order to facilitate access to them and simplify pinpointing the most relevant for the specific user and their current need, a number of views to materials and navigational tools are provided.

The core, root page gives a brief overview of submenus as follows.

Explore Climate Adaptation Knowledge

The ClimEmpower Educational Library brings together learning resources on climate change adaptation from the ClimEmpower project and selected external sources. Whether you are a policy maker, educator, student, practitioner or simply interested in climate resilience, the library offers several ways to discover and explore relevant information.

Choose the approach that best matches how you prefer to learn.

Browse Educational Materials



Browse the collection through a structured catalogue of educational resources organised by material type and topic.

This view provides direct access to learning materials developed within ClimEmpower, making it easy to explore reports, guidance documents, presentations and other educational resources. Future updates will introduce AI-assisted search and document chat, allowing users to ask questions directly about individual documents and quickly locate relevant information.

Best for: discovering available learning materials and exploring individual resources.

Find Materials by Climate Hazard and Sector



Sometimes you know the challenge you are interested in rather than the document itself.

The Hazard–Sector Matrix organises the same educational resources according to combinations of climate hazards (such as floods, droughts or heatwaves) and sectors or elements at risk (such as agriculture, health,

infrastructure or biodiversity). This provides an alternative pathway for finding relevant information based on practical adaptation questions.

Best for: users looking for guidance on a specific climate hazard or sector.

Find Materials for a Specific Climate Dimension, Depending on the Group You Belong To

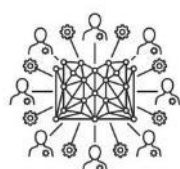


Environment, health, education, economy, infrastructure, governance are various climate change dimensions you might be interested in. Also, different educational materials are suited depending on your role: educator, researcher, professional, decision maker, farmer etc.

The Target Group – Dimension Matrix organises the same educational resources according to combinations of who you are and what your interest is. This provides an alternative pathway for finding relevant information based on practical adaptation questions.

Best for: users looking for knowledge on a specific climate dimension.

Discover Trusted Knowledge Hubs



Climate adaptation knowledge extends well beyond the ClimEmpower project.

The Knowledge Hubs page brings together carefully selected external platforms, repositories and educational initiatives that provide high-quality information, guidance and learning materials. These trusted sources complement the ClimEmpower library and help users continue exploring topics in greater depth.

Best for: expanding your learning beyond the project resources.

Experience AI-Generated Learning Formats



Can complex technical reports become easier to understand through AI?

As an experiment, ClimEmpower deliverables are presented in multiple AI-generated formats, including dialogues, presentations, mind maps, summaries and other learning-oriented representations. Rather than replacing the original reports, these alternative formats are intended to support different learning styles and improve accessibility.

This is an ongoing experiment, and we welcome feedback on which presentation styles are most useful for different audiences.

Best for: exploring new ways of understanding project results.

A Growing Educational Ecosystem



The ClimEmpower Educational Library is continuously evolving. New educational materials, AI-supported learning features and external knowledge sources will be added throughout the project to support climate adaptation learning across Europe.

Whether you prefer browsing documents, searching by climate challenge, discovering trusted external resources or interacting with AI-generated learning materials, the platform aims to make climate adaptation knowledge easier to find, understand and apply.

2.3.1 Education about CC

Education about CC submenu [<https://climempower.eu/education-about-cc>] presents the whole collection of 200+ third-party, freely available, online educational resources compiled by subject matter experts from all project consortium partners.

It is suitable for users who do not yet know what they are exactly looking for but would rather want to get the idea of what is available. The page can be searched by keyword via standard browser content search. On this particular page, materials are organized in sections by the type of material:

- popular science texts,
- educational videos,
- lessons learned & case studies,
- serious games,
- scientific articles,
- tutorials,
- adaptation plans,
- courses,
- other.

A user can either browse through all materials by simply scrolling the page or can skip to the section with desired type of material by clicking at its name on the top of the page:

Educational Materials Library

 **TABLE OF CONTENTS**

Popular science texts	Educational videos	Lessons learned & case studies	Serious games
Scientific articles	Tutorials	Adaptation plans	Courses
Other			

Figure 6 EDU library sections

Materials are presented in a simple, easily readable table format with the title of the material, intended target audience and language of the material.

The integrated system of Nature-based solutions to mitigate floods and drought risks in the Serchio River Basin (Italy)	general public	
Protecting outdoor agricultural workers from extreme heat in Puglia, southern Italy	general public and decision makers	
Nature-Based Solutions in schools: a green way to adapt buildings to climate change in Solana de los Barros, Extremadura (Spain)	general public and decision makers	

Figure 7 EDU materials presentation in a table form

Hovering a mouse over the title of the material (just positioning it above but not clicking on) elicits a popup window briefly describing the content of the material by its summary and importance.

Creating Climate Change Curriculum

educators

SUMMARY: This article gives guidelines as to how to design and implement climate change education in a slow and archaic education system. It is focused on the USA.

IMPORTANCE: This is a relatively short read that can help educators design their own courses around climate change.

How to...

educators

Figure 8 EDU material's summary and importance in the form of a tooltip

2.3.2 Knowledge hubs

The Knowledge hubs submenu [<https://climempower.eu/knowledge-hubs>] is intended for those users who did not find what they were looking for in collected educational materials, or for those who want to know even more.

Subject matter experts from project consortium partners have identified valuable online portals containing specific knowledge resources on the broad topic of climate

change and presented them on this page in a manner similar to the general page: title of the page, target audience and language.

UNDP Climate Change Adaptation Portal	policy makers	
Red Cross game hub	general public, educators	
Earth4all	scientific community, institutional stakeholders	

Figure 9 Knowledge hubs presentation in a table form

2.3.3 Hazard-Sector Matrix

The Hazard-Sector Matrix submenu [<https://climempower.eu/edu-hazard-sector-matrix>] is helpful to find appropriate educational materials for specific climate hazards in specific socio-economic sectors. In order to facilitate locating appropriate materials they are presented in a matrix with hazards in rows:

- drought,
- fires,
- floods,
- hail and storms
- heatwaves and
- sea level rise

and socio-economic sectors in columns:

- agriculture,
- economy,
- energy,
- environment,
- forestry
- human settlements,
- health, infrastructure and
- tourism.

SECTORS → ↓ HAZARDS	AGRICULTURE/ FARMING	ECONOMY/ FINANCE	ENERGY	ENVIRONMENT/ BIODIVERSITY	FORESTRY	HUMAN SETTLEMENTS	HEALTH	INFRASTRUCTURE	TOURISM
Drought	42	29	11	60	10	35	18	2	11
Fires	6	11	3	20	7	15	8	1	6
Floods	26	32	13	43	8	47	17	2	3
Hail & storm	1	9	2	3	0	11	4	0	0
Hail & storms	1	9	2	3	0	11	4	0	0
Heatwaves	19	37	17	33	5	51	31	2	8
Sea level rise	2	3	0	7	1	7	1	0	3

Figure 10 Hazard-Sector Matrix

The number at the intersection represents the number of educational materials corresponding to chosen hazard and sector. Clicking on the number opens a new window with the list of appropriate educational materials.

Intersection Records: Fires & Agriculture/Farming				
MATERIAL NAME	TYPE ▾	TARGET GROUP ▾	RELEVANT STRATEGY TYPE ▾	LANGUAGES ▾
European Climate Risk Assessment Report	 Report	 Policymakers, Authorities, Experts, Planners, Researchers	 Adaptation	EN FR GE PO
How heatwaves impact our lives	 Video	 Public, Policymakers	 Adaptation	EN 
Traditional Farm Design vs. Permaculture Design: What's the Difference?	 Video	 Public, Farmers	 Mitigation, Adaptation	EN 
MAIA Webinar library	 Playlist	 Public, Experts	 Mitigation, Adaptation	EN
ClimateADAPT	 Website	 Experts, Planners	 Mitigation, Adaptation	EN
Planet Shapers	 Podcast Series	 Public, Youth	 Mitigation, Adaptation	GE

Figure 11 List of EDU materials for fires in farming

Materials are represented with their title, type, target audience, relevant strategy type and language.

Each of these attributes can be used as a filter to narrow down the list.

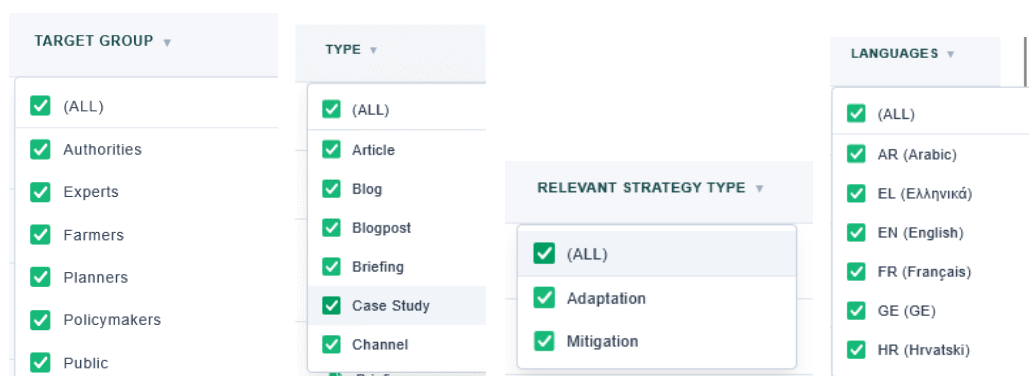


Figure 12 Various filtering options

Hovering the mouse over the title presents a summary of the material's content and its importance.

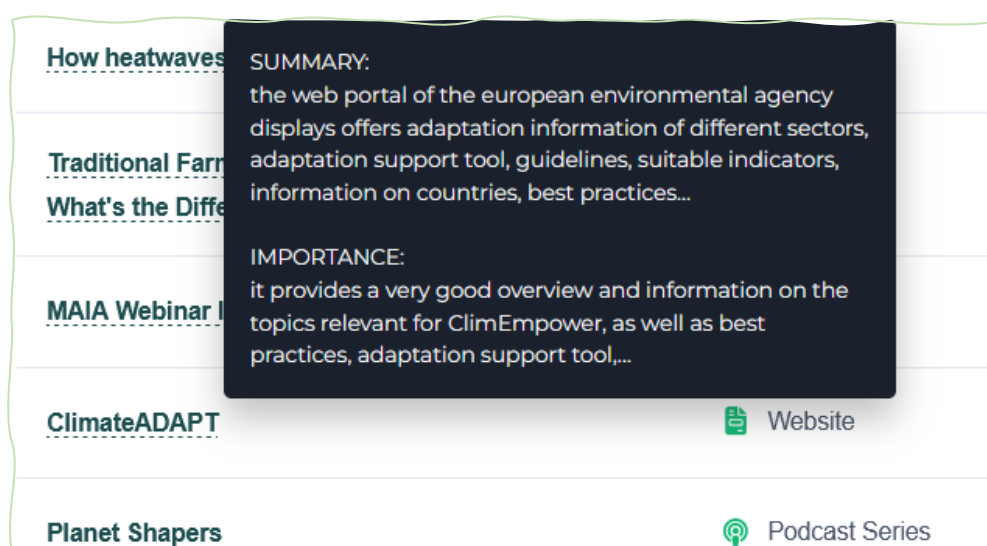


Figure 13 Example of summary and importance for a meterial

In the case that a material is a video on the YouTube. a “CC” icon in the language column indicates automatic translations of the video into other languages might be available.

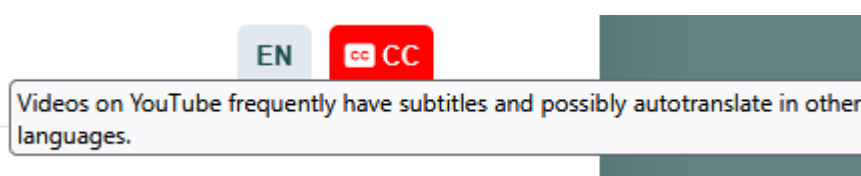


Figure 14 Indicator for a YouTube video which might have automated translation in other languages

2.3.4 User-Dimension matrix

The User-Dimension matrix submenu [<https://climempower.eu/edu-user-dimension-matrix>] presents educational materials relevant to specific audience and specific

dimension they are interested in. In order to facilitate locating appropriate materials they are presented in a matrix with target audience in rows:

- authorities,
- business,
- educators,
- experts,
- farmers,
- managers,
- ngos,
- planners,
- policymakers,
- public,
- researchers,
- risk managers and
- youth

and climate dimensions in columns:

- economy,
- environment,
- settlement areas,
- governance,
- health,
- infrastructure,
- population and
- education.

TARGET GROUP → + RELEVANT DIMENSION	ECONOMY & LABOUR MARKET	ENVIRONMENT/ NATURE & SETTLEMENT AREAS	GENERAL DIMENSION	GOVERNANCE	HEALTH & WELLBEING	INFRASTRUCTURE	POPULATION & EDUCATION
 Authorities	17	23	0	42	10	22	12
 Business	9	3	0	9	1	3	1
 Educators	2	8	0	9	3	1	28
 Experts	28	20	0	53	12	26	21
 Farmers	3	16	0	2	1	13	5
 Managers	0	0	0	1	0	0	1
 NGOs	2	4	0	6	4	2	5
 Planners	14	16	0	27	7	21	7
 Policymakers	35	37	0	73	16	39	28
 Public	25	58	2	58	17	59	56
 Researchers	10	8	0	21	2	6	11
 Researches	0	1	0	1	0	1	0
 Risk Managers	6	2	0	9	2	5	2
 Youth	0	2	0	4	2	1	18

Figure 15 The User-Dimension matrix

The number at the intersection represents the number of educational materials corresponding to chosen hazard and sector. Clicking on the number opens a new window with the list of appropriate educational materials.

Target: Educators • Dimension: Health & Wellbeing				
RESOURCE TITLE	TYPE ▾	STRATEGY ▾	LANGUAGE ▾	REGION COVERAGE
Climate Change Adaptation Learning Journey	 e-learning course	 Adaptation	EN	N/A
Human Health and Climate Change	 Course	 Mitigation, Adaptation	EN ES	N/A
PROGRAMME BRIEF: Harnessing the Transformative Potential of Education for Climate Change Mitigation, Adaptation and Resilience Building in Europe and Central Asia	 Textual Document	 Mitigation, Adaptation	EN	N/A

Figure 16 A view/list of educational materials suitable for educators on the topic of health

Materials are represented with their title, type, target audience, relevant strategy type and language.

Each of these attributes can be used as a filter to narrow down the list.

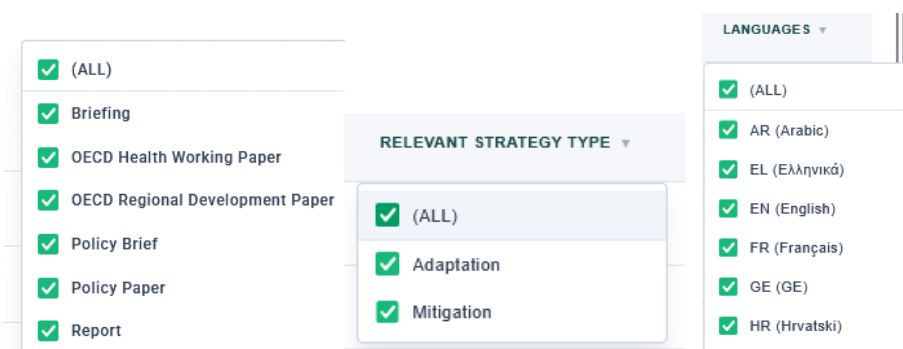


Figure 17 Examples of filtering options

Hovering the mouse over the title presents a summary of the material's content and its importance.

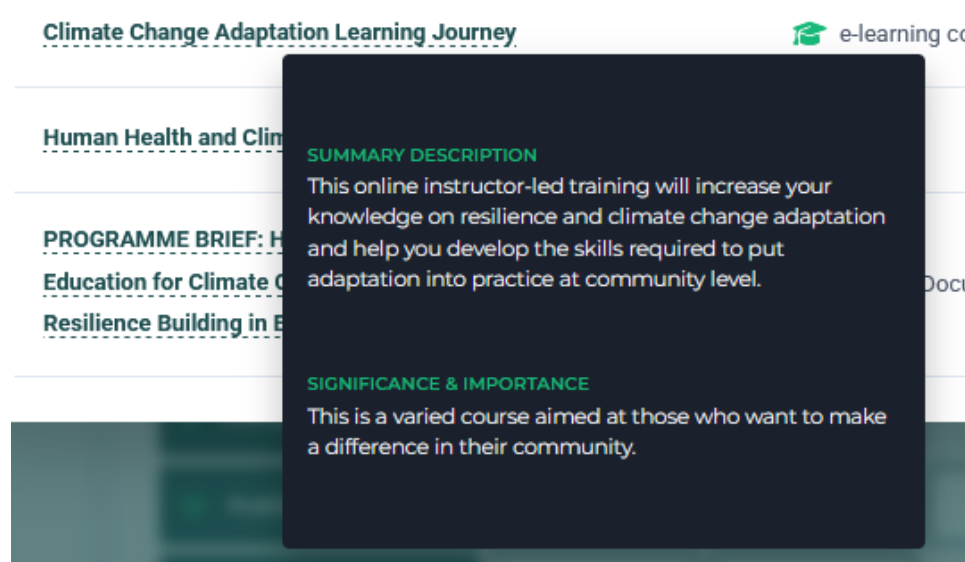


Figure 18 Example of summary and importance of an EDU content

2.4 Other resources

Other resources with potential educational value are available through the **Results** menu of the ClimEmpower website (<https://climempower.eu/results>). They are presented both **in their original form, as produced by subject-matter experts from the project consortium, and in various adapted and interpreted formats.**

The main Results page provides an overview of the content related to the project's results (Figure 19).

THE RESULTS OF THE PROJECT ARE TARGETED TO:



Public Services

Regional administrations requiring climate-resilient strategies for policy integration.



Academia

Research institutions providing the scientific basis and R&D collaboration.



Industry

Agricultural and food producers looking to align sustainable practices with economic survival.



Civil Society

Experts in civil associations and citizens needing awareness of climatic dangers.

RESULTS INVENTORY

ID	TITLE/NAME	CATEGORY	KEY FUNCTION	STATUS
D1.2	ClimEmpower Scenarios	Knowledge	Defines regional needs, hazards, and interests from stakeholder interactions.	Final
D2.2 – D2.4	Data and Knowledge Gap Assessments	Data	Identifies and addresses missing climate info for regional planning.	v1
D3.1 – D3.2	User-centric CC resilience enhancing services	Services	Provides user-centric algorithms and tools for data processing.	v1
D4.1	Educational materials for increased regional CC resilience v1	Knowledge	A curated collection of training resources to boost climate literacy.	Final
D4.3	Regional CC-resilience recommendations	Knowledge	Actionable strategies for local adaptation and disaster risk reduction.	v1
D5.6 – D5.7	Stakeholder engagement and event reports	Service	Documents Community of Practice (CoP) engagement and outreach.	Final
D6.6	Project results and software components	Software	Includes libraries, GUI components, and technical tools.	v1

DEEP DIVE: EDUCATIONAL RESOURCES (D4.1) AND MICROLEARNING

Key material types include:

Popular Science & Blogposts: Short, digestible texts.

Educational Videos: Visual materials for future scenarios.

Serious Games: Interactive tools for community engagement.

Lessons Learned: Evaluations for regional replication.

Figure 19 Overview of results

2.4.1 Deliverables

The **Deliverables** submenu presents all public deliverables of the project. They are listed in a table and provided as links to the corresponding PDF documents, following the project's agreed deliverable structure.

Although the deliverables are primarily intended as formal project outputs rather than educational materials, many contain substantial knowledge and methodological content that can be used for learning, training and professional capacity building.

ClimEmpower Scenarios (D1.2)
Climate Change resilience indicators (D2.2)
Methodology of spatial data downscaling (D2.3)
Measures and strategies for resilience (D2.4)
Application architecture (D3.1)
Reusable libraries and services (D3.2)
Educational materials (D4.1)
Knowledge hubs (D4.1)
Resilience Recommendations (D4.3)
Stakeholder engagement plan v1 (D5.6)
Stakeholder engagement plan v2 (D5.7)
Innovation management plan (D6.6)

Figure 20 List of project deliverables

In order to make it easier for users to understand and consume their contents, deliverables are accompanied with AI-generated summaries and interpretations in the following forms (Figure 21):

- mind maps,
- infographics,
- slides,
- video presentation,
- audio interview/discussion,
- flash cards and
- quiz.

					
All project results					
ClimEmpower Scenarios (D1.2)					
Climate Change resilience indicators (D2.2)					
Methodology of spatial data downscaling (D2.3)					
Measures and strategies for resilience (D2.4)					
Application architecture (D3.1)					
Reusable libraries and services (D3.2)					
Educational materials (D4.1)					
Knowledge hubs (D4.1)					
Resilience Recommendations (D4.3)					
Stakeholder engagement plan v1 (D5.6)					
Stakeholder engagement plan v2 (D5.7)					
Innovation management plan (D6.6)					

Figure 21 Various interpretations of deliverables

These additional interpretations of the content were typically produced by AI tools.

2.4.1.1 Mind-maps and infographics

Mind-maps and infographics are used to present an overview of the document, facilitating identification of relevant parts of the document and understanding the whole.

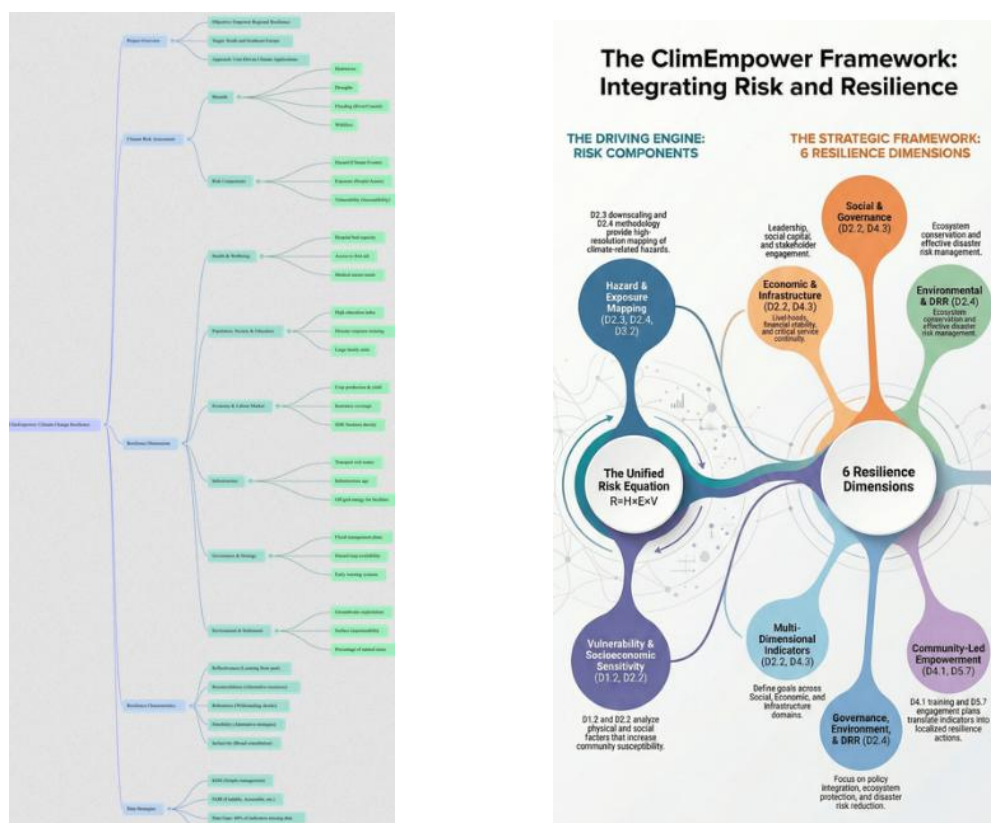


Figure 22 Example of mind map and infographic

2.4.1.2 Slides

Slides present the document's content in abbreviated, visual form.

ClimEmpower deliverable

D4.2 Educational materials for increased regional CC resilience v2

Page 31 of 52

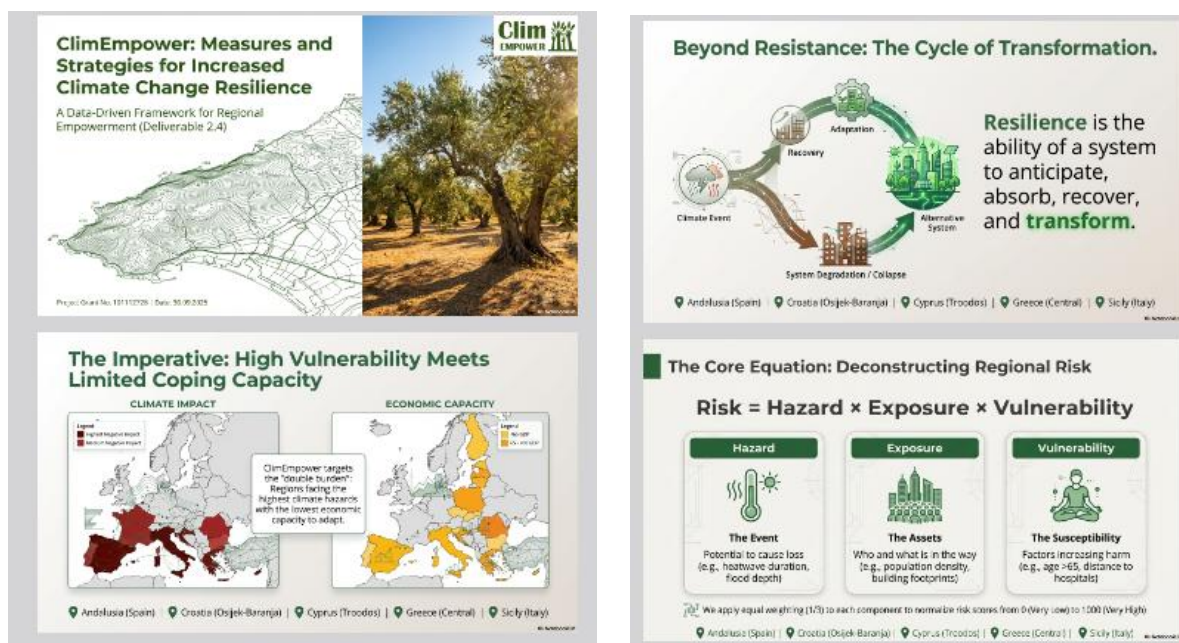


Figure 23 Example of slides as interpretation

2.4.1.3 Video presentations

Video presentations are intended to present the whole content in abbreviated, lively format using illustrations, narration and written highlights to support multimodal learners.

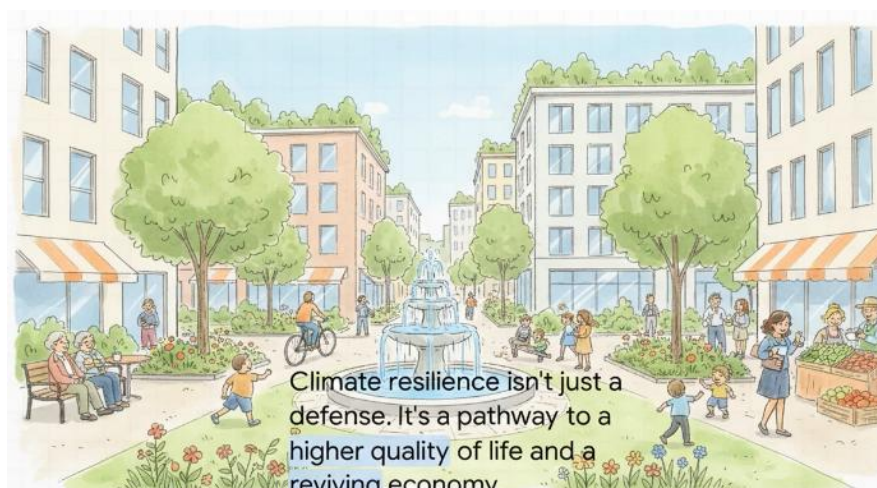


Figure 24 Example of video interpretation

2.4.1.4 Audio interviews and podcasts

Audio interviews and podcasts are designed with one participant playing the role of a typical user of that deliverable. By asking questions and stating opinions this person is representing the audience. This form is ideally suited for omnipresent use and as a multitasking activity alongside with other routine activities, leisure and sports.



Figure 25 Example of audio interview interpretation

2.4.1.5 Flash cards

Flashcards are intended both as frequently asked questions and answers, as well as a mean to assess own knowledge. They can be used as a social game, too.

Several cards are presented with questions printed on them. Clicking the card flips it showing the answer.

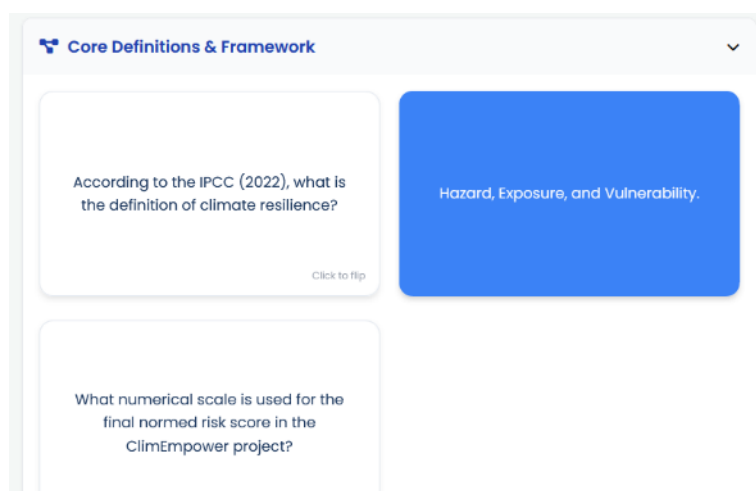


Figure 26 Example of flashcards self-assessment

The cards are typically grouped in several categories, specific to the document.

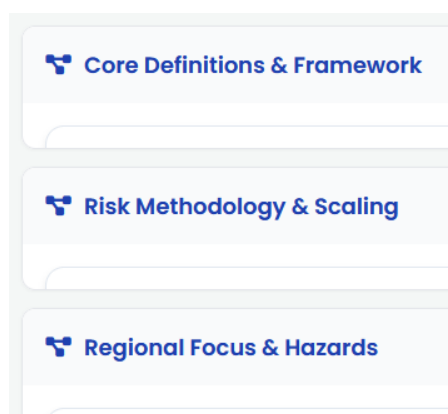


Figure 27 Example of flashcard groups of a specific topic

2.4.1.6 Quiz

Quizzes are intended for self-assessment of own competences regarding the specific document and its content. They contain several multiple-choice questions. Users click on answers they believe are correct and those answers are highlighted in green if correct or red if wrong upon submitting the quiz for evaluation.

ClimEmpower: Knowledge Quiz

1. Which three components are used to calculate climate risk in the ClimEmpower framework?

Hazard, Exposure, and Vulnerability

Temperature, Precipitation, and Wind

Economy, Society, and Infrastructure

Source: [1, 2]

2. What is the recommended default weighting for risk components according to UNDRR and IPCC?

Hazard gets 50%, the others 25%

Equal weighting (1/3 for each layer)

Vulnerability gets 100% of the weight

Source: [3]

Figure 28 Example of a quiz

2.4.2 Resilience Recommendations

Climate Resilience Recommendations are one of the key results many users would benefit from. Besides their publication in the full form (PDF document) as deliverable 4.3, they are also presented in an easily navigable form as submenu Resilience recommendations [<https://climempower.eu/recommendations-presentation>].

At the top of the page, a user selects relevant sector.

Sectoral Climate Resilience Recommendations

New and Existing Buildings



Agriculture



Blue and green infrastructures



Transportation



Protected Areas Conservation



Figure 29 Resilience recommendations categories

Clicking on it opens a list of resiliencies for that sector:

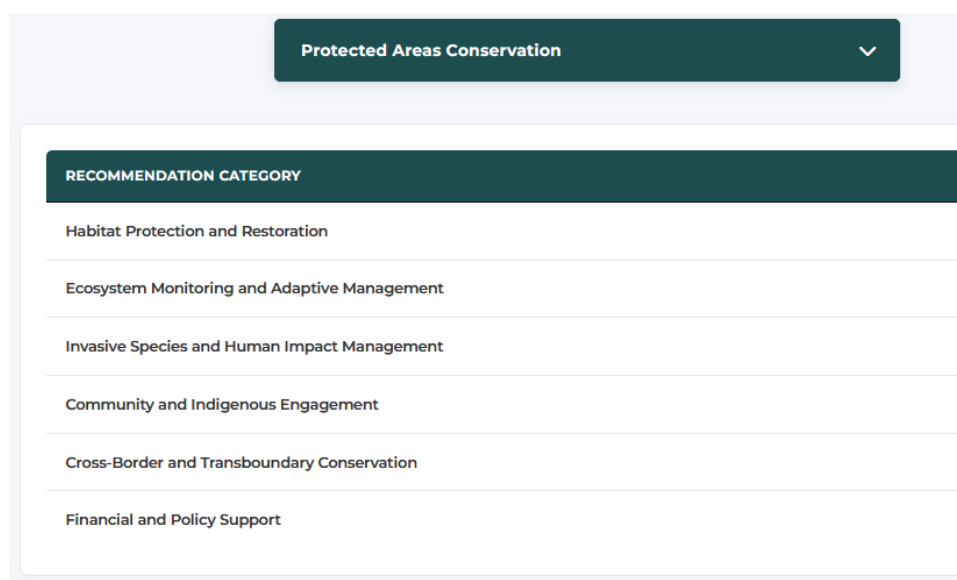


Figure 30 Example of recommendation list for a topic

Hovering the mouse over a resilience presents recommendations in bulleted form in a popup window:

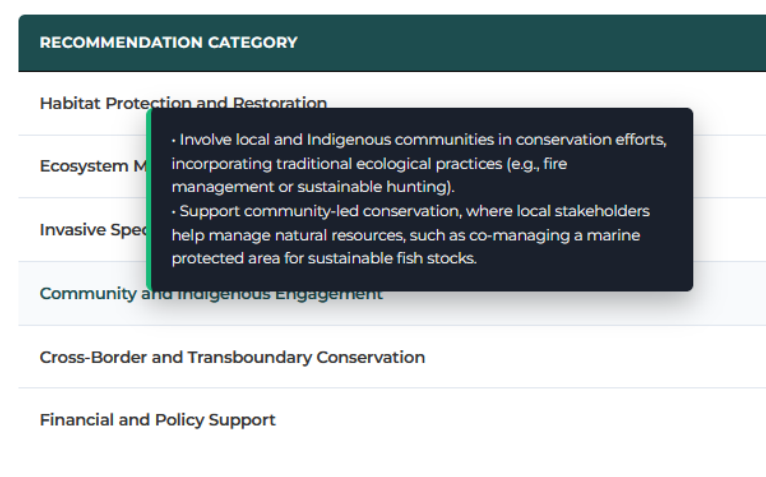


Figure 31 Example of resilience recommendations for a topic

2.4.3 Risk Map Information

Another key product are risk maps, therefore a special submenu „Risk Map Information,” [<https://climempower.eu/results/riskmaps/>] is dedicated to them.

2.4.3.1 Risk Map Landing Page

The Risk Maps landing page provides the main entry point to the ClimEmpower risk-assessment content. It introduces the climate hazards (droughts, wildfires, floods, heatwaves) covered by the website and gives users direct access to the corresponding risk pages. The page also introduces the common risk framework used throughout the

website, in which risk results from the interaction of Hazard (H), Exposure (E) and Vulnerability (V).

This overview allows users to first understand the overall structure of the ClimEmpower approach before moving to a specific hazard and asset. It therefore functions as the navigation and conceptual starting point for the more detailed risk assessments.

Additionally, the following links are found on the risk map landing page:

- Further educational material found on Zenodo
- Download link of the risk maps
- Link to the adaptation measures

[← Back to Results](#)
[△ Back to ClimEmpower website](#)

[RISK MAPS](#)
[🌱 Drought](#)
[🌊 Heatwaves](#)
[🔥 Wildfires](#)
[💧 Floods](#)
[📖 References](#)

★★★★★

Horizon Europe · Grant No. 101112728 · climempower.eu

ClimEmpower: Risk Map Methodology

Navigating Hazard, Exposure, and Vulnerability for Localized Resilience. Asset-specific climate risk methodologies with documented formulas, data inputs and adaptation measures.

[🌱 Drought](#)
[🌊 Heatwave](#)
[🔥 Wildfires](#)
[💧 Floods](#)

[📖 References](#)

[Risk Map Grid](#)
[Framework ↓](#)

[Complete Methodology on Zenodo ↗](#)

[View / Download Risk Maps ↗](#)
[Adaptation Measures ↗](#)

CLIMEMPOWER RISK EQUATION

H

×

E

×

V

=

R

H = Hazard E = Exposure V = Vulnerability
R = Final risk score (1–1000)

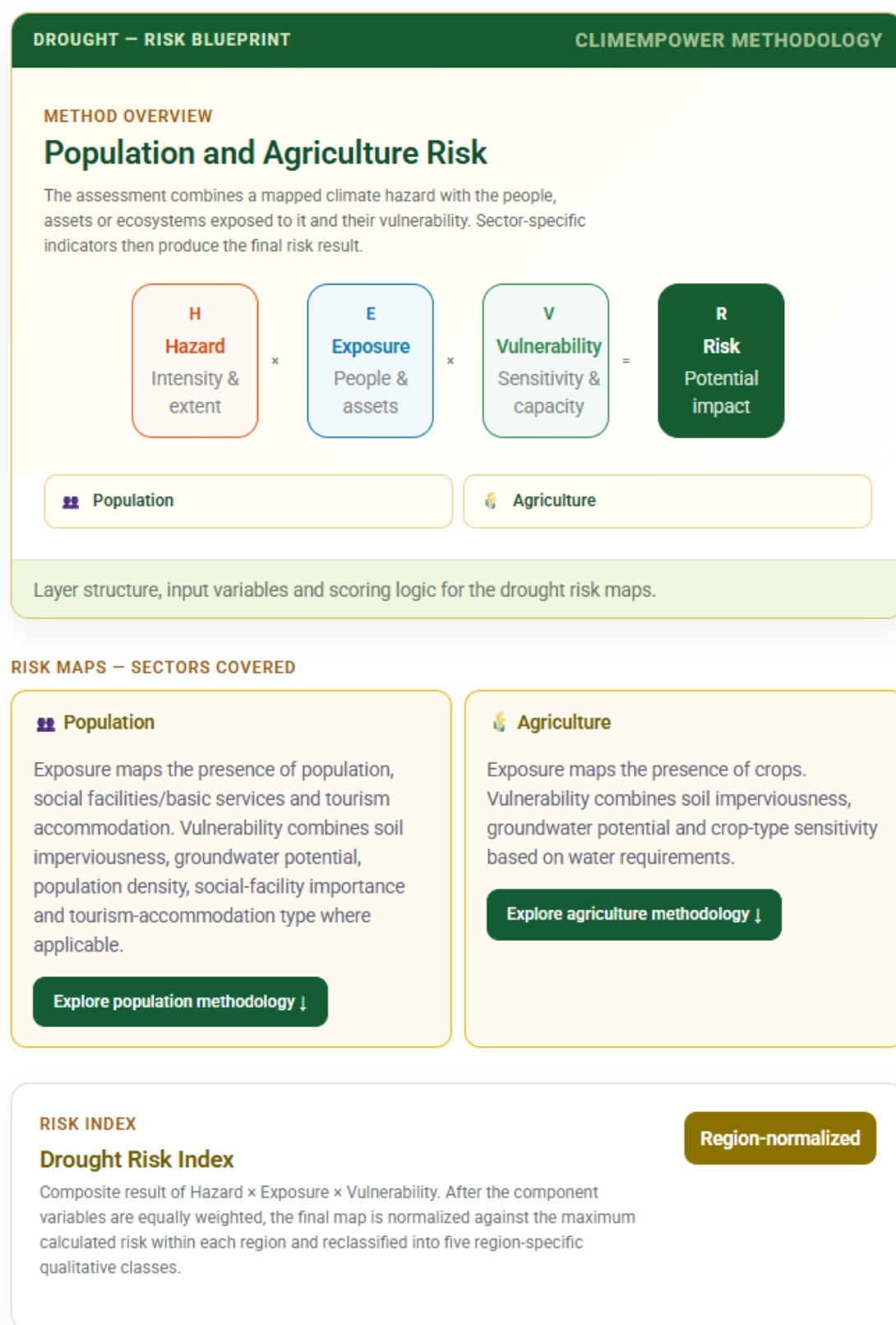
Hazards	Drought · Heatwaves · Wildfires · Floods
Risk model	Hazard × Exposure × Vulnerability
Risk scale	1–1,000 when H, E and V are scored 1–10
Risk classes	Very Low · Low · Moderate · High · Very High
Method rule	Keep asset-specific exposure profiles separate
Local data	Use higher-resolution local data where available and document

Figure 32: ClimEmpower Risk Map Methodology front page

2.4.3.2 Individual Risk Pages

The Individual Risks section contains the detailed risk assessments. The information is organised first by climate hazard and then, where applicable, by the asset or sector at risk. This structure makes it possible to distinguish between the hazard itself (drought, wildfires, heatwaves, floods) and the different consequences that the same hazard may have for population, agriculture, ecosystems, infrastructure, biodiversity, health or tourism.

Within each risk assessment, users can inspect the relevant Hazard, Exposure and Vulnerability components. The pages provide descriptions of the variables used, their scoring or classification, the underlying data sources and the formulas used to combine variables into the risk components. In this way, the website makes the methodological steps behind each risk map transparent rather than presenting only the final map or risk class.



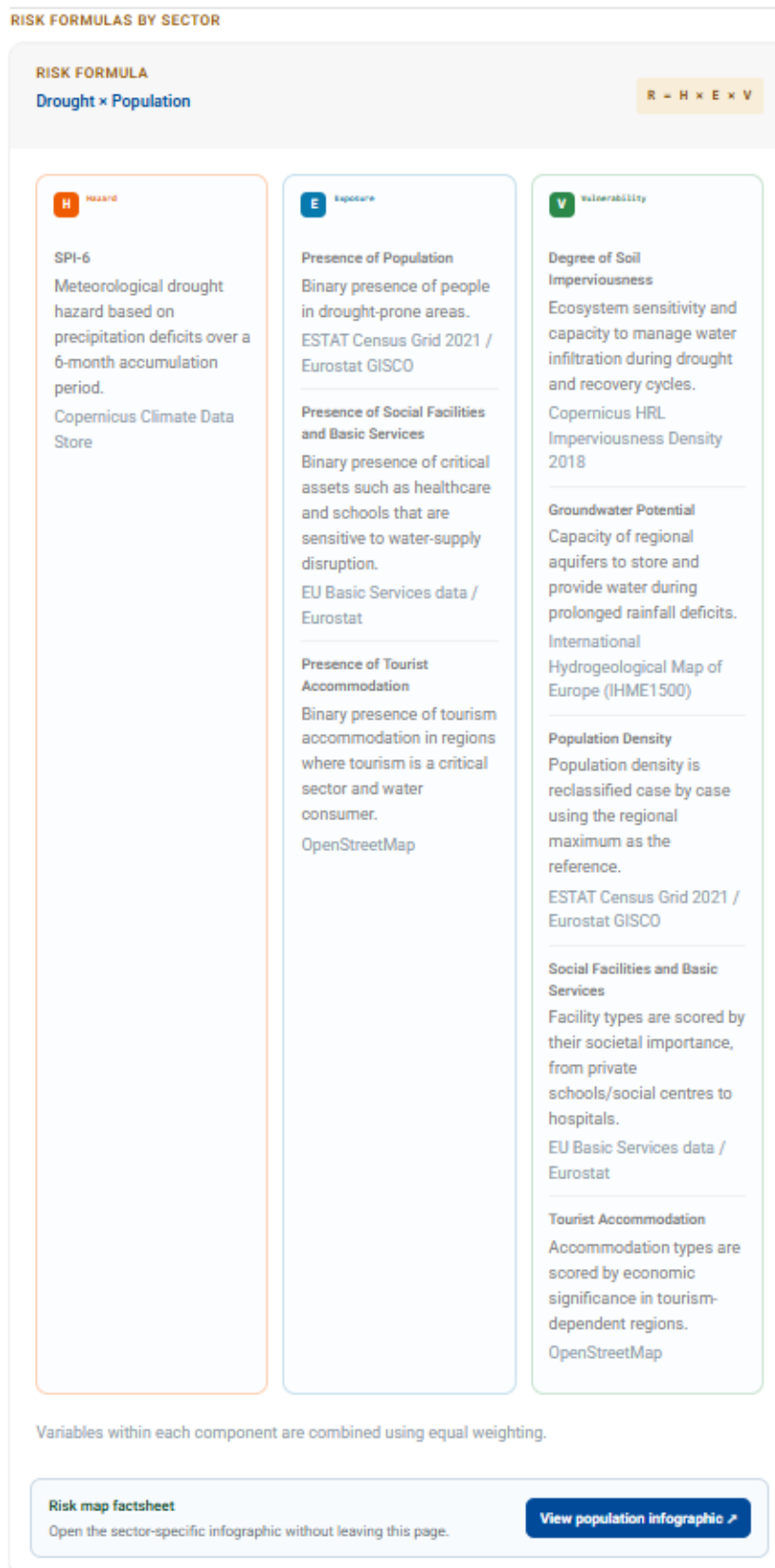


Figure 34: Example Drought Risk Map - calculation

The Adaptation Measures page connects the risk-assessment part of the website with possible responses. It provides a central overview of adaptation measures for the hazards covered by ClimEmpower. Users can search and filter the available measures and explore interventions relevant to the selected climate risk.

The measures are organised so that users can move from identifying and understanding a risk to considering potential adaptation options. This supports the practical use of the Risk Maps beyond the assessment itself.

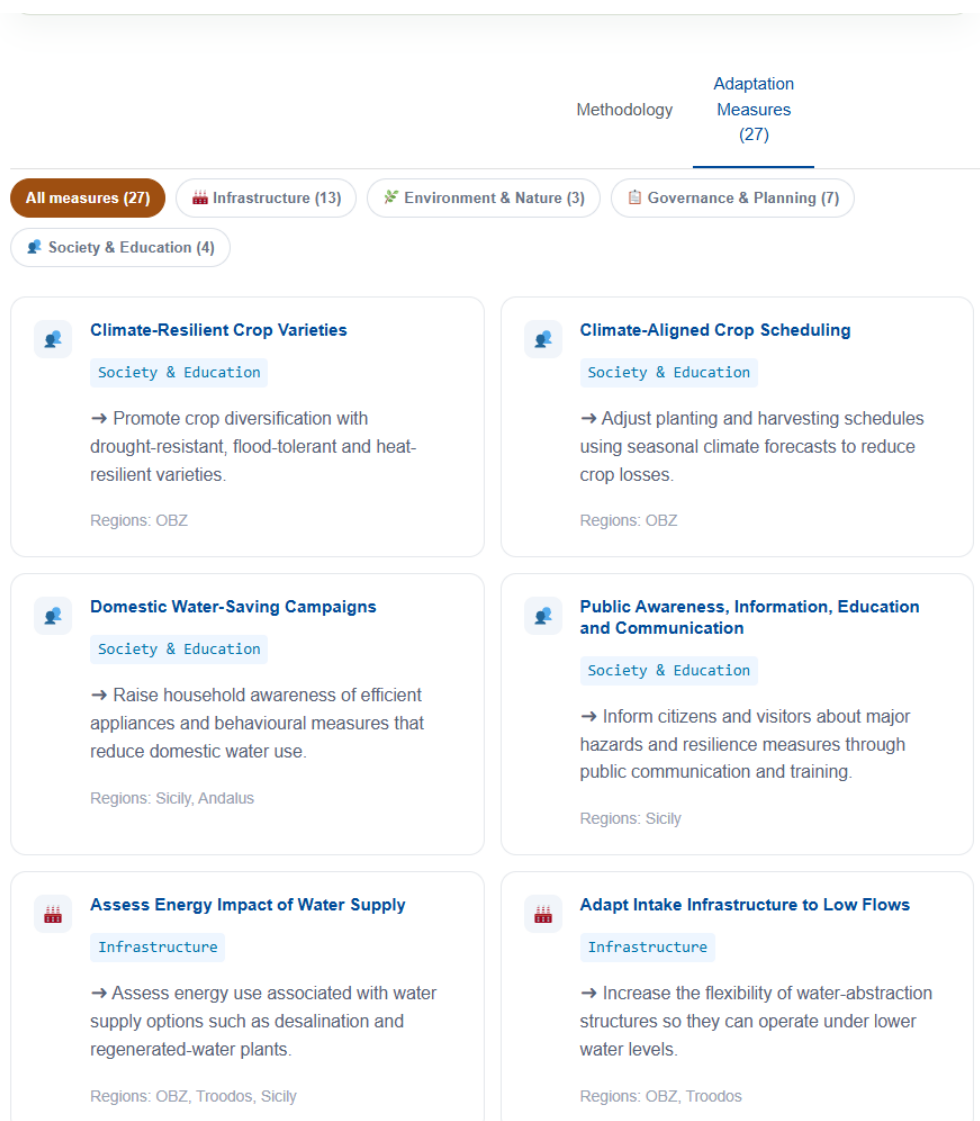


Figure 35: Example Drought Risk Maps – adaptation measures

The Risk Map Factsheets complement the detailed risk methodology presented on the website. They provide a compact and visually structured summary for each specific hazard × asset combination.

Their main purpose is to make the risk calculation easier to understand and apply. The factsheets bring together the relevant Hazard, Exposure and Vulnerability indicators, their scoring or reclassification, the component formulas and the final $\text{Risk} = \text{Hazard} \times \text{Exposure} \times \text{Vulnerability}$ calculation in one overview.

The factsheets are therefore intended as practical calculation aids rather than separate methodologies. Users can view them alongside the corresponding risk assessment and enlarge them on the website for easier reading of the scoring tables, formulas and supporting information.

CLIMEMPOWER RISK MAP FACTSHEET



Drought: Population Risk

ABOUT THIS RISK MAP

This factsheet summarizes the ClimEmpower drought risk assessment for the population sector. The methodology differentiates sectoral impacts and uses high-resolution hydro-meteorological forcing data and bias-adjusted climate projections to estimate the probability of exceeding historical drought thresholds.

1. RISK FRAMEWORK

H Hazard

E Exposure

V Vulnerability

METHOD

Each component is calculated independently; variables within a component are aggregated using equal weighting.

2. HAZARD

SPI-6: 6-month precipitation deficits.

SPI-6	Score
-1.0 - 1.0	5
-1.5 - -1.0	8
-2.0 - -1.5	9
<= -2.0	10

Reference period 1971-2010; historical 1981-2010; future 2021-2050, 2041-2070, 2071-2100.

Copernicus CDS / C3S Atlas; processed to 200 m; GeoTIFF, EPSG:3035.

3. EXPOSURE

Population

ESTAT Census Grid 2021; Eurostat GISCO; 1 km; presence Yes/No.

Social facilities / basic services

EU Basic Services; Eurostat; NUTS-3; presence Yes/No.

4. VULNERABILITY

Population density

ESTAT Census Grid 2021; reclassified separately by region using the regional maximum as reference.

Social facilities

Facility	Score
Private schools	4
Social centres	4
High schools	5
Elementary schools	7
Nursery schools	8
Medical centres	9
Hospitals	10

5. SCORING

H HAZARD

1-10

Hazard variables are assigned a score from 1 to 10.

E EXPOSURE

0 / 1

0 = no presence / not exposed
1 = presence / exposed

V VULNERABILITY

1-10

Vulnerability variables are assigned a score from 1 to 10.

6. FINAL RISK CALCULATION

$$R = H \times E \times V$$

REGION-SPECIFIC CLASSIFICATION

The regional risk range is divided into five equal classes.



Variables within each component are equally weighted. No universal class thresholds are shown.

Figure 36: Example Drought - population risk map – factsheet

Finally, there is an infographic added to make it easier for users to understand the risk classification at the end of the process:

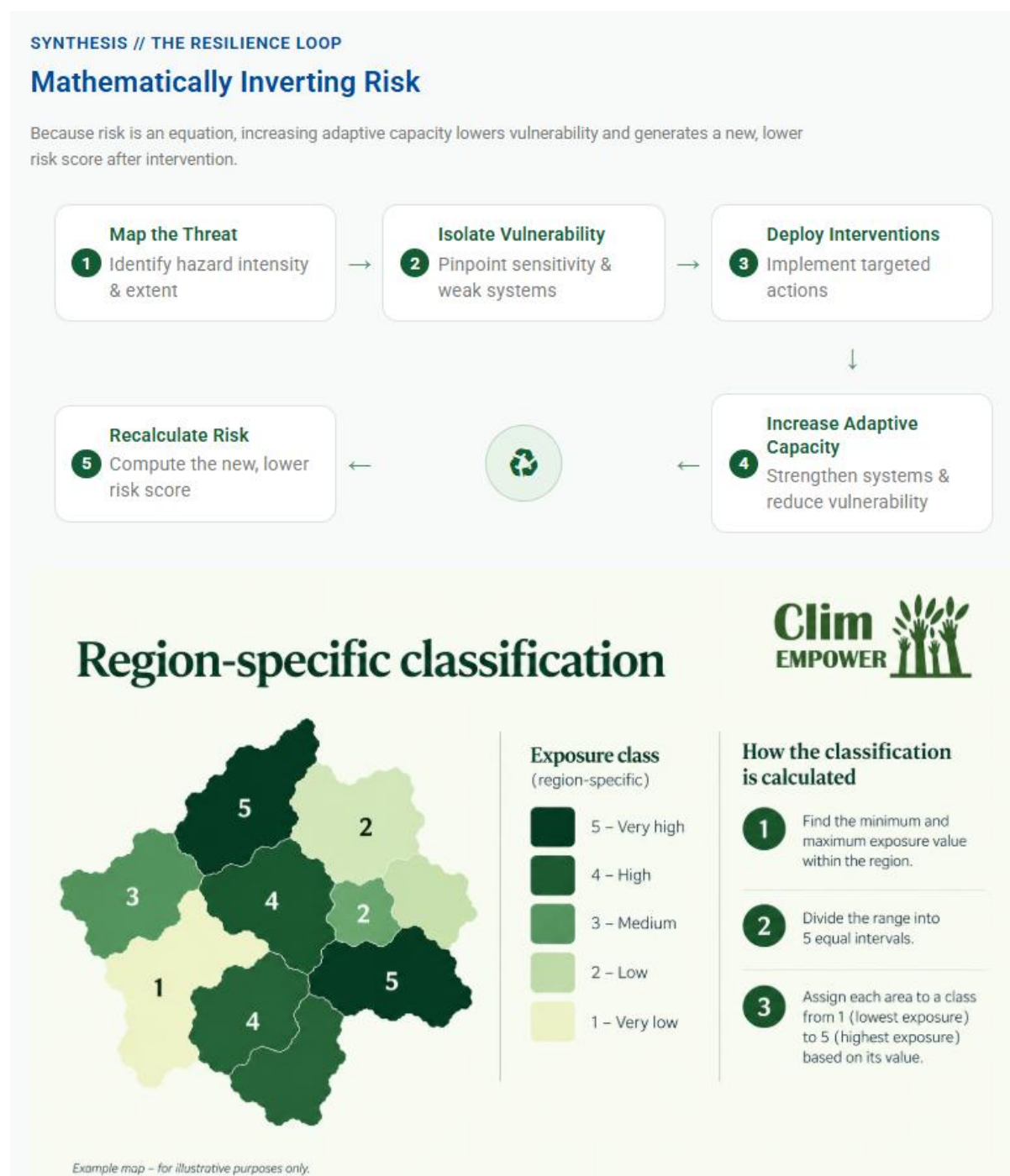


Figure 37: Region-specific classification

2.5 Search engine

The project's web site provides a search engine. By means of keywords or search phrases a user can quickly pinpoint relevant documents within the project framework, i.e. project's web site:

D2.4 Measures-and-strategies-forincreased-Climate-Change-resilience-1-50-99

Size: 2 MB | Page: 50

...se green areas in cities to absorb rainwater, delay runoff, and reduce impermeable surfaces. Lowers **flood** risk in urban areas by enhancing infiltration and storage. **sicily**
Environment & Settlement Are...

[CONTINUE READING](#)

D2.4 Measures-and-strategies-forincreased-Climate-Change-resilience-1-1-50

Size: 3 MB | Page: 50

...sure Description Exptected Impact applicable region (**sicily**, Troodos, Andalus, Central Greece, OBZ) **flood**ing from heavy rainfall Environment & Settlement Areas Enhancing **flood**
Resilience Implement ter...

[CONTINUE READING](#)

D5.6-Stakeholder-engagement-plan-and-event-report-v1-1-1-50

Size: 4 MB | Page: 50

...on natural resources. Additionally, both regions confront challenges associated with frequent urban **floods** and heatwaves, which pose significant risks to their communities and
infrastructure. In the m...

[CONTINUE READING](#)

Figure 38: Example of search results

2.6 AI assistant

Although a significant effort has been undertaken by the project to present the results of the project as well as relevant third-party educational content in a variety of views and forms in order to accommodate broad range of target audiences and their needs, the project consortium partners are aware that a significant effort is needed on side of users to digest the content and derive meaningful information for their further actions.



Therefore, modern tools in form of LLM chatbots have been investigated and implemented on the web site as "Climempower AI assistant".

This tool has access to all documents provided within the project. Thus, users can „talk“ to AI assistant, ask questions in order to get answers, discuss, clarify and solidify their new knowledge.

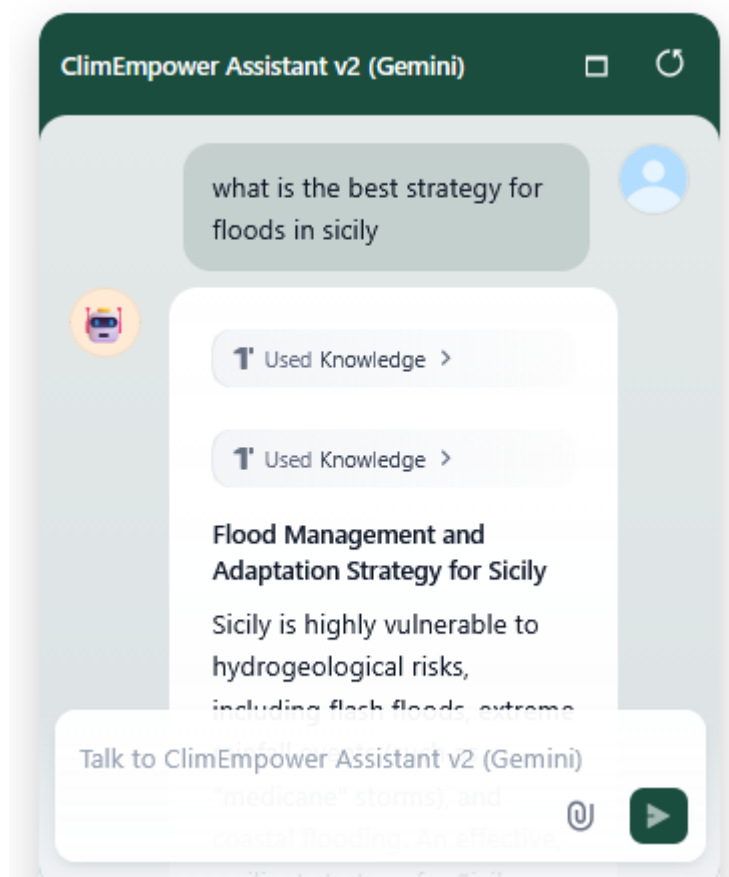


Figure 39 Example of conversation with ClimEmpower Ai assistant

The AI assistant has access to all project deliverables, all identified educational materials, and is pretrained on general knowledge.

3 Practical considerations and lessons learnt

This section provides an overview of the organisation, structure, and practical application of the educational materials produced within the project. It explains how materials are structured to meet diverse user needs and reflects on lessons learnt from deploying Generative AI (GenAI) to enhance learning accessibility.

The educational library can be explored through structured browsing or targeted search, while the interactive **ClimEmpower AI assistant** offers a conversational entry point to project knowledge

3.1 Multiple ways of accessing and understanding project knowledge

Like most research and innovation initiatives, ClimEmpower produces extensive technical documentation, including reports, methodologies, and guides. While rich in insight, specialized project documentation is often written by domain experts for specific technical purposes and may assume prior background knowledge or use complex terminology.

Different stakeholders engage with information in different ways:

- **Quick Overviews:** Decision-makers or general users seeking high-level concepts benefit from concise summaries, mind maps, or short presentations.
- **In-Depth Technical Detail:** Developers and researchers requiring methodological rigor prefer full technical reports or hands-on tutorials.
- **Multimodal Learning:** Other users absorb knowledge best through visual, audio, or self-assessment formats.

To bridge this gap, ClimEmpower provides alternative formats and entry points for its deliverables and **Courses and Manuals**—including mind maps, infographics, slides, video presentations, audio interviews/podcasts, flashcards, and quizzes. These alternative formats do not replace original technical documentation; rather, they serve as complementary entry points to make project knowledge easier to discover and understand.

- **Browsing the Educational Library** is ideal when users wish to discover resources or explore a topic broadly without a specific query in mind.
- **Search and Conversational AI** (the ClimEmpower AI assistant) are most effective when users have a specific question or immediate information need

3.2 Lessons learnt on generative AI usefulness

Generative AI tools—such as Mistral AI, Google’s NotebookLM, and Open Notebook—were used to increase team productivity and convert core project deliverables into engaging, royalty-free multimedia formats (mind maps, infographics, videos, and podcasts). While these formats improve accessibility and visual appeal, effective deployment requires structured workflows and human oversight.

Key takeaways from the project's experience with GenAI include:

- **The "Garbage In, Garbage Out" Principle:** The accuracy and quality of AI outputs depend entirely on the quality of source documents, prompt design, and review workflows. Poor input selection or vague instructions lead to incomplete or misleading results.
- **Risk of Hallucinations and Omissions:** AI tools can omit crucial nuances, overemphasize minor details, or introduce factual errors. High visual polish must never be mistaken for factual accuracy; human experts remain fully responsible for reviewing and validating all outputs.
- **Systematic Workflow Documentation:** For recurring tasks, prompts, inputs, and transformation steps should be systematically tracked and refined. Reusable AI-assisted workflows combine human domain expertise with automated processing to ensure consistency and reliability.
- **Conversational Discovery vs. Accuracy Risks:** The interactive **ClimEmpower AI assistant** provides a powerful mechanism for exploring project documents conversationally, but highlights the necessity of reminding users that dynamically generated AI responses must be verified against the underlying source documents

4 Key messages and next steps

4.1 Key messages

- **ClimEmpower educational materials ease access to and practical use of climate change knowledge.** The project brings together curated external resources and project-generated outputs, including short Knowledge Bites, fully fledged courses and manuals, tools, methodologies, risk map factsheets, and resilience recommendations, organising them to meet diverse audience needs.
- **You do not need to be a climate expert to benefit** from these materials. The library is structured to build capacity across target groups ranging from the general public, educators, and farmers to strategic planners, decision-makers, and researchers.
- **Knowledge is accessible through multiple pathways and formats.** Users can browse the educational library, filter via the Hazard–Sector Matrix or User–Dimension Matrix, search specific keywords, or interact conversationally with the ClimEmpower AI assistant. Alternative AI-supported formats (such as mind maps, slides, podcasts, and quizzes) provide visual, audio, and self-assessment entry points for different learning styles.
- **Project outputs are designed for practical application.** Every output focuses on supporting concrete learning, policy integration, climate risk assessment, and regional resilience planning.

4.2 What can you do next

- **Start with your specific needs and interests.** Address your immediate role or regional climate challenge by selecting relevant target groups, hazards, or sectors.
- **Identify the perspective most relevant to you.** Use the thematic matrices to quickly filter learning units, tools, and recommendations tailored to your domain.
- **Choose your preferred access pathway.** Browse the library catalogue to explore broader topics, use keyword search for specific documents, or consult the AI assistant to ask direct questions about project deliverables.

4.3 Further resources

Table 1 shows the recommended platforms for further reading and access to related project resources.

Table 1: Recommended Platforms

Source platform	Short definition	Relevant materials
ClimEmpower Project Results — climempower.eu/results/	Official ClimEmpower platform for project results and outputs	Project deliverables; resilience recommendations; risk-map information; project tools and software; scenarios; data and knowledge assessments; stakeholder engagement results
ClimEmpower Educational Library — climempower.eu/knowledge-hubs/	ClimEmpower collection of educational materials and selected knowledge resources	Educational materials; reports and guidance; presentations; learning resources; climate-hazard and sector resources; target-group resources; external knowledge resources
CORDIS — cordis.europa.eu	European Commission platform for EU-funded research and innovation	Project descriptions; public deliverables and reports; publications; project partners; project results and outputs
Climate-ADAPT — climate-adapt.eea.europa.eu	European platform for climate change adaptation knowledge and practice	Adaptation strategies and policies; case studies; climate risks and impacts; adaptation options; tools; indicators; research and innovation projects
ClimEmpower Zenodo Community — zenodo.org/communities/climempower	Open repository for ClimEmpower research outputs and project materials	Datasets; journal publications; conference papers and posters; educational materials; other project outputs

Annex 1: Data, security, and ethics

This deliverable presents all educational content produced within the Project.

A 1.1 Documents produced

A1.1.1 Knowledge Bites:

Short, concise learning materials—including the "Did you know?" series, policy briefs, factsheets, and infographics—designed to communicate core climate risk and adaptation concepts quickly.

A1.1.2 Courses and Manuals:

In-depth learning modules (where each individual output is structured as a learning unit) covering project methodologies, technical tutorials, and climate risk frameworks. These are complemented on the website by alternative AI-generated formats (mind maps, infographics, slides, videos, podcasts, flashcards, and quizzes).

A1.1.3 Curated Third-Party Library & Knowledge Hubs:

A curated metadata catalogue of over 200 recommended external educational resources and trusted external platforms compiled by consortium experts.

A1.1.4 Other Resources with Educational Value:

Practical project outputs and derived guidance structured for learning and capacity building, including:

- **Public Deliverables:** Formal technical reports accompanied by AI-generated summaries and multimodal learning formats.
- **Resilience Recommendations:** Navigable, sector-specific strategies for climate resilience.
- **Risk Map Information:** Methodological documentation, individual hazard assessments, and practical Risk Map Factsheets providing clear calculation formulas.

A1.1.4 Navigational Matrices & Discovery Frameworks:

Structured navigational tools designed to pinpoint relevant learning materials across specific user needs:

- **Hazard–Sector Matrix:** Cross-references climate hazards (e.g., floods, droughts, heatwaves) with socio-economic sectors (e.g., agriculture, health, infrastructure).

- **Target Group & Dimension Matrix (User–Dimension Matrix):** Matches target audience roles (e.g., planners, farmers, educators) with climate resilience dimensions (e.g., governance, economy, settlement areas).

A1.1.5 Other Resources with Educational Value:

Tangible project results and practical calculation aids, including:

- **Public Deliverables:** Formal technical reports accompanied by AI-generated summaries and multimodal formats.
- **Resilience Recommendations:** Navigable, sector-specific adaptation strategies.
- **Risk Map Information & Factsheets:** Risk assessment methodologies, hazard pages, and compact Risk Map Factsheets detailing indicator scoring and formulas.

A1.3 Security and Ethics

- **Intellectual Property Rights (IPR):** Generative AI tools were used to create alternative interpretations of project documents without infringing on third-party IPR beyond standard model training.
- **AI Summaries & Validation:** Generative AI was employed to generate concise summaries for third-party resources to streamline compilation. Users are informed that dynamically generated AI summaries and conversational responses should be verified against original source materials.
- **Use of Generative AI in Document Finalisation:** Generative AI tools were utilized to assist in the drafting, structural organization, editorial refinement, and terminology standardization during the finalisation of this deliverable document. All AI-generated text, structural proposals, and editorial updates were rigorously reviewed, verified, and approved by the human lead authors, who retain full responsibility for the factual accuracy, integrity, and final content of this document.

A2 Anticipated impacts

D4.2 contributes to the achievement of several ClimEmpower Strategic Objectives by translating project knowledge, tools and results into **accessible educational resources that strengthen stakeholders' understanding, capacity and ability to act on climate change and resilience**. The educational library is designed for a broad range of users, including the general public, educators, decision-makers, strategic planners, scientists, implementers, farmers and businesspeople, and supports them in understanding climate risks, planning for their consequences and using relevant methods, tools and datasets.

Its strongest contribution is to **SO5 Empower the regions to activate and enhance their potential for addressing the climate change challenge**. By providing structured, accessible and target-group-oriented learning materials, D4.2 supports knowledge transfer, capacity building and the practical use of ClimEmpower results by regional stakeholders. The organisation of materials by hazards, sectors, climate dimensions and user groups allows stakeholders to identify resources relevant to their specific responsibilities and regional needs.

D4.2 also directly supports **SO6 Ensure the use and impact of the ClimEmpower outputs** by making project results easier to understand, access and reuse beyond the technical consortium. In addition to conventional educational resources, the library includes alternative AI-supported learning formats such as summaries, presentations, dialogues and mind maps, helping make technical project outputs more accessible to different audiences and learning styles.

The deliverable additionally supports the other strategic objectives by helping stakeholders better understand **regional climate challenges and needs (SO1), climate data and services (SO2), climate impact and resilience indicators (SO3), and the tools and user-centric applications developed by the project (SO4)**. In this way, D4.2 acts as a bridge between ClimEmpower's scientific and technological results and their practical uptake by regional and local users.

D4.2 supports the long-term impact of ClimEmpower by converting project knowledge into reusable educational resources that remain available beyond the project lifetime, strengthening regional capacity for continued learning, informed decision-making and independent climate-resilience action.