



Acropolis under snowstorm on 17 February 2021

# **STRENGTHENING CULTURAL HERITAGE RESILIENCE FOR CLIMATE CHANGE - WHERE THE GREEN DEAL MEETS CULTURAL HERITAGE**

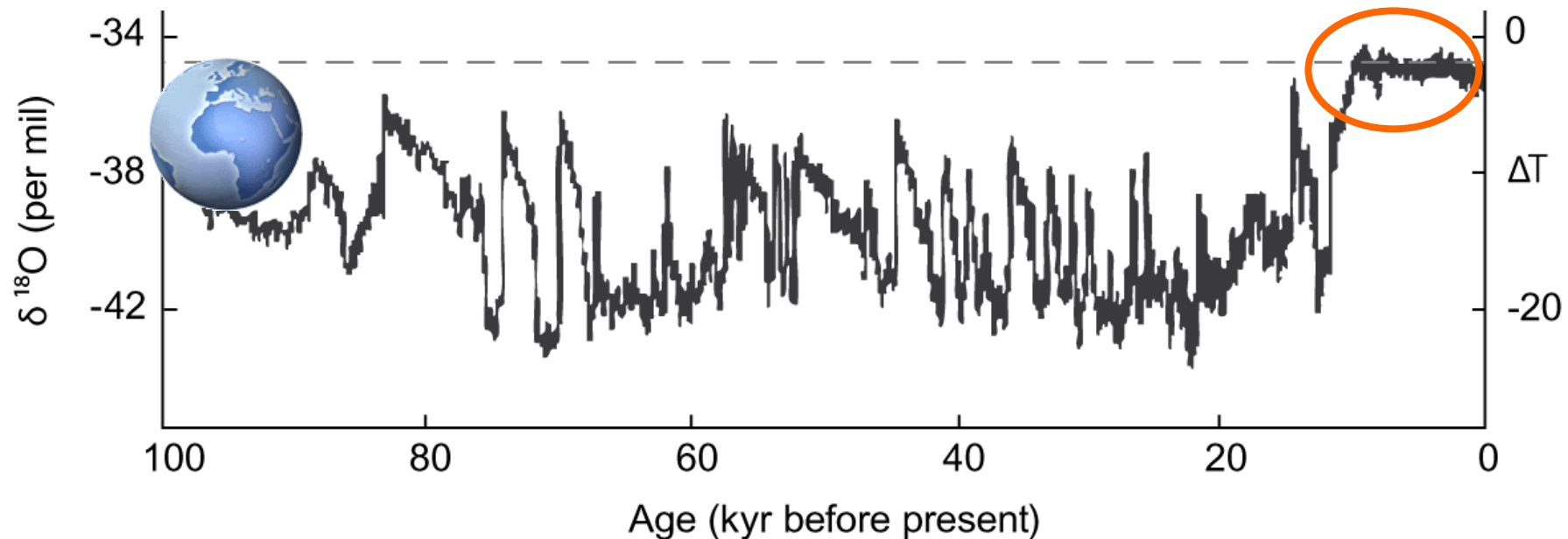
**EU OMC Member States' expert group (2021-2022)**

**Chair: Johanna Leissner (Fraunhofer, Germany)**



**Erasmus Green Heritage - final conference 3 October 2025**

The past evolution of the Earth has been very dynamic with different climate modes, ice periods and interglacial periods. Only in the last 10,000 years Humanity has had - **a stable climate!**





# EU OMC Expert Group of Member States “Cultural Heritage Resilience for Climate Change”

First time a political mandate was given to this topic! In September 2024 a Follow Up meeting was organized about progress made in last 2 years



25 EU countries and 3 associated countries sent delegates

- Tasks

- Identify the **state of play in EU and Member States** regarding **policies**
- Identify **emerging threats of climate change** on cultural heritage
- Collection of **Good Practice examples**
- Identify what cultural heritage **can contribute** to solve climate crisis
- **Awareness raising** for the topics in society, **political decision making and arts and creative sectors**
- Output: a **report and 10 recommendations** for **EU** and its **Member States**



## Follow Up in 2024 - 2 years after publication of final report

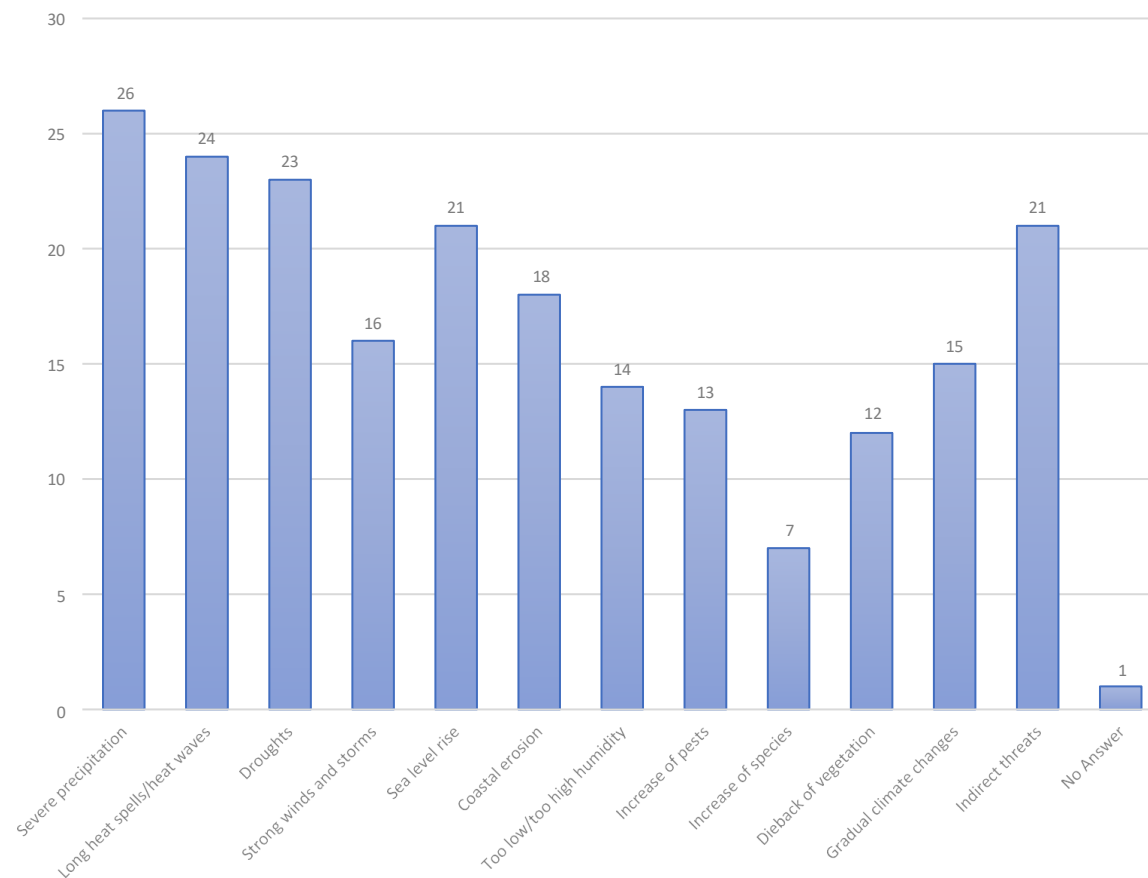


- EU Survey conducted with the members of the OMC group (19 Member States replied)
- Follow-up meeting took place in September 2024
- OMC group: over 50 appointed experts from 25 EU Member States plus Switzerland, Norway and Iceland,



# Threats to cultural heritage from climate change

- 1) Severe precipitation
- 2) Long heat waves
- 3) Droughts
- 4) Sea level rise
- 5) Indirect threats
- 6) Coastal erosion
- 7) Strong winds
- 8) Gradual climate change
- 9) Too low/high humidity
- 10) Increase of pests
- 11) Dieback of vegetation
- 12) Migration of foreign species



Strong winds



Severe precipitation



Increase of pests



# Risk potential by type of tangible heritage

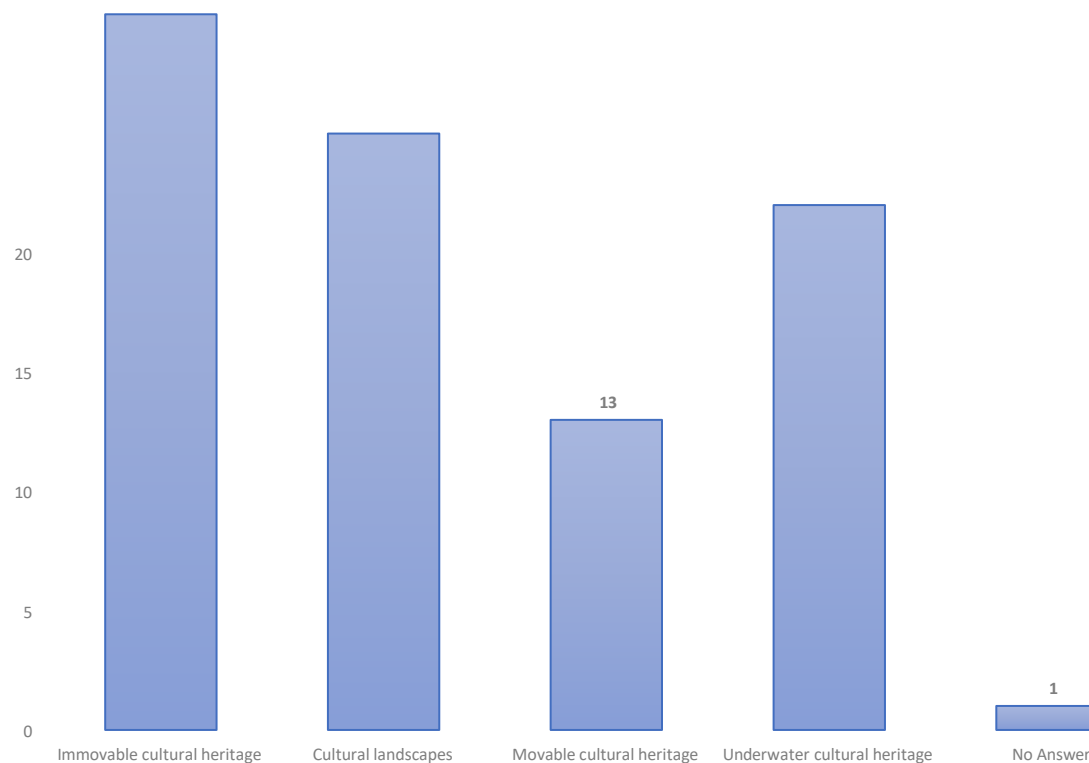
1. Buildings and monuments

2. Cultural landscapes

3. Underwater heritage

4. Movable heritage

5. No answer



Karlštejn Castle, CZ



Cultural landscape



Indoor and movable heritage

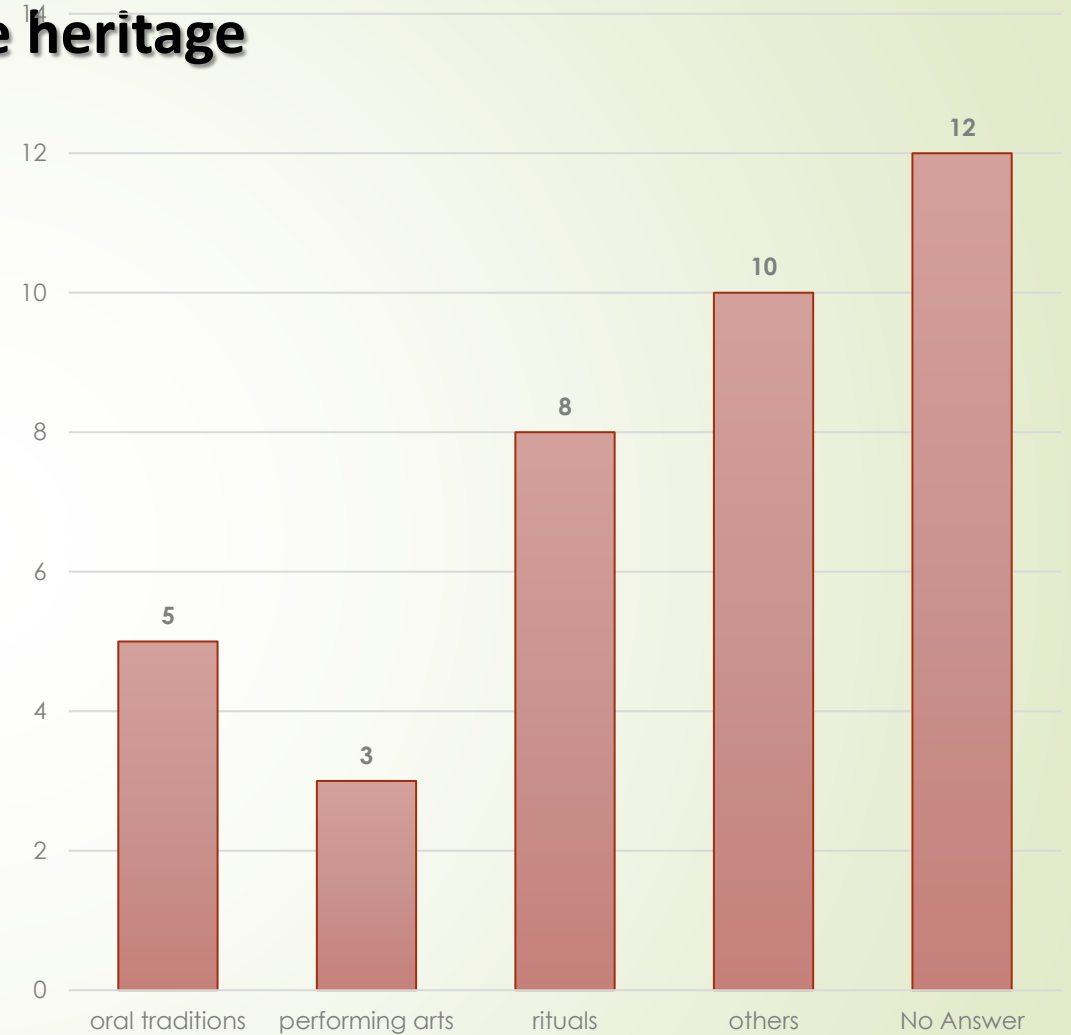
## Risk potential for type of intangible heritage

Intangible heritage

### 3b. Intangible heritage, including:

|                 |                        | Answers | Ratio   |
|-----------------|------------------------|---------|---------|
| No Answer       | <div><div></div></div> | 12      | 42.86 % |
| others          | <div><div></div></div> | 10      | 35.71 % |
| rituals         | <div><div></div></div> | 8       | 28.57 % |
| oral traditions | <div><div></div></div> | 5       | 17.86 % |
| performing arts | <div><div></div></div> | 3       | 10.71 % |

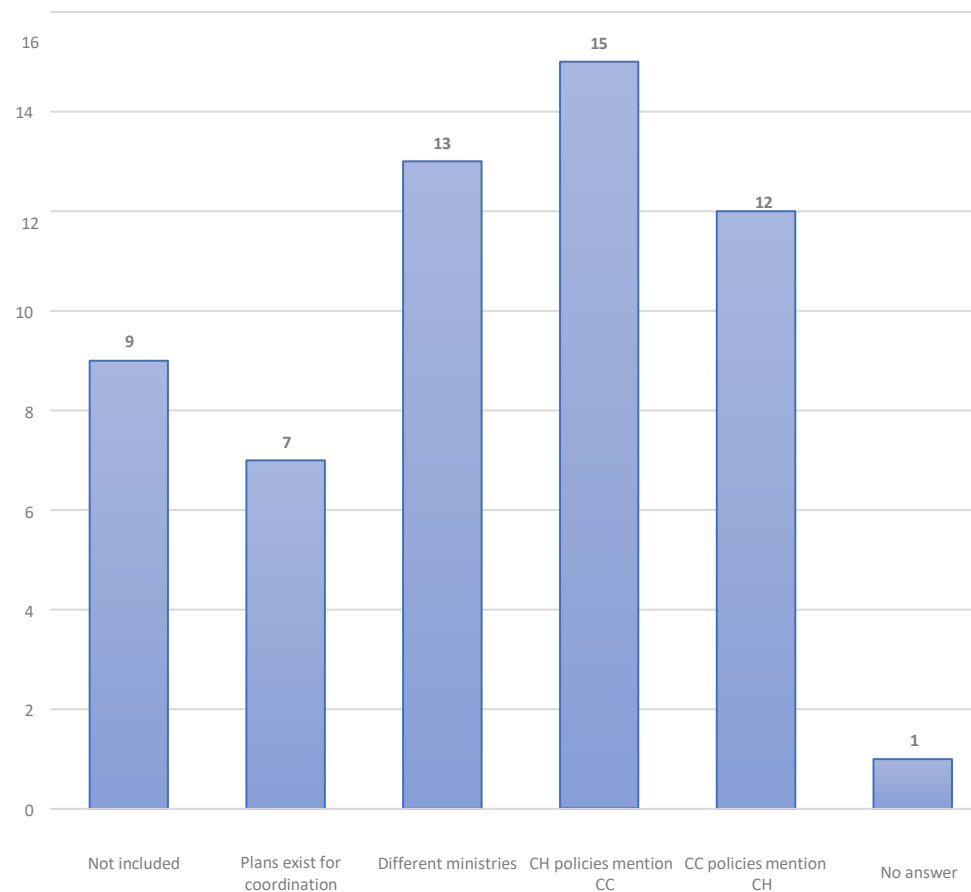
Others:  
traditional nature use practices, traditional knowledge,  
seasonal movement, sports in nature, crafts, farming  
techniques, falconry, indigenous culture.



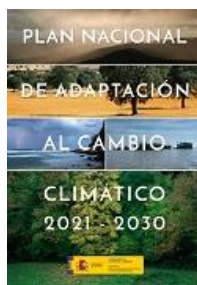


# Situation cultural heritage / climate change in policies

- 1) Cultural heritage not included in policies – 9 countries
- 2) Some plans exist for coordination of climate change and cultural heritage – 7 countries
- 3) Different ministries responsible
- 4) Cultural Heritage policies mention Climate Change – 15 countries
- 5) Climate Change policies mention Cultural Heritage – 12 countries
- 6) No answer – one country



Examples: Spain and Italy



**2015 National Strategy of Adaptation to Climate Change**  
**2018 National Plan of Adaptation to Climate Change**



# To whom were you invited to present the OMC report and how many times the report was presented?

More than **150** presentations were given

in many European countries and beyond - in USA, Chile, Canada, Morocco, Rwanda and at EU Council and EU Parliament, G7, G20, COP27 & EU MED. Report given personally to the president of the European Commission, Ursula von der Leyen.

## Specifically:

- Climate Change Advisory Group for Built and Archaeological Heritage
  - Committee of the Regions
    - Beirat für Baukultur
  - German Ministry for Environment
  - German State Ministers for Culture
- National and Local governments/authorities & heritage managers/staff
  - Climate Action Regional Offices
  - ICOMOS National Committees
  - National Heritage Institute
  - US National Park Service
    - ICCROM Rome
  - ... and many more

Other public or civil society organisations: 10 (29%)

Stakeholders: 8 (23%)

Ministry of Environment: 7 (21%)

Ministry of Culture: 6 (18%)

Other Ministries: 3 (9%)

## From whom did the report receive attention in your country?

**Heritage Managers: 13 (37%)**

**Policy Makers: 9 (26%)**

**Stakeholders: 9 (26%)**

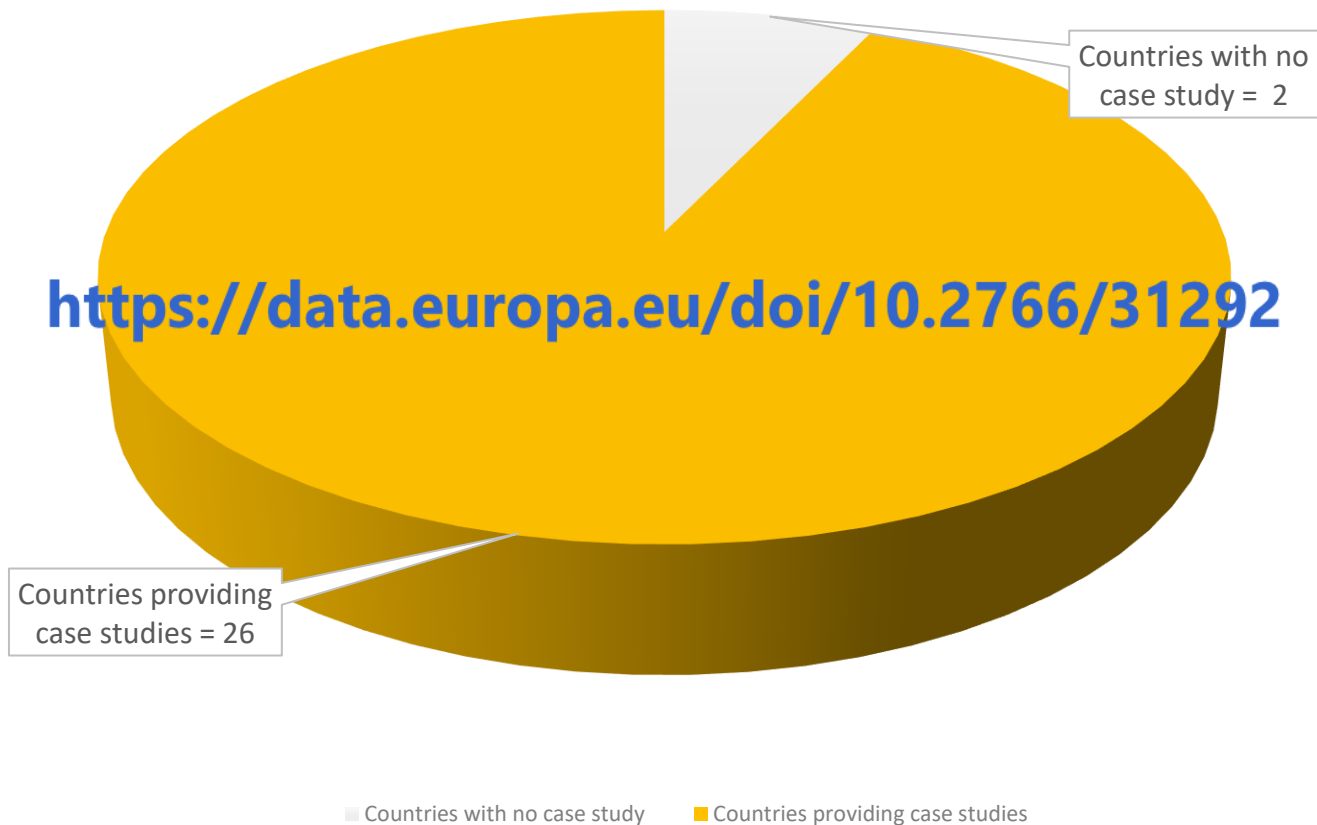
**Other: 4 (11%)**

**Also mentioned:**

- Dissemination through Creative Europe Desk for Culture
- Dissemination through advisory groups and working groups on cultural heritage, archeology, climate change
- Dissemination through websites of stakeholders

# 83 Good practice examples from Europe!

- a source of inspiration and for up-scaling
- driven by research projects
- extremely difficult to collect the information



# Adaptation and mitigation – cultural landscapes and intangible heritage

- **Alpe Pedroria and Alpe Madrera – IT.**

Restoration agricultural landscapes and traditional huts in the Alpine region of Lombardia to increase the resilience and function as carbon sinks

## Measures:

- Recovery of pastureland began in 2014 (7 % of the original pastureland),
- Restoration of wooden huts, stone houses and paths
- Revitalisation of traditional production of Bitto cheese by returning of pasture and livestock
- Repopulation of animal species in danger of extinction

## Impact:

- Renewed awareness in the local community, starting with the youngest, of the importance of the pastoral activity and culture and of the recovery of abandoned pastures.
- Promotion and enhancement of the intangible heritage
- Original Alpine Brown and the Orobica goats were reintroduced.
- **Grasslands (pastures) act again as net carbon dioxide**
- **Grasslands continue to store carbon even during extreme drought simulations.**



*Alpe Pedroria, restored stone house in the mountains*

© 2015, Roberto Segattini, FAI - Fondo Ambiente Italiano

# Adaptation and mitigation – tangible and intangible, improving skills

- **The art of drystone walling – HR.**

The art of drystone walling is about the know-how to making stone constructions by stacking stones upon each other, without using any other materials except sometimes dry soil. Dry stone walls are climate friendly and play a vital role in preventing landslides, floods and avalanches, and in combating erosion and desertification of the land, enhancing biodiversity and creating adequate microclimatic conditions for agriculture.

## **Measures:**

Workshops: Experts together with volunteers participated in the reconstruction of drystone walls in order to renovate them using traditional skills and technologies. Practical learning about the practices used by people from prehistory to today to organise their living and working space by optimising local natural and human resources. In 2023 European Year of skills!!!

## **Impacts:**

The workshop enabled the promotion of this UNESCO World Heritage Site, raising awareness and appreciation enhancing the role of local communities in its safeguarding and protection.

The art of drystone walling, knowledge and techniques was inscribed onto the UNESCO Representative List of the Intangible Cultural Heritage of Humanity in 2018.



Repairing dry stone terraces of the Takala vineyard, the first protected dry stone landscape in Takala, Croatia, 2018. Photographer: © Filip Šrajer, Dragodid

# Adaptation and mitigation – solving both climate crisis and housing crisis

- Green is not only a colour – sustainable buildings already exist - NO.

EXPLORE WHETHER AND HOW CLIMATE GOALS CORRESPOND TO GOALS FOR THE PROTECTION OF CH BUILDINGS AND WHAT ROLE BUILDINGS AND PROTECTION CAN HAVE AS CC MITIGATION MEASURE.

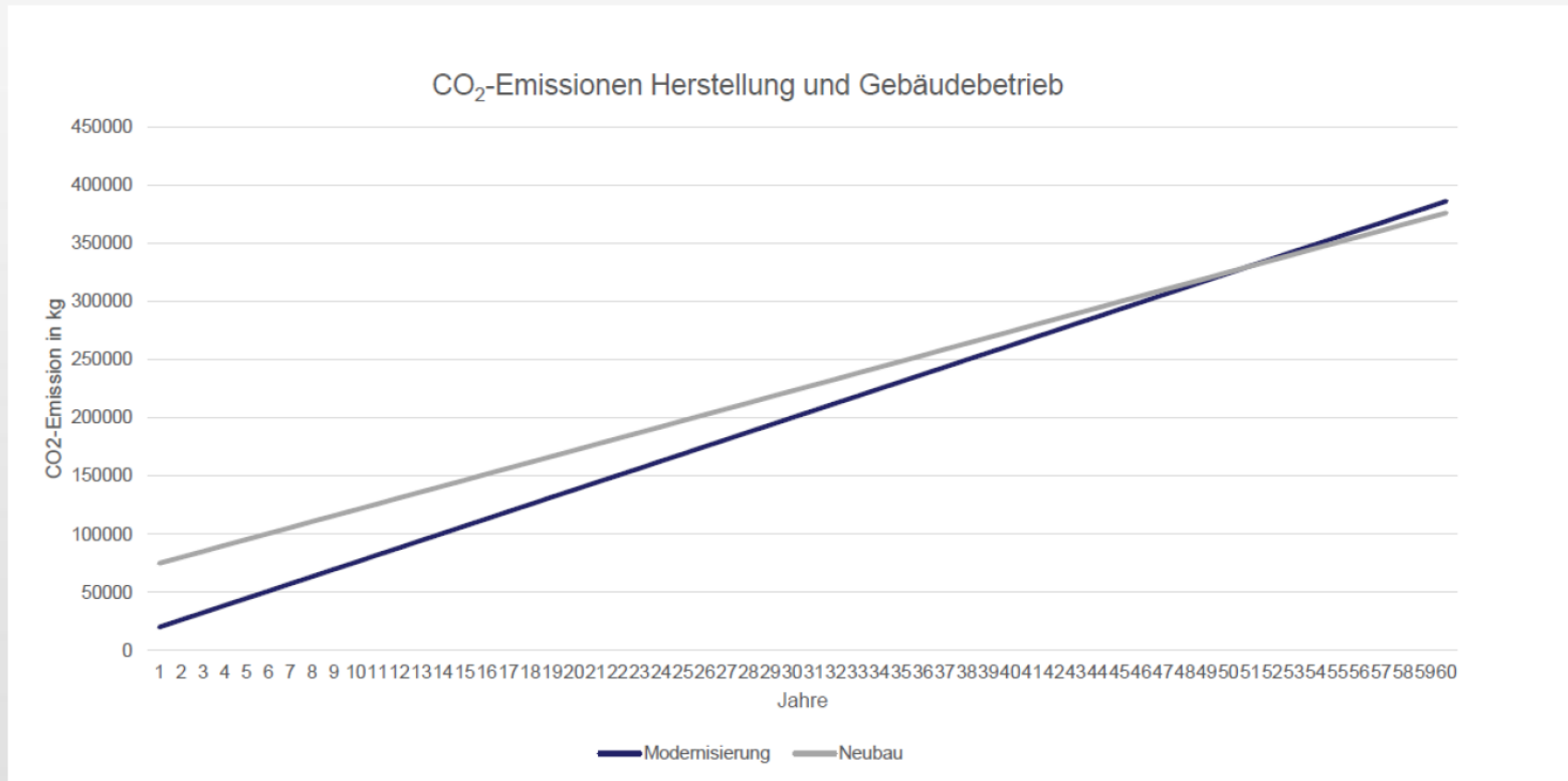
14 assessed buildings are of varying age, size, architecture and construction method. All have different conservation values based on age, representativeness, architectural design and cultural heritage context. A comparison of investment costs for the various scenarios shows that the cost of upgrading is lower than of constructing a new building for 20 of the 24 building cases, and significantly lower for 15 of 24 cases. Looking at emissions reductions per invested amount, the results indicate that upgrading is more cost-effective than new construction, if the aim is to reduce greenhouse gas emissions.



A residential building originally from the 18<sup>th</sup> century.  
@Innlandet fylkeskommune

# Upgrading old buildings vs demolition and new energy efficient buildings

One example from Bavaria (Dipl.Ing Klaus-Jürgen Edelhäuser)



- Break-even point only reached after 52 years

# Adaptation and mitigation – archeological heritage and historical vegetation

- **Colosseum Archaeological Park (Parco archeologico del Colosseo) – IT.**

This case study shows how satellite technologies and space economy play an essential role in monitoring and protecting cultural heritage at risk from climate change, extreme events and natural and anthropogenic hazards, providing economic, management and social benefits.

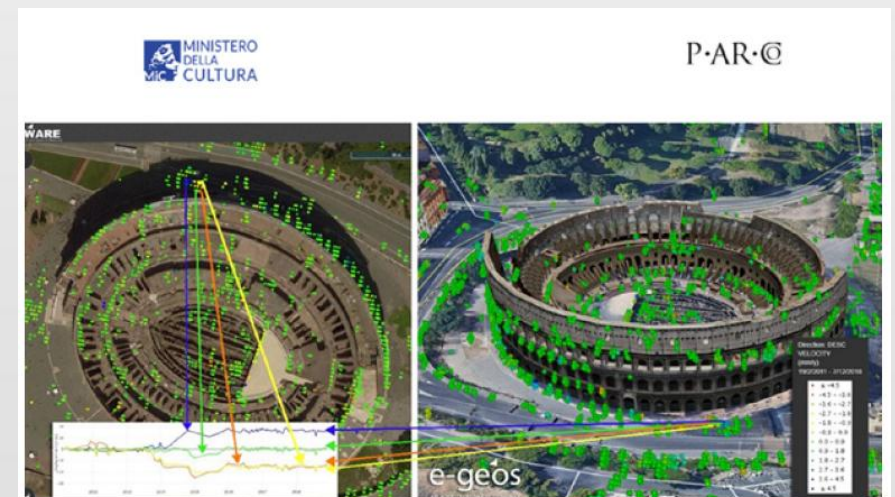
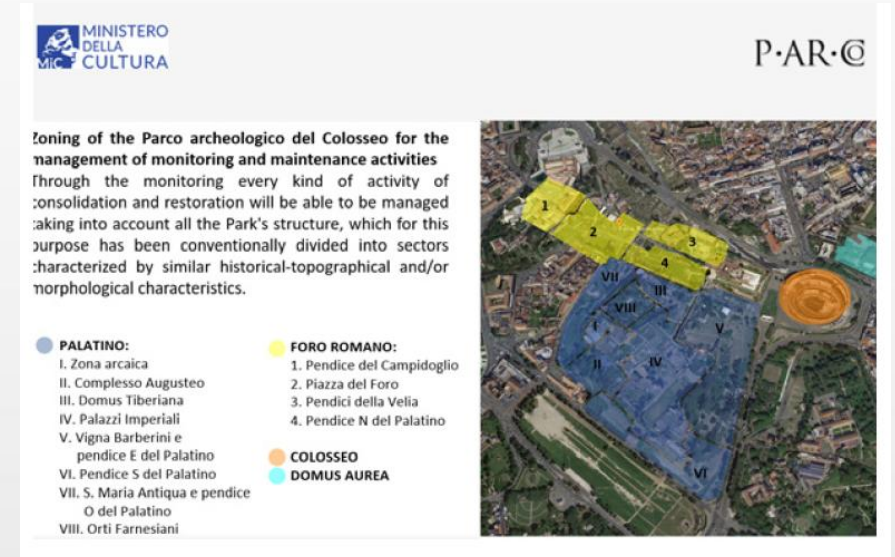
## Measures:

- Preventive monitoring including trees stability
- Monitoring of weeds and census of species
- Measurements of wind and gusts
- Definition of an operational protocol for monitoring and management

## Impact:

A preliminary cost–benefit analysis shows that the main benefits derived from the outputs of the park’s monitoring and maintenance project are as follows:

- decreasing costs of emergency interventions
- decreasing costs of ordinary management, important as preventive maintenance is a fundamental prerequisite of sustainable conservation
- increasing accessibility of knowledge



# Adaptation and mitigation – coastal and underwater heritage in a changing climate

- Coastal heritage - CHERISH (2017-2023)- Ireland and Wales.

It brought together four partners across two nations: the Royal Commission on the Ancient and Historical Monuments of Wales; the Discovery Programme, Ireland; Aberystwyth University: Department of Geography and Earth Sciences; and Geological Survey Ireland.

It raises awareness and understanding of the past, present and near-future impacts of climate change, storminess and extreme weather events on the rich cultural heritage of the regions' seas and coasts.

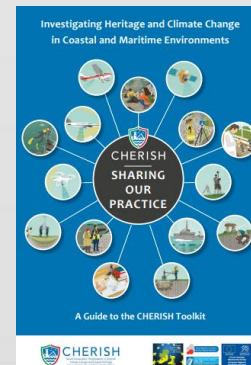
It captures airborne, seafloor and terrestrial datasets. The project worked to create a seamless land-to-sea view of coastal and maritime cultural heritage sites in an endeavour to understand how they are being affected by climate change.

In March 2023 a Good Practice Guidance was published on the project's "toolkit" for researching at-risk sites.

[Download of the toolkit:](#)  
[Sharing Our Practice - CHERISH](#)



*UAV captured aerial photograph of the monastic site showing the impact of the sea defences, Illauntannig, Castlegregory, Co. Kerry, Ireland.*  
© 2018, The CHERISH Project



# Adaptation and Mitigation – energy and circularity

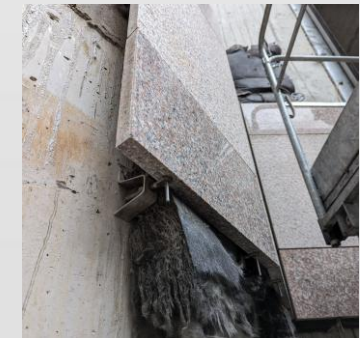
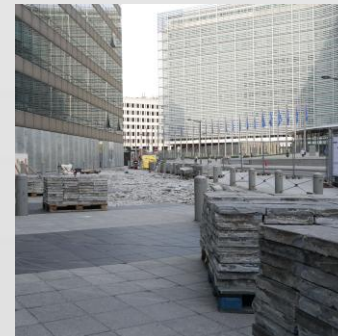
- Resilient storage (ReStora) – BE.
  - Developing a national strategy that takes into account the optimal conditions for the preservation of artworks and objects.
  - Optimisation of climate conditions in museum infrastructure and museum depots to lower energy demands and costs in museum infrastructure by 10–30 %.
  - Creating a shared protocol that allows institutions to loan and share objects more easily. So far outdoor and future climate data are not integrated into protocols.
  - The Protocol has been tested in two smaller museums – FelixArt, Drogenbos and Comics Art Museum, Brussels.
- Reuse of historic building materials and techniques in contemporary buildings – BE.
  - Promotion of life cycle assessments (LCAs) for the reuse of materials.
  - Using salvaged materials reduces the quantity of demolition waste and offers high-quality building materials that have a negligible environmental impact.
  - Certification for used materials is lacking. Proof is needed that the materials are not at the end of their life when a building is demolished and that they can still perform in a safe way in a new building or in another existing building.
  - LCAs are not yet used in an active way in the building sector. When old buildings are completely or partly demolished, the materials often still have value and should be reused in a way that preserves their quality. This can be in a restoration context or in new buildings.



FelixArt Museum, Drogenbos



Comics Museum, Brussels



# Adaptation and Mitigation – traditional knowledge and regulation

- **TRADITIONAL AIR WELL SYSTEM – AT.**

## EVALUATION OF AN AIR-COOLING SYSTEM FROM 19TH CENTURY.

To evaluate the effectiveness of the ‘old’ air well system. To evaluate minimal-invasive options to optimize the reduction of heat in the auditorium and CO<sub>2</sub> saving.



Roof of the Burgtheater in Vienna

- **SAFEGUARD AND ENHANCEMENT PLAN – FR.**

## City of Bordeaux: URBAN PLANNING REGULATIONS - CHANGES IN THE CITY TO COMBAT CC, WHILE MAINTAINING THE REQUIREMENTS OF THE URBAN HERITAGE

### Practical measures:

thermal insulation of buildings and revegetation of court yards to fight urban heat, maintaining biodiversity, wellbeing and health improved, incorporating the needs of the residents. Further example Strasbourg, whose completion is scheduled for 2022. The objective is to no longer pit architectural heritage against sustainable development and to combine its preservation with climatic issues.

<https://www.youtube.com/watch?v=CNKSwTTbVWg> (in French)



Greening in World Heritage City Bordeaux

# Key messages and recommendations

- Cultural Heritage is threatened by climate change at an unprecedented speed and scale. At the same time **cultural heritage offers solutions and inspirations to the climate crisis as well as to the affordable housing policy**
- **Cultural Heritage and Climate Change must be considered in all policies and planning decisions** (ministries of finance, economy, environment, spatial planning, mobility and culture) at all levels
- **Cross-sectorial cooperation on all levels including with the industrial sector must be enhanced**
- **Research programmes are the indispensable drivers** for implementation but are **missing mainly at the national level**
- **National authorities** must build capacity and start planning - training and **upskilling of experts** is central
- The **collection of 83 good practice examples** demonstrates effective adaptation and mitigation solutions and measures. Traditional and innovative, green solutions must be harmonised, together with a **scientific post-evaluation** of applied measures..
- **Decision-makers at the national, regional, and local levels must be incentivised through monetary and fiscal policies. Currently, there is no data available on the economic costs of adapting and mitigating cultural heritage.**
- A common platform is needed at the EU and national levels to collect and make accessible all relevant information.
- **The European Union is the worldwide leader in cultural heritage and climate change impacts and must become the leader in adaptation to enhance international cooperation.**



Dry stone walling



Demolition of buildings



Traditional farm houses



Orthodox church



Skokloster Castle