BRIEFING

European Parliament

The impact of climate change on cultural heritage

SUMMARY

Climate change, a global phenomenon, affects every aspect of our lives, including cultural heritage in both its forms – tangible and intangible. Extreme weather conditions expose these important elements of our cultural identity to serious threats. These threats must be addressed to protect valuable sites and preserve them for future generations.

Research on climate change is not a novelty, but climate change as it relates to cultural heritage is a relatively new area of exploration and policy. The impact of climate change on cultural heritage made its way to the Conference of the Parties to the United Nations Convention on Climate Change in Madrid in 2019 (COP25) and has become increasingly visible at subsequent COPs.

In 2003, the European Commission became the first European Union institution to launch a research project addressing the intersection of climate change and cultural heritage. Since then, the EU has expanded the scope and scale of its projects in this policy area. The EU's competence in cultural policy is limited to providing funds, which it does in the areas of cooperation, networking, exchange of best practices, research and education. Despite this limitation, EU-level policies offer a broad perspective, much needed given the interdisciplinary and global nature of this issue.

The dual challenge of climate change and protection of cultural heritage does not often feature clearly in European Parliament resolutions or European Commission policy documents. However, policy instruments are indeed available, and an integrated approach including not only economic, but also social, environmental, sustainability and identity dimensions of this complex issue is well underway.

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Introduction

Climate change has accelerated in recent years, with summer temperatures in parts of the EU reaching 40° C (and 35° C indoors). Successive droughts and torrential rains resulting in floods accompany these hikes in temperature. Ongoing melting of glaciers and ice caps is leading to rising sea and ocean levels, which will increasingly threaten coastal cultural heritage sites. Changes in humidity levels, fluctuations in freeze-thaw cycles and resultant biological degradation caused by microorganisms and insect infestations pose further threats to heritage buildings and sites.

The rapid increase in the frequency of climate-related extreme events necessitate deep investigation into their consequences for the cultural heritage sector. The results of such research can help us mitigate the impact of climate change on cultural heritage. However, it is important to acknowledge that adaptation measures can result in damage to or even loss of cultural heritage when improperly tailored to the specific situation. Local communities have valuable knowledge and skills related to their cultural heritage that can be instrumental in preserving it. However, the impact of climate change on these skills and knowledge, and the resultant effects on communities' ability to contribute to preservation and prevention efforts have not yet been sufficiently researched.

The wider awareness and recognition of climate change as a significant threat to world cultural heritage is a recent development. Only in 2005 did a group of concerned organisations and individuals bring the issue of the impacts of climate change on world heritage to the attention of the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Committee. Consequences of climate change are equally challenging for less-known, local cultural heritage not officially recognised by UNESCO. At stake are communities' potential for economic and social development, not to mention the value of local heritage as an identity factor.

Cultural heritage and climate change: Basic notions

The impact of climate change on cultural heritage is determined not only by the physical parameters of climate change but also by the type of heritage involved: tangible or intangible. Tangible cultural heritage can be movable (e.g. artefacts) or immovable (e.g. buildings). Intangible cultural heritage – traditions and local knowledge – is also at risk from climate change. As this very knowledge can help protect tangible cultural heritage, preserving it is all the more important.

Pre-existing vulnerabilities deriving from physical, social and cultural features increase the potential for cultural heritage to be adversely affected by climate change. Additionally, responses to climate change can themselves constitute a hazard when badly conceived or implemented. Such circumstances can lead to damage or, in extreme cases, loss of tangible heritage. Climate change-related displacements of populations and disbanding of communities can lead to loss of intangible heritage, with detrimental knock-on effects for tangible heritage.

Categories of hazards and elements of solutions

Climate change related hazards for cultural heritage include changing temperature patterns, such as extreme summer temperatures and warm or extremely cold winters, and changing precipitation patterns, which can lead to flooding or droughts, unusually strong storms and high winds. The resulting acidification and rising levels of oceans and seas, landslides, increased frequency of freeze/thaw cycles, wildfires, coastal erosion and rise in pollutants and bio-infestation, among other factors, can cause materials like stone and brick to crack and split, destabilising the structure of buildings and damaging archaeological and underwater sites.

Solutions to the challenging situation of cultural heritage in the context of climate change consist of combining actions in the areas of research, education, mitigation and adaptation. To guarantee a comprehensive response, economic consequences on global, national, regional and local levels must also be taken into account. Equally important are social and human aspects such as identity and the importance of cultural heritage for social cohesion. As climate change affects all populations and social strata, the process of measuring and monitoring hazards, and developing and implementing technical solutions, should be inclusive and include public participation.

Climate policy measures may impose requirements on cultural heritage buildings and sites, to reduce their carbon footprints. However, the energy-saving measures necessary to meet target parameters and preserve cultural heritage *in situ* can provoke tensions between those focused on energy savings and those focused on site preservation. Cultural heritage itself offers solutions and paths to explore for addressing climate change, as it contains a wealth of traditional knowledge of local conditions and solutions. For example, life cycle assessments of buildings offer locally rooted solutions and promote repair, retrofitting and reuse of materials and resources from these structures. The resulting longevity of historic buildings contributes to resource efficiency.

Cultural heritage and climate change: Global aspects

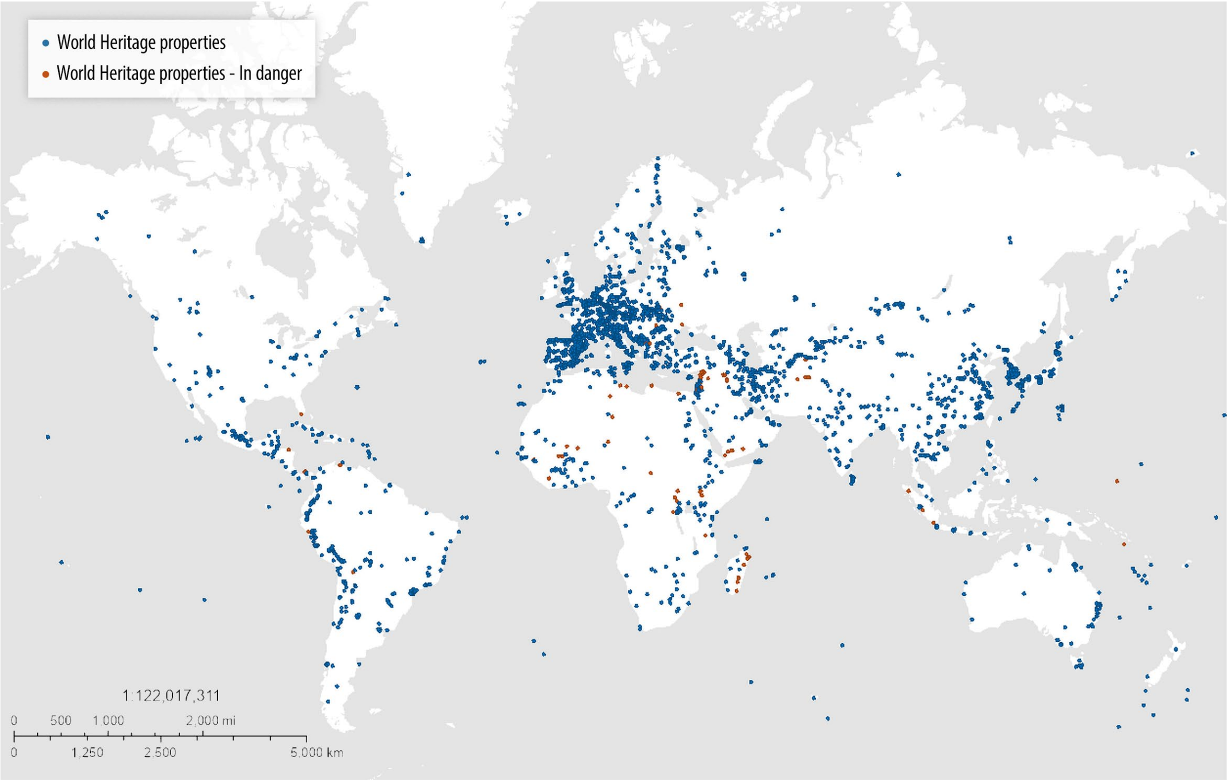
Once the impact of climate change on cultural heritage featured on the UNESCO agenda, the subject gained visibility in policy debates at international fora. UNESCO continued exploring these issues in various publications, such as its 2007 report on predicting and managing the effects of climate change on world heritage, which was quickly followed by a compilation of case studies on climate change and world heritage. As a result of these publications, in 2007 the General Assembly of States Parties to the World Heritage Convention adopted a policy document on the impacts of climate change on world heritage properties. In 2015, UNESCO's World Heritage Committee published a policy guidance document on integrating the 17 Sustainable Development Goals (SDGs) into the implementation of the World Heritage Convention. The United Nations (UN) had adopted the 17 SDGs earlier in 2015 as a 'universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity'. While the 11th goal explicitly refers to the need to 'strengthen efforts to protect and safeguard the world's cultural and natural heritage', all SDGs have links to cultural heritage and climate change.

The Council of Europe has initiated numerous debates and publications on climate change, its consequences and the challenges it poses to cultural heritage preservation. The body has reflected on its negative economic and social impact on local communities, such as a loss of identity, values and cultural diversity resulting from the increased vulnerability of cultural heritage sites and their subsequent degradation. It has also recognised traditional knowledge related to cultural heritage as a source of information for tackling climate change.

After the Greek government organised an international scientific conference on climate change and cultural heritage in Athens in June 2019, the issue made its way to COP25, the 25th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Madrid in December 2019. The Climate Heritage Network (CHN), a voluntary, mutual support network of government agencies, non-governmental organisations, universities, businesses and other organisations was launched in October 2019. CHN addresses climate change from the point of view of culture in a broad sense, from arts to cultural heritage, working to achieve the ambitions of the Paris Agreement. The Glasgow-Sharm el-Sheikh work programme was established at COP26 to facilitate the development of a framework to guide the achievement of the Paris Agreement's global goal on adaptation. Subsequent work included a focus on tangible cultural heritage; however, traditional and local knowledge, as well as that of indigenous peoples, were only recognised as a crosscutting consideration. At COP28 in December 2023, the United Arab Emirates and Brazil co-chaired a ministerial dialogue of the Group of Friends for Culture-based Climate Action at the UNFCCC. It focused on a wider understanding of climate change, encompassing cultural as well as environmental, financial and scientific challenges. The two-year Glasgow-Sharm el-Sheik work programme concluded at COP28 with the adoption of the UAE Framework for Global Climate Resilience. Protecting cultural heritage – both tangible and intangible – from the impacts of climate change is one of the framework's seven targets. Work towards the target is to be guided by indigenous, traditional and local knowledge.

The impact of climate change on a given type of cultural heritage varies considerably according to geographical location and socioeconomic situation. The UNESCO World Heritage List is perhaps the best-known register of important heritage sites around the world. Under the umbrella of world heritage, UNESCO (and most actors in the field) distinguishes cultural heritage sites from natural heritage sites and sites with mixed cultural/natural elements. However, the UNESCO list does not fully reflect the richness of world heritage. Gaining membership of this elite club is a long and costly process. The map below (Figure 1) reflects this situation: European sites feature predominantly, whereas other continents have comparatively fewer sites. Additionally, many sites outside of Europe are at a higher risk of damage due to climate change. Combined with the lower recognition of non-European sites at the UNESCO level, this situation results in an uneven level of research on and preparedness to address such threats in those regions.

Figure 1 – Map of UNESCO World Heritage sites



Source: UNESCO.

Table 1 presents the three continents with the highest number of world heritage sites affected by climate change since 1985. Despite having the largest number of UNESCO heritage sites by far, Europe is in second place in terms of number of sites affected – perhaps suggesting that heritage preservation actions already in place are working.

Table 1 – Regions where World Heritage Sites are most impacted by climate change

Region	Number of WH sites impacted	% out of WH sites impacted globally	Natural and mixed heritage sites impacted	Cultural heritage sites impacted
Africa	24	27	7	17
Europe	21	24	4	17
Asia	15	17	7	8

Source: ICOMOS & ICSM CHC, 2022.

Cultural heritage and climate change in EU policies

The EU has limited competence on cultural policies, which are primarily a national responsibility. Its role is to support Member States in their actions in this area, which generally translates into issuing non-binding recommendations on specific issues and helping create networks and cooperation platforms. Such tools guide Member States through the challenging task of combining climate change policy and efforts to preserve cultural heritage. The EU is well-placed to identify policy gaps and boost the necessary interdisciplinary research across the continent. Climate change is a global phenomenon, and although its expression varies according to geographical location, approaches to tackling it developed in the EU could even have impact beyond the EU's borders.

As tangible heritage has been the focus of EU heritage preservation efforts thus far, this briefing will present how the EU addresses climate change-related threats to heritage sites, archaeological sites, historic buildings, parks and gardens, and underwater cultural heritage.

Key EU initiatives

A December 2019 European Commission communication on the European Green Deal comprehensively presented climate change issues for the EU to address. However, it did not explicitly mention cultural heritage. The 2021 Europa Nostra and International Council on Monuments and Sites (ICOMOS) publication 'European Cultural Heritage Green Paper – Putting Europe's shared heritage at the Heart of the European Green Deal', co-funded from the EU Creative Europe programme and the European Investment Bank Institute, provided the missing link between the European Green Deal and cultural heritage. It recommended the inclusion of energy efficiency measures in heritage buildings, use of traditional construction materials, deepening knowledge of traditional buildings techniques, and including cultural heritage in the Renovation Wave. The report also highlighted that cultural heritage is itself a source of sustainable solutions and a potential means by which to promote the green transition.

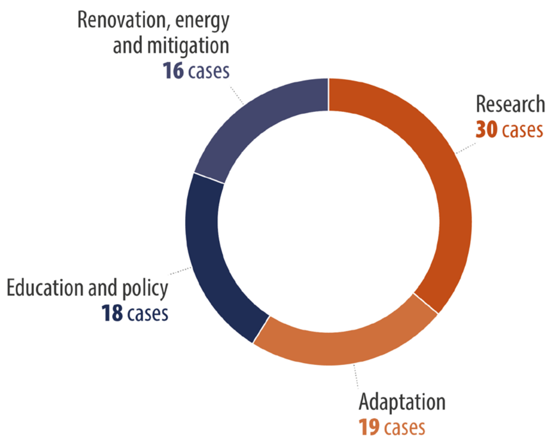
At the conclusion of the European Year of Cultural Heritage (2018) the European Commission issued the European Framework for Action on Cultural Heritage. The document focused on endangered cultural heritage and drew attention to climate change as a threat. It presented a set of actions to be taken to protect cultural heritage by managing risks and improving resilience against natural disasters and climate change. These included the research, development and dissemination of evidence-based, cost-effective strategies and tools.

The Work Plan for Culture 2019-2022, adopted by the Council in December 2018 at the conclusion of the European Year of Cultural Heritage, included sustainability in cultural heritage in its priorities. It announced the establishment of an Open Method of Coordination (OMC) expert group on strengthening cultural heritage resilience for climate change as a related action. Experts were also to deliver a 'comprehensive analysis and recommendations regarding the quality principles to be applied throughout interventions affecting the historical environment'.

The current Work Plan for Culture (2023-2026) priority in this area takes a broader perspective and focuses on 'risk preparedness in cultural heritage and on strengthening cultural heritage's resilience to climate change'. It highlights that cultural heritage can be a source of good practice and knowledge regarding climate adaptation, and the role culture can play in triggering climate action.

The results of discussions of experts from 25 EU Member States and three associated countries in the OMC group were published in a 2022 report. The experts arrived at the alarming conclusion that climate change has been affecting cultural heritage at an unprecedented speed and scale. At the same time, awareness of and proper policies and actions plans to tackle the impact were lacking both at EU and Member State levels, with 9 of the 28 countries that took part lacking a legal framework for heritage and climate change. Only seven countries (Ireland, Greece, Italy, Cyprus, Slovenia, Finland and Sweden) had plans to coordinate their policies on climate change and cultural heritage. To support its reflections on the implications of climate change for cultural heritage, the report included case studies detailing Member State actions in this domain. The majority of case studies focused on tangible heritage, and only seven dealt with underwater heritage. Figure 2 shows that research dominated in the report, as it probably did in total actions undertaken by Member States. Renovation and mitigation ranked the lowest, which reflects the long-missing link between the Green Deal and cultural heritage.

Figure 2 – Main categories of case studies



Source: OMC report, European Commission, 2022.

The report highlighted that cultural heritage should not be seen solely as a victim of climate change, but also as a source of reflection and answers to related challenges. It highlighted the need to strengthen cultural heritage resilience to climate change and to commit to fight climate change. On mitigation and adaptation to climate change, the authors recommended careful planning and a holistic approach that considers the whole life cycle of a heritage building as well as embodied, or grey, energy (the total energy used to create a product). They stressed the importance of research, such as studies on the future energy demands of built heritage, and education to strengthen interest in and care for cultural heritage – which, they noted, is an important identity factor. Another recommendation was to evaluate the scale and dimensions of climate change damage and loss of cultural heritage. To this end, actors would need a coherent methodology for obtaining reliable information, quantitative data (for example on the number of sites under immediate and long-term threats) and knowledge on rates and forms of decay affecting indoor, outdoor and underwater tangible heritage and potentially leading of intangible heritage. The authors encouraged the EU to develop financial incentives, necessary resources, and inventories and platforms for monitoring and information exchange.

The report analysed good practices, including climate-neutral use of heritage sites, the reuse of materials and building methods, and responsible preservation techniques. The authors proposed recommendations for professionals and policy-makers at all levels of decision-making. They suggested updating the New European Agenda for Culture to take into consideration the adaption of cultural heritage to climate change. They recommended the Commission assess the economic costs of climate change mitigation with regard to heritage, and urged national, regional and local authorities to use monetary and fiscal policies, such as creating incentives for investment, to safeguard cultural heritage. It pointed to the utility of an assessment map of cultural heritage at risk in Europe, and encouraged structured cooperation between different levels of governance.

The New European Bauhaus initiative (NEB), mentioned in both the OMC report and the Europa Nostra document, was first announced in Commission President Ursula von der Leyen's State of the Union speech in September 2020. This new interdisciplinary initiative encourages community projects that combine aesthetics embodied in culture and arts with sustainability. It is linked to the Renovation Wave initiative on greening buildings, which points to the need to safeguard heritage during renovations. As buildings are responsible for about 40 % of total EU energy consumption, it is crucial to look for energy gains in buildings. Heritage buildings constructed using traditional techniques offer a sustainable and resilient solution for energy neutral living, but their maintenance requires knowledge of traditional artisanship. Engaging with representatives of technology, innovation, arts, crafts, culture, local communities and people of all age groups guarantees the consideration of as many social, ecological, technological and scientific aspects as possible in addressing climate change, energy transitions, and preservation of cultural heritage and landscapes.

European Parliament debates and resolutions

After significant flooding of the Venice UNESCO cultural site in autumn 2019, the European Parliament held a debate with the Commission on the EU's response to extreme meteorological events and their impacts. The focus was on protecting European urban areas and their cultural heritage through climate adaptation and risk management policies. Extreme events like the Venice flood are becoming increasingly frequent, and have been attributed to climate change.

In June 2020, Parliament adopted a resolution approving the Commission's proposal to mobilise the European Union Solidarity Fund (ESF) to assist Portugal, Spain, Italy and Austria following natural disasters in those countries. The largest share of costs that the EFS could cover (over €479 million) related to expenditure for restoring preventive infrastructure and protecting cultural heritage.

Parliament's resolution of January 2021 on an effective policy legacy for the European Year of Cultural Heritage addressed the impact on cultural heritage of factors such as global warming and climate change, with regard to increased occurrences of extreme weather events. Members of the European Parliament stressed the need for knowledge-sharing between the Member States, and called on the Commission to propose concrete actions for preserving and protecting cultural heritage in light of these natural and man-made hazards. The Parliament called for increased budget allocations for heritage research in Horizon Europe, and synergies between various EU funds, in particular the European Structural and Investment Funds, Horizon Europe, Creative Europe and LIFE. Parliament stated that investment in cultural and sustainable tourism infrastructure should be considered small-scale and eligible for support where co-financing from the European Regional Development Fund does not exceed €10 million. In cases where infrastructure was considered world cultural heritage, the ceiling should be raised to €20 million.

Three months later, in its resolution on cohesion policy and regional environment strategies in the fight against climate change, Parliament called for environmental and social criteria and preservation of natural heritage to be given the same consideration as economic criteria when determining eligibility for EU funding. The rich contribution of arts and culture to raising awareness of issues such as environment, climate, sustainability and social dimension, and to inspiring positive behavioural change was highlighted in the European Parliament resolution of December 2022 on the implementation of the new European agenda for culture and the EU strategy for international cultural relations. Parliament noted that traditional knowledge is part of cultural heritage and can help enhance climate change mitigation and adaptation efforts. Civil society and national and local organisations could be instrumental for raising awareness among citizens. The resolution pointed to the importance of sustainability during the restoration of cultural heritage and traditional buildings, and the NEB initiative's potential to contribute to the protection and restoration of cities and their cultural heritage in the event of natural or human-induced disasters.

The Commission reacted to the resolution, stressing that cultural heritage is at the heart of EU cultural policy. It highlighted several initiatives and processes, such as the EU Climate Risk Assessment, the EU Mission on Adaptation, and the Commission guidelines on updating national adaptation strategies.

EU support for projects on climate change and cultural heritage

An array of EU programmes and initiatives offer funding and cooperation opportunities for the protection of cultural heritage against threats from climate change.

Horizon programmes

Horizon 2020, together with its predecessors and its current successor Horizon Europe, have provided EU funds for research and innovation projects and cooperation across the EU and beyond.

This has been a prominent source of funding for many projects addressing a broad range of issues related to climate and cultural heritage.

Research projects

In 2003, the Commission launched the world's very first call for a research project on the impact of climate change on cultural heritage. Research from the project, Noah's Ark (2004-2007, €1.7 million) concluded for the first time that climate change had a severe impact on outdoor built heritage and cultural landscapes. It resulted in the publication of The Atlas of Climate Change Impact on European Cultural Heritage Scientific Analysis and Management Strategies, which would underpin subsequent EU policy on sustainable development, climate change and cultural heritage.

Rising sea and ocean levels due to climate change constitute the biggest threat to cultural heritage in Europe. As a result, the bulk of research projects focus on coastal areas, which host a large share of the heritage endangered in this way. For example, in the HYPERION project (2019-2022, almost €6 million), a system of sensors monitored climate impact on a small, local scale at four heritage sites (three of which were coastal) in participating countries: Greece (Rhodes), Spain (Granada), Norway (Tønsberg) and Italy (Venice). As coastal communities also need to address cultural landscapes, which face serious risk, projects such as RescueME (2016-2019, €6.5 million and a further €4 million for 2022-2023) conduct research at the intersection of cultural landscapes and local communities. Their aim is to co-develop inclusive and just resilience strategies and innovative solutions to protect European cultural heritage and cultural landscapes from climate change.

Also related to rising sea levels, underwater cultural heritage is a niche area of climate change research. The ongoing THETIDA project (2023-2026) was granted almost €7 million to provide preventive conservation strategy for underwater and coastal sites, identify threats, and promote adaptation, reconstruction and other post-disruption strategies. Past projects HERACLES (2016-2019, €6.5 million) and STORM (2016-2019, over €7 million) boosted climate change adaptation and resilience of underwater cultural heritage sites.

Networks, platforms and hubs

As well as directly co-funding research projects, Horizon Europe and its predecessors (and other EU initiatives) have set up networks, platforms and hubs to bring together interested parties to aid cooperation and procurement of funds for joint research. Horizon Europe's Pillar 2, Cluster 2: Culture, Creativity and Inclusive society, a relatively new part of the programme, supports innovation, job creation and improved working conditions in cultural sectors. It can also be used to finance projects which increase access to common heritage through high-quality digitisation and curation of digital heritage assets. For example, the SHIFT project harnesses digital tools such as artificial intelligence and machine learning to improve access to cultural heritage for Europeans with disabilities.

The European Institute of Innovation and Technology, an innovation network, was founded in 2008. It set up nine knowledge and innovation communities, ecosystems of partnerships which aim to find and commercialise solutions to pressing global challenges such as climate change. One of them is dedicated to cultural and creative sectors and industries and covers cultural heritage.

The Joint Programming Initiative on Cultural Heritage and Global Change (JPI CH) provides a forum for Member States and third countries to collaborate on strategic research (including on cultural heritage and climate change) and build synergies. It brings together national research funding organisations, ministries and research councils from Europe to address societal challenges in the European Research Area framework. A recent collaborative research action by the JPIs on Cultural Heritage and Climate and the Belmont Forum investigates the ways cultural heritage can be a resource for climate mitigation and adaptation, and sustainable development solutions for heritage.

European Regional Development Fund

Cultural heritage can benefit from cross-border and regional cooperation among heritage sites that face similar climate-related threats. Funding such projects is in the purview of the European Regional Development Fund (ERDF). For instance, in the framework of its Interreg Central Europe programme, the ERDF supported the ProteCHt2save project on risk assessment and sustainable protection of cultural heritage in a changing environment. The project aimed to build public- and private-sector capacity to mitigate the impacts of climate change and natural hazards on cultural heritage sites, structures and artefacts. An Interreg Northern Periphery and Arctic research project, Adapt Northern Heritage (2017-2020, almost €400 thousand), investigated the environmental impacts of climate change on areas in the Arctic and northern periphery, where communities are geographically dispersed. Accelerating climate change threatens the region's cultural heritage, which has always been fragile as a result of harsh natural conditions. The nature of the region necessitates strong involvement of communities in preserving their dispersed cultural heritage.

The ERDF also provides financing for projects on the green transition, energy efficiency and retrofitting. Such projects can decrease the environmental impact of cultural heritage sites and buildings by adapting them to green energy requirements, while mitigating their vulnerability to climate change. For example, ERDF funding was used to update the thermal insulation of the Ketrzyn castle in Poland.

Erasmus programmes: Educational projects

Addressing climate change threat to cultural heritage requires educating future professionals, as well as fostering interdisciplinary and cross-border cooperation and providing training in necessary skills and competencies. This is the scope for action of the Erasmus and Erasmus+ programmes.

For example, in the Erasmus+ co-funded HERITAGE-PRO project, experts from five European countries cooperated to develop a training programme for professionals working in cultural heritage preservation. The European Cultural Heritage Skills Alliance, also funded by Erasmus+, addresses shortages and mismatches of skills in the cultural heritage sector (including skills necessary to face challenges of climate change), identifying gaps between what educational institutions offer and what the sector needs.

Creative Europe

Cultural heritage features in the culture strand of Creative Europe, the only EU funding programme devoted solely to culture and media. The programme co-funded a pilot project, the European Heritage Hub (EHH), inaugurated in May 2023. In line with the European Framework for Action on Cultural Heritage, the hub provides a network for stakeholders in the domain of cultural heritage. According to the EHH website, cultural heritage is situated at the intersection point for the triple (green, digital and social) transformation. Cultural heritage 'as a motor of climate resilient sustainable development' is one of the five framings by which the EHH aims to explore this intersection. The EHH's work includes many projects on the interconnection between climate change and cultural heritage.

Digital Europe

With the massive digitisation of the economy and the society, culture has become a main field of interest among users and businesses. Digital preservation of cultural heritage and cultural assets is therefore one of the Commission's priorities. Efforts in this field can receive funding through the Digital Europe programme. Digital tools can be used to preserve cultural heritage and assets for future generations. This is of particular importance as regards preserving the memory of heritage sites and assets endangered by climate change and rising sea levels. As data has become central for future technological development, the common European data space for cultural heritage, an EU initiative funded under the Digital Europe programme and announced in a November 2021

Commission recommendation, has become of paramount importance. The goal is to make digitised cultural heritage images, such as 3D models of historical sites and high quality scans of paintings, available to museums, galleries, libraries, and archives across Europe for sharing and reuse. Europeana, the European digital cultural platform, will serve as the base for the data space. Europeana has benefited from financial support from the Connecting Europe Facility.

Urban policy

Cultural heritage is an important part of urban landscapes and its conservation is fundamental for the sustainable development of towns and cities facing climate-related threats. As the example of Venice showed, climate change can dramatically affect urban cultural heritage. Consequently, urban policies have a role to play in addressing it.

The New Leipzig Charter, adopted in November 2020, pointed out the role cities play in shaping Europe's urban heritage and the identity of its citizens, and stressed the importance of preserving and revitalising built heritage of outstanding cultural value. It also noted that as climate change has a 'direct and local impact on towns and cities throughout Europe', there was therefore a need for action on climate change and cultural heritage via urban policy and funding. The Urban Agenda for the EU is a mechanism gathering the Commission, national ministries, city authorities and other stakeholders to help introduce better laws, facilitate access to funding and improve knowledge sharing on issues relevant to cities. It includes climate adaptation, culture and cultural heritage among its priorities.

Facing future challenges

Many of the EU funding schemes and programmes mentioned above already provide what is needed to tackle future threats to heritage: joint investigations on climate change's impact on various types of cultural heritage, high-level measurements and monitoring tools, and dedicated networks and hubs. The recently established data space for cultural heritage is an important addition to these instruments.

The new EU dual policy area of climate change and cultural heritage is deeply entwined with the triple transformation (green, digital, social). Ambitious, top-quality research efforts is needed to address this complex and urgent issue. Careful consideration is necessary to avoid maladaptation and minimise negative impact on local populations that could damage intangible heritage. The challenge is even greater given difficult economic and social contexts, and growing fears of quickly-developing AI. Ongoing actions address elements ranging from global sustainability, environmental issues and biodiversity to embodied energy and the circular economy; from grassroots participation, education and awareness to energy efficiency, retro-fitting and use of traditional materials; from land use to urban policy; and much more.

While there are costs associated with this multitude of actions, the cost of inaction would be higher. Experts have stressed the urgency of incorporating cultural heritage considerations into all policy areas and funding programmes. Most importantly, cultural heritage should have a place in climate legislation and funding for climate change research, monitoring and data collection. Achieving this would require taking into consideration economic, environmental and social costs, and utilising the wealth of traditional and local knowledge that cultural heritage itself provides.

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