BRIEFING

European Parliament

Museums, libraries and archives in the face of climate change challenges

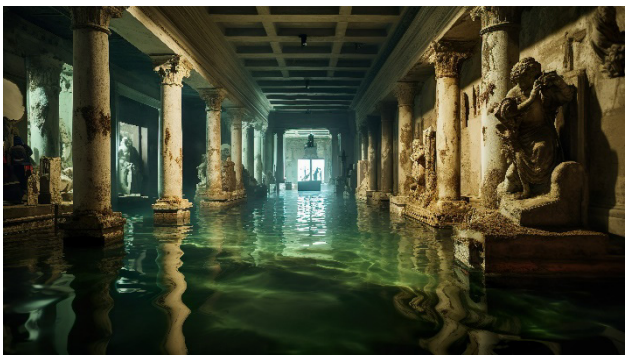
SUMMARY

Museums, together with archives, galleries and libraries (GLAM), are guardians of collective memory and cultural heritage. They take care of and protect artefacts of historic and artistic importance that testify to the evolution of humanity and its artistic and intellectual achievements. These artefacts have been collected and stored in museums and their reserves for future generations to enjoy, study and research.

However, their future is at stake owing to climate change, global warming and unstable weather conditions. Hikes in temperature, torrential rain and floods put GLAM infrastructure in a challenging position given the need to guarantee safe conditions to accommodate all kinds of artefacts made from materials such as paper, leather, canvas, silk, wood, stone and bronze. Each category requires different storage conditions as regards temperature, humidity, exposure to light, etc. If such conditions are not guaranteed, the integrity of these artefacts is threatened by mechanical, chemical and biological factors.

In attempting to address these challenges, GLAM buildings also need to adapt to energy efficiency requirements. This, together with necessary adaptations to indoor conditions for the exhibition and storage of valuable artefacts for their proper preservation and preventive conservation, as well as digitisation, require human and financial resources, upskilling and training. Budgets for GLAM institutions, particularly for museums, are limited however owing to the drop in their revenues during the COVID-19 lockdowns, rocketing energy prices and pressure on state budgets.

The European Union is involved in helping GLAM institutions face all these challenges, coordinating expert studies on technical issues, defending budgets for cultural institutions, working on recommendations and exchanging knowledge and experience gathered by museums.



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Introduction

Museums are very special places and play an important role in a society. The International Council of Museums (ICOM) provides a new definition: 'A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing'. This assigns an ambitious task to museums at a time when these public institutions face financial challenges after long periods of closure due to COVID-19 sanitary concerns, followed by limited access, both of which weighed heavily on their budgets. This was followed by Russia's war against Ukraine, which resulted in soaring energy prices while museums are obliged to keep strict temperature and humidity conditions to preserve their collections.

All this has happened in the context of climate change, which has accelerated in recent years with temperatures during the summer reaching 40°C in some areas of the EU, and going up to 35°C indoors in some galleries, libraries, archives and museums (GLAM) across the continent. These conditions require costly and ever-increasing energy consumption due to the air-conditioning necessary to cool museum areas and to bring the temperature and humidity to a level that does not threaten the preservation of artefacts. These are just two out of 10 'agents' endangering collections of movable cultural heritage. In addition to these two factors, successive droughts and floods, which put the collections at risk, accompany the hikes in temperature. The melting of glaciers and ice caps will result in rising sea and ocean levels, threatening the existence of coastal museums such as the Museum of European and Mediterranean Civilizations in Marseille, constructed in the port area at sea level. Due to the rising sea levels, replicas of hundreds of Palaeolithic wall paintings from the submerged Cosquer Cave were moved to a new museum in its neighbourhood. These conditions result in the spread of invasive species and pests, another agent of deterioration.

International developments and museums' choices

As the acceleration of climate change-related meteorological phenomena threatens the whole planet and human activity, the time is ripe to evaluate the situation of museums as particular sites of human memory. Given the wide range and diversity of GLAM collections (paintings, sculptures, photographs, manuscripts, old prints on various supports, archaeological artefacts, mummies, scientific heritage items, etc.), the subject is complex and interest in it is relatively new.

The Climate Heritage Network (CHN) of government agencies, NGOs, universities, businesses and other organisations was created in Edinburgh in October 2019 to include the cultural dimension (artistic and cultural activities and heritage) in climate policy. This initiative is part of the legacy of the European Year of Cultural Heritage 2018, as stated in its final document, 'European framework for action on cultural heritage', which highlighted the urgency of climate change issues in cultural heritage preservation. COP25 in Madrid in 2019 saw the ICOMOS (International Council on Monuments and Sites) launch its climate change message – 'Cultural Heritage Can Help!' – and later agree to play a role as the CHN's secretariat. COP26 in Glasgow in the autumn of 2021 added momentum to reflect on specific challenges for museums resulting from climate change.

More than a decade ago, UNESCO's World Heritage Committee had already launched a reflection on the inclusion of 17 Sustainable Development Goals (SDGs) in the World Heritage Convention in the form of a policy guidance document. The United Nations adopted 17 SDGs 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'. Although only the 11th goal refers to the need to 'strengthen efforts to protect and safeguard the world's cultural and natural heritage', all of the SDGs make provision for cultural issues. Thus, museums need to address sometimes competing objectives: to keep their strained public budgets under control, preserve collections for future generations, implement sustainability goals, and follow environmental guidelines.

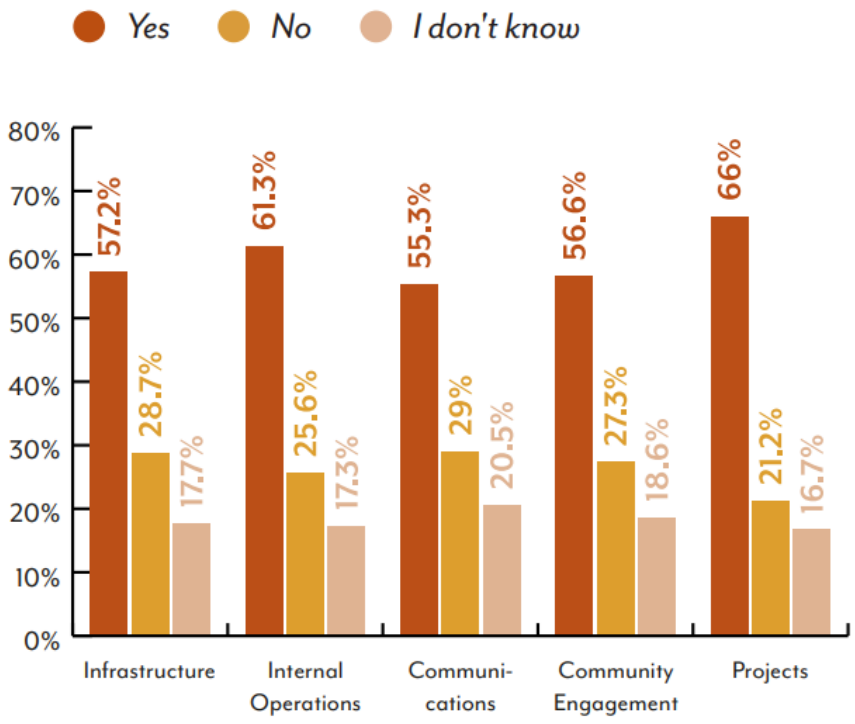
Areas of action to protect GLAM from climate change

According to one of Europe's leading museums, 'new developments in preventive conservation, take into account both the preventive conservation and environmental sustainability objectives of cultural institutions, advocating for loosening these environmental guidelines' as regards temperature and relative humidity in exhibition or storage spaces. However, there are 'no coherent methodologies for obtaining reliable information, quantitative data or deep knowledge about the decay and loss of cultural heritage' to properly assess the risks and indicate solutions.

Based on the 'Mobilising Museums for Climate Action' toolbox, developed at COP26, a November 2022 NEMO survey on 'Museums in the climate crisis' analysed the following aspects and actions:

- **mitigation actions** to reduce greenhouse gas emissions or support their removal (as regards energy, waste, buildings, food, and supporting nature to remove emissions)
  - *through* museums: museums must support society in massively reducing greenhouse gas emissions by raising awareness of people's role in climate action and necessary skills to use less, waste less, and make sure that anything they do use is renewable
  - *in* museums: museums must significantly reduce greenhouse gas emissions in all aspects of their activity, ensuring that all involved in the institution's operations know and are empowered to play their role in climate action;
- **adaptation actions** that help people, property and nature face climate impacts
  - *through* museums, which must support people and the environment, to face and cope with challenges posed by current and potential impacts of climate change
  - *in* museums, which must understand the impact of climate change on them, and adapt their practices, location, programmes and collections accordingly;
- climate action as part of sustainable development, climate justice and a just transition.

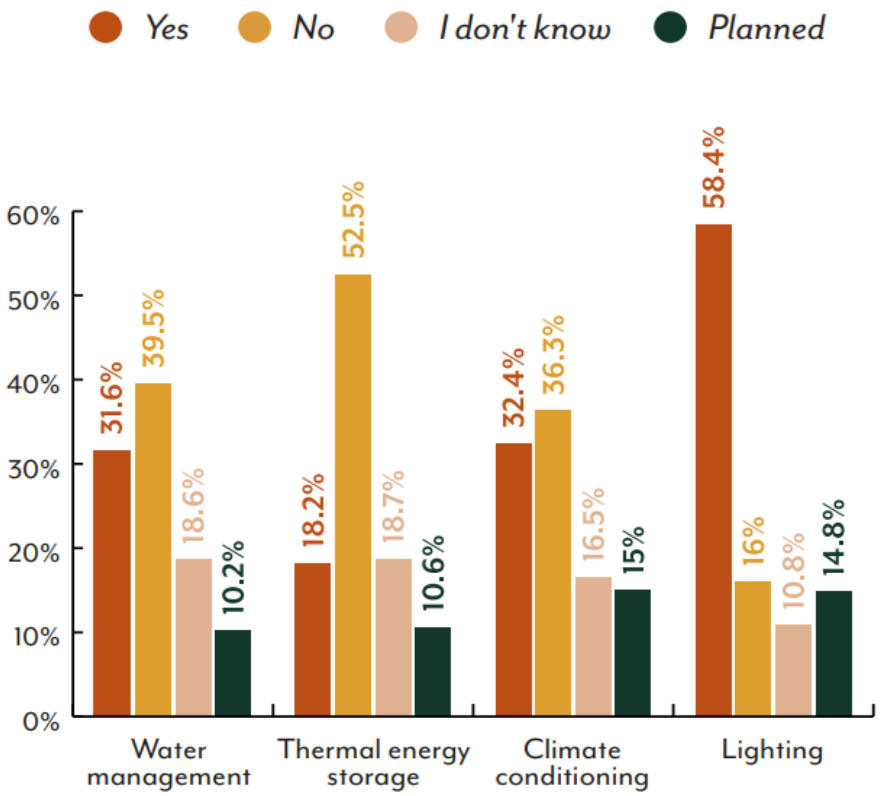
Figure 1 – Areas where the museum takes climate action or applies sustainable methods



Source: Museums in the climate crisis, November 2022.

The museums highlighted in the survey engage in various activities in relation to climate change, including aspects such as infrastructure, community engagement, internal operation, communications and projects (Figure 1), or installations for water management, thermal energy storage, climate conditioning and lighting (Figure 2). However, while eight out of 10 museums in Europe have acknowledged climate change and sustainability as important strategic topics, only four in 10 museums have methods or criteria to measure and assess their own efforts at sustainability.

Figure 2 – Climate-friendly or neutral technical installation



Source: Museums in the climate crisis, November 2022.

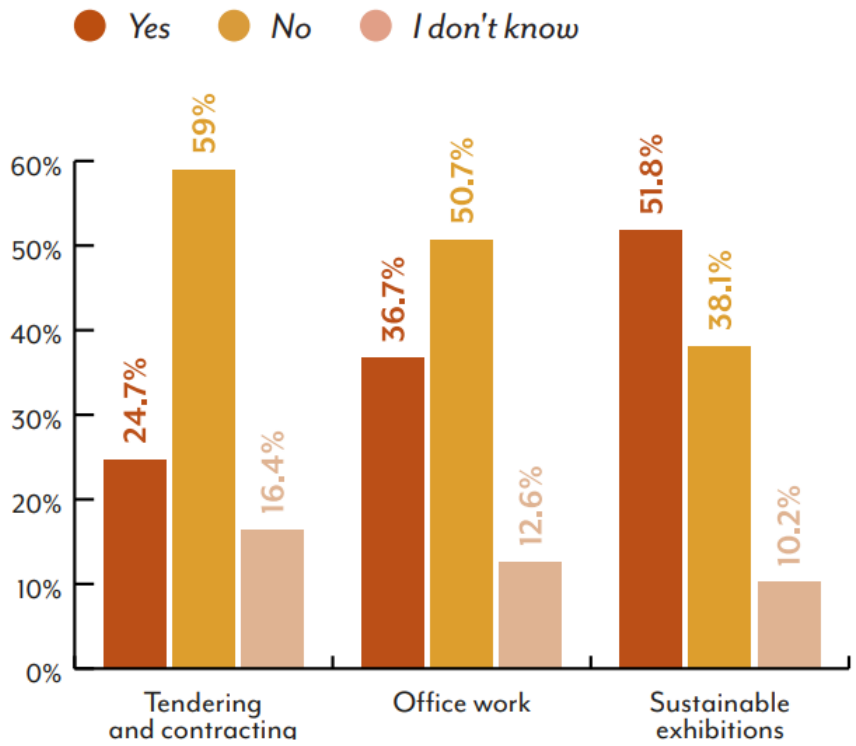
Only three out of 10 museums have analysed potentially challenging climate impacts, and two-thirds of them report that they do not have sufficient knowledge about the UN SDGs and climate action. Moreover, almost 60 % of museums are not involved in climate change research.

More than six out of 10 museums do not have or do not know about guidelines for sustainable tendering and office work. Half of them claim to have guidelines for more sustainable exhibitions, which seems to be an area where the progress towards sustainable museums is the most advanced (Figure 3).

The survey's authors advanced some recommendations to address gaps they had highlighted. These relate to factors which, according to museums, impede the inclusion of sustainability and climate change issues in managing their premises and collections.

The lack of funding features at the top of this list (Figure 4), and takes a prominent place among the recommendations for museums. Museum infrastructure requires investments to ensure energy-efficient buildings thanks to climate-friendly or neutral constructions, including roof and wall insulation, high-efficiency glass, and nature-based solutions to ensure they function sustainably.

Figure 3 – Sustainability guidelines



Source: Museums in the climate crisis, November 2022.

Funding for cross-sectoral global networks and umbrella organisations could help them share skills, expertise and knowledge on climate change-related issues in museums and their collections, and encourage risk assessment, adaptation and mitigation for museums. Financial support is also needed to upskill and train staff to contribute to museums' sustainable transition and to support society's just transition.

Museums report that they lack support from public administrations in their efforts and policy direction; these administrations need to ensure that guidelines, standards and reporting requirements reflect all aspects of museum work and support sustainable goals. A dedicated climate change strategy for museums is also necessary.

Governing and funding bodies need to cooperate with museums and take collective decisions to the benefit of the museum and the public. Similarly, the digitalisation of museum collections is recommended as a way of preserving knowledge among professionals and access for the public. Finally, the survey reflects the insufficient focus on movable cultural heritage in GLAM institutions.

A 2021 study investigated these issues, among others, providing specific examples of phenomena such as changed freeze-thaw and salt crystallisation cycles, which affect museum walls and can cause collections to deteriorate. The authors conclude that some risks remain under-researched. In addition, there is a lack of knowledge about synergies between parameters resulting in direct and indirect, immediate and long-term effects on various materials, objects, buildings and sites. Urgent action is needed to assess the risk and vulnerability of cultural heritage sites to climate change.
The Rijksmuseum CLIMATE4WOOD project on furniture and paintings on wooden panels searched for specifications for museum indoor temperature and humidity levels that are safe for such artefacts while keeping energy consumption to a minimum. The research combined artefact preservation and energy efficiency concerns so that the museum reduces its carbon footprint.

EU action to protect museums and their collections

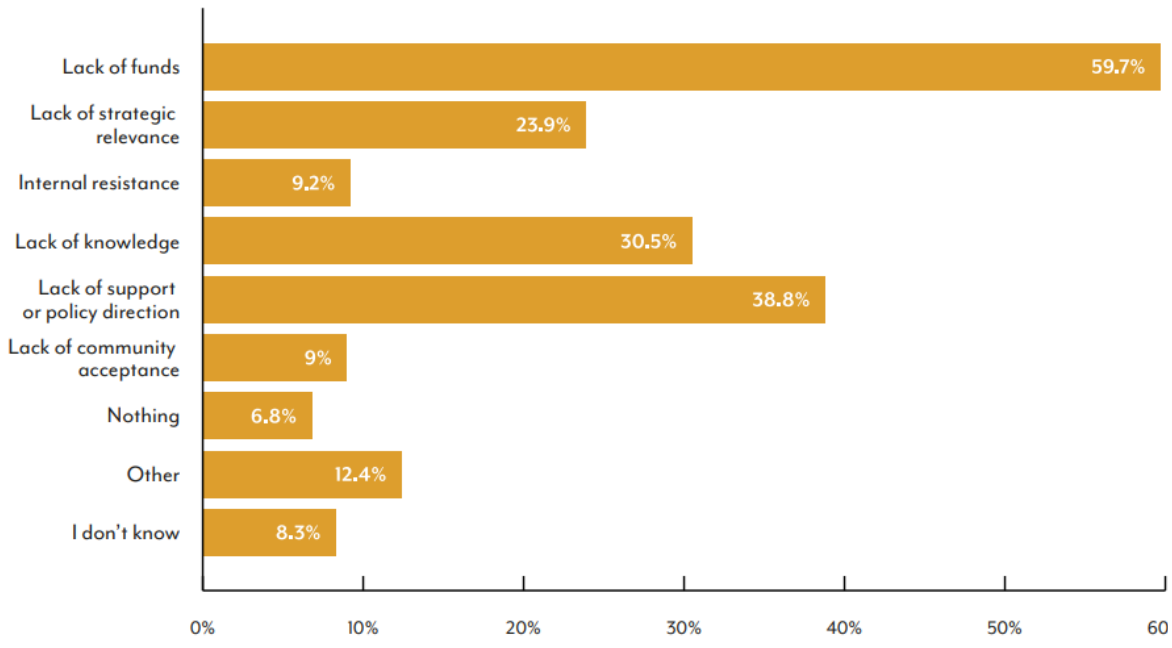
The Council conclusions of June 2020 on risk management in cultural heritage recalled that artefacts, as part of cultural heritage, are an important source of identity. The European Council invited Member States to 'enhance the significant role in risk management played by authorities, cultural institutions', such as GLAM, citizens and civil society, and highlighted the need for close cooperation between them.

Between January 2021 and April 2022, a group of 50 experts from 25 EU Member States plus Switzerland, Norway and Iceland attended the open method of coordination (OMC) meetings reflecting the priority on 'sustainability in cultural heritage' in the European Council's Work Plan for Culture 2019-2022. They studied the impact of climate change on cultural heritage and collected best practice examples to protect and safeguard Europe's cultural heritage.

The group adopted the report on 'Strengthening cultural heritage resilience for climate change – Where the European Green Deal meets cultural heritage', with 10 key recommendations. The report highlighted the fact that not much information is available on movable cultural heritage displayed and stored in museums, historic houses, archives and libraries, 'mainly due to the lack of research on the influence of the future climate or climate events on indoor climate conditions and thus the stability of museum collections and written heritage'. However, the experts suggested that museums were 'excellent vehicles for engaging citizens in the decarbonisation challenge as strong actors in this transition'. They also provided examples of how curators and conservators could contribute to the 169 targets defined in the 17 SDGs, going beyond the care of movable cultural heritage stored in their institutions, among other suggestions, and thus assigned museum staff a new task in addressing climate change in the context of SDGs and citizens' engagement.

A July 2022 Commission document, 'Stormy Times – Nature and humans: Cultural courage for change', prepared by the OMC expert group on the cultural dimension of sustainable development, tried to estimate CO_2 emissions by various cultural sectors, including museums. Thus, museums' efforts to preserve their artefacts include the preventive conservation and predictive maintenance of the items, energy efficiency investments, SDGs and a mission to engage citizens.

Figure 4 – Factors impeding the museum's sustainable transition



Source: Museums in the climate crisis, November 2022.

As digitisation is another important aspect of artefact preservation for future generations, museums can also benefit from the EU's Digital Europe programme for the development of infrastructure and training of necessary skills. The digital cultural platform Europeana, funded from the Connecting Europe Facility infrastructural fund, aggregates the digital cultural heritage of some 3 000 European libraries, museums and audiovisual collections to make over 50 million items widely accessible. It will be the basis for building a common data space, the 'European Collaborative Cloud for Cultural Heritage', a contribution to one of the EU's flagship initiatives. It will allow GLAM institutions across Europe to share and reuse digitised cultural heritage images, such as 3D models of historical sites and high quality scans of paintings, providing digital infrastructure for collaboration between cultural heritage professionals across the EU. The recently established Horizon Europe – Cluster 2: 'Culture, creativity and inclusive society' provides the necessary funding.

Research on the climate-museum relationship can be useful in discovering past climate-related events. Thus, the Joint Programming Initiative on Cultural Heritage and Global Change (JPI CH) organised a joint workshop with the Joint Programming Initiative on Connecting Climate Knowledge for Europe (JPI Climate) to gain insights into periods when people faced and adapted to extreme weather events, with similar peaks and even higher frequencies. The data from investigations into different types of heritage assets (such as old cemeteries, maps, and wooden beams from ancient buildings or archaeological collections) can provide researchers with information and data to help build climate models.

The Creative Europe programme can provide funding for projects such as FirstEurope, dealing with citizens' involvement in activities focused on climate change in museums. It also supported the work on the European Cultural Heritage Green Paper by Europa Nostra and other bodies, highlighting the role of cultural heritage in achieving the Green Paper's goals.

European Parliament

In its resolution of 20 January 2021 on achieving an effective policy legacy for the European Year of Cultural Heritage that it had initiated in 2017, Parliament was concerned with the impact of climate change and global warming on cultural heritage. It stressed that the European Green Deal should include actions to mitigate this impact, recognising that cultural heritage can play an important role in achieving the climate sustainability goals through the readaptation of sustainable, traditional European practices.

In its resolution of 14 December 2022, Parliament defended the use of traditional substances used in original works, which are necessary for their restoration. A careful assessment of the socio-economic benefits derived from the use of such substances against the risk posed to human health or the environment is needed, as a ban would provoke a crisis in the sector.

Challenges ahead

EU funds alone will not be enough to help museums cope with their challenging tasks in protecting their artefacts from climate change, digitally preserving them, and/or moving them to safer places (such as the Louvre museum's conservation and storage facility for the Louvre Lens). Compliance with energy efficiency requirements, engagement with citizens on climate change in general and on their premises, and supporting SDGs are all ambitions which require financial and human resources, as well as upskilling of the staff and equipping of premises. However, the COVID-19 lockdowns deprived museums of a considerable portion of their revenues, putting some of them on the verge of bankruptcy.

The budget for public support is under pressure from rocketing energy prices affecting both citizens and publicly funded institutions. European museums are also helping to protect Ukraine's cultural heritage, museums and collections from destruction as a result of Russia's war against the country, which has deliberately targeted cultural heritage and establishments. There is also a need to invest in energy efficiency. Nevertheless, given the urgency of the climate emergency, dedicating adequate resources to preserving Europe's collective memory and heritage must be a priority.

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