Alliance for Research on Cultural Heritage in Europe

ARCHE

Deliverable 2.5

ARCHE SRIA Key Messages and Preliminary Findings

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Abstract

Based on the outputs of the other Tasks in WP2, this report will collate the preliminary findings of the multiple consultations, workshops and working groups into key messages and drivers for the preparation of the final ARCHE SRIA.

Revision history and list of contributors

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1-9	04-08/2024	C. Giry-Deloison (ANR), P. Liévaux (MC), Ina Belcheva, M. Gravari-Barbas, I. Stankovic (UP1), E. Borgia, S. Rossi, G. Sobrà (MiC), S. Hermon, L. Nunziata, M. Soyluoglu (CyI), P. Ferreira, L. Igreja (FCT), K. Kowalski, L. Piekarska (UJ), R. Petitcol, E. Cazenave (FSP), J. van't Hof, E. Roell, E. Stegmeijer (RCE), K. Warren, J. Davies (UKRI), S. Stefan (SPK), M. Martinez (KEA), T. Hovland, E. R. Tærum (RCN), M. Groentjes, J. van Kersen (NWO), M. Grano, A. Gravagnuolo (CNR), T. Aigner, M. Graf, J. Henriksson (TMO), A. Heritage (ICCROM), E. Cano, B. Ramírez, L. Ramos (CSIC), A. Rosenberg (GSRI), M. Drdácký (UTAM AVCR), N. Vernimme (FHA), C. Tavzes (ZVKDS)	First versions based on the WGs work
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18	20/09/2024	A. Caussé, E. Cazenave, M. Gaman (FSP)	Revision (Priority Areas)

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Acronyms

AI	Artificial Intelligence
ARCHE	Alliance for Research on Cultural Heritage in Europe
CBD	Convention on Biological Diversity
CCIS	Cultural and Creative Industries and Sectors
CH	Cultural Heritage
DRR	Disaster Risk Reduction
EDI	Equity, Diversity and Inclusion
EU	European Union
GLAMs	Galleries, Libraries, Archives, Museums
IPCC	Intergovernmental Panel on Climate Change
JPI CH	Joint Programming Initiative on Cultural Heritage and Global Change
RCH	Resilient Cultural Heritage
RDG	Restricted Drafting Group
SRIA	Strategic Research and Innovation Agenda
R&I	Research and Innovation
STI	Science, Technology and Innovation
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

Disclaimer

This is a living document, intended to gather contributions from ARCHE partners and external stakeholders who can offer insights for the preparation of a Strategic Research and Innovation Agenda (SRIA) dedicated to cultural heritage, particularly in the context of developing its resilience against global climate change.

This evolving draft reflects the ongoing work of the four ARCHE project Working Groups (WGs) and integrates both the outcomes of the ARCHE project and current discussions around the establishment of a European Partnership for Resilient Cultural Heritage (RCH).

As a work in progress, it will continue to develop with additional input from Member States and Associated Countries along with feedback gathered through a public consultation open to the broad cultural heritage R&I community that will include (without being limited to) national policymakers, researchers, practitioners, civil society and citizens.

Introduction

Momentum in Cultural Heritage Research & Innovation at European and International Levels

Building on the achievements and lessons learnt of the Strategic Research and Innovation Agenda 2020 Joint Programming Initiative on Cultural Heritage and Global Change (JPI CH), the development of the new Strategic Research and Innovation Agenda (SRIA) has been conducted within the framework of the Alliance for Research on Cultural Heritage in Europe (ARCHE) project. In particular, the work has been conducted under ARCHE Work Package 2 which aims, under the coordination of the CNR, to develop, together with relevant stakeholders, the cross-disciplinary SRIA with a long-term perspective.

It is important to note that the development of the ARCHE SRIA is embedded in the strategic recommendations ensuing from key documents recently developed by the ARCHE and JPI CH communities as well as other cultural heritage global initiatives, including:

- The 2024 Proposal (April 2024) for The European Partnership for Resilient Cultural Heritage[1];

- The 2024 ARCHE "Report on Future Trends on Cultural Heritage Research and Innovation"[2];

- The 2023, Systematic Literature Review of Climate Change Impacts on Cultural Heritage by the British Council[3];

- The 2022 ICOMOS International Co-Sponsored Meeting on Culture, Heritage, and Climate Change (ICSM) White Papers[4];

- The 2022 JPI Cultural Heritage and JPI Climate White Paper "Cultural Heritage and Climate Change: New challenges and perspectives for research"[5];

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[1] https://assets.ctfassets.net/cdx728z92xkc/15Qci9Qixjzcus3xl7ytWb/ad460c1c6a2bd1138cff9899e00fae1b/ec_rtd_04_cultural-heritage.pdf (accessed 20/09/2024).
[2] https://www.heritageresearch-hub.eu/app/uploads/2024/04/ARCHE_D2.1_Report-on-Future-Trends-on-Cultural-Heritage-RI.pdf (accessed 20/09/2024).
[3] https://www.britishcouncil.org/sites/default/files/climate_change_impacts_on_cultural_heritage_report.pdf (accessed 20/09/2024).
[4] https://openarchive.icomos.org/id/eprint/2717/; https://openarchive.icomos.org/id/eprint/2719/; https://openarchive.icomos.org/id/eprint/2718/ (accessed 20/09/2024).
[5] https://www.heritageresearch-hub.eu/white-paper-cultural-heritage-and-climate-change-new-challenges-and-perspectives-for-research/ (accessed 20/09/2024).

- The 2021 ICCROM "Anticipating Future Heritages" study[6].

The future ARCHE SRIA also draws from other relevant documents produced by the European Union (EU) or by the cultural heritage international community, including, without being limited to, the following (see Annex 2 for the broader list):

- European Commission: Directorate-General for Research and Innovation, *Horizon Europe strategic plan 2025-2027*, Publications Office of the European Union, 2024 ;[7]

- Pasikowska-Schnass M., *The impact of climate change on cultural heritage*, European Parliamentary Research Service, 2024;[8]

- European Commission: Directorate-General for Education, Youth, Sport and Culture, *Strengthening cultural heritage resilience for climate change – Where the European Green Deal meets cultural heritage*, Publications Office of the European Union, 2022;[9]

- Potts A. et al., *European Cultural Heritage Green Paper: Putting Europe's shared heritage at the heart of the European Green Deal*, Europa Nostra in partnership with ICOMOS, 2021.[10]

Finally, the ARCHE SRIA is in line with the foreseen European Partnership for Resilient Cultural Heritage (RCH).[11] Prepared in the Horizon Europe framework programme, the RCH Partnership will address two main challenges:

1. The limited research and evidence regarding adaptation strategies and the impact of climate and environmental change on cultural heritage;

2. The need for enhanced understanding, use and recognition of how cultural heritage can inform policies and guide implementation measures, including the role of traditional and local knowledge.

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[6]https://www.iccrom.org/publication/anticipating-futures-heritage (accessed 20/09/2024).

[7] https://data.europa.eu/doi/10.2777/092911 (accessed 20/09/2024).

[8] The impact of climate change on cultural heritage (europa.eu) (accessed 20/09/2024).

[9] https://data.europa.eu/doi/10.2766/44688 (accessed 20/09/2024).

[10] European Cultural Heritage Green Paper - Full Paper in English by Europa Nostra - Issuu (accessed 20/09/2024).

[11] See Preliminary Partnership Proposal (April 2024) at https://assets.ctfassets.net/cdx728z92xkc/15Qci9Qixjzcus3xl7ytWb/ad460c1c6a2bd1138cff9899e00fae1b/ec_rtd_04_cultural-heritage.pdf (accessed 10/08/2024).

Cultural Heritage in a Changing Context

The ARCHE SRIA is prepared in line with the Council of the European Union's definition of cultural heritage:

> *"Cultural heritage consists of the resources inherited from the past in all forms and aspects - tangible, intangible and digital (born digital and digitized), including monuments, sites, landscapes, skills, practices, knowledge and expressions of human creativity, as well as collections conserved and managed by public and private bodies such as museums, libraries and archives. It originates from the interaction between people and places through time and it is constantly evolving. These resources are of great value to society from a cultural, environmental, social and economic point of view and thus their sustainable management constitutes a strategic choice for the 21st century."* [12]

Furthermore, in line with the imminent European Partnership for Resilient Cultural Heritage under Horizon Europe, the following additional note is used for the purpose of the ARCHE SRIA:

> *"Cultural heritage is much more than the sum of knowledge and lessons from our past into the present. It can develop resilience that can help process recent and ongoing events and strengthen a healthy response for the future. It can inspire adaptation and mitigation measures in the face of climate change, through, for instance, the sustainability of adaptive reuse of immovable heritage or the knowledge carried via intangible heritage."* [13]

The ARCHE SRIA adopts such a comprehensive approach to further highlight the multiple roles that cultural heritage can play in a society facing global environmental and socio-political challenges. In this context, cultural heritage is perceived as part of complex systems, "cultural ecosystems", comprising of interlinkages of places, cultural expressions and human/nature interactions and now affected by global environmental changes, including climate change.

Climate change represents a direct threat to cultural heritage. Global warming, sea level rising, the increased frequency and intensity of extreme climate events (e.g., floods) and other effects of climate change are increasingly damaging to cultural heritage. There is a need to enhance research and accelerate science-based policy

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[12] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XG0614(08)&from=FR (accessed 20/09/2024).
[13]https://assets.ctfassets.net/cdx728z92xkc/15Qci9Qixjzcus3xl7ytWb/ad460c1c6a2bd1138cff9899e00fae1b/ec_rtd_04_cultural-heritage.pdf (accessed 20/09/2024).

and actions towards addressing these challenges through international cooperation and local actions.

In fact, research concerning the protection of cultural heritage from the impacts of climate change can drive innovative solutions for both mitigation (e.g., solar panels integrated within the environment and cultural landscape) and adaptation (e.g., new biomaterials for contrasting the deterioration of cultural heritage, and engineering infrastructures for flood risk management) strategies.

Furthermore, cultural heritage is also a source of knowledge and a venue for creativity in addressing the challenges posed by climate change. For instance, past *savoir-faire* (know-how) could be revisited and applied in contemporary settings; past and contemporary heritage, including indigenous knowledge, can be used to foster climate action in the broader society; and data on past climate can be used to analyse recent and current trends and to formulate hypotheses for the future and improve climate models.

Both risks and opportunities related to climate change impacts on cultural heritage can be addressed by an improved integrated and strategic approach.[14] This approach can also provide solutions to improve societal well-being and resilience and develop new opportunities for sustainable cultural heritage management. Hence, heritage research can have a key and direct contribution to longstanding global efforts towards addressing climate change, and to provide innovative pathways towards achieving the objectives of the Paris Agreement[15] and attaining climate neutrality by 2050.[16] Such a role highlights the functions of cultural heritage in fostering resilient societies and further adds to the debate of defining cultural heritage as a global public good.[17]

In this context, the ARCHE SRIA is designed to provide the framework for a comprehensive and holistic scope of action that ensures all aspects of cultural heritage are addressed through a coordinated strategy that promotes resilience and sustainability. It thus embraces an interdisciplinary and transdisciplinary approach

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[14] See for instance, UK Cultural Heritage Briefing. UK Climate Risks, https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Cultural-Heritage.pdf (accessed on 10 August 2024).
[15] https://unfccc.int/sites/default/files/english_paris_agreement.pdf (accessed 20/09/2024).
[16] See European Green Deal.
[17] One might also consider the notion of 'commons' relevant, based on the approach in Brando, N. et al. "Governing as commons or as global public goods: Two tales of power". *International Journal of the Commons*, Vol. 13, no 1 2019, pp. 553–577 Publisher: Uopen Journals, URL: http://www.thecommonsjournal.org DOI:10.18352/ijc.907. https://thecommonsjournal.org/articles/10.18352/ijc.907. (accessed on 10 August 2024).
On the topic of commons, see: Benesch, H., Hammami, F., Holmberg, I. & Uzer, E. (Eds.). (2015). *Heritage as common(s) – Commons as heritage*. Gothenburg, Sweden: Makadam. Gould, P. G. (2017). "Considerations on governing heritage as a commons resource". In P. G. Gould & K. A. Pyburn (Eds.), *Collision or Collaboration. Archaeology Encounters Economic Development* (pp. 171–187). Cham, Switzerland: Springer.

towards ensuring an effective participatory framework for all researchers, cultural heritage practitioners, policy and decision-makers, civil society and citizens.

The ARCHE SRIA aims at fostering research towards addressing management of cultural heritage and environmental and sustainability challenging through a multi-stakeholder "win-win approach", also engaging technological and research infrastructures, cultural and education institutions as well as GLAMS.

1. Drafting Process

The process towards the identification of the ARCHE SRIA Priority Areas has been characterised by a participatory and inclusive approach engaging ARCHE partners as well as external stakeholders.

It started with a foresight analysis conducted to determine future needs corresponding to longer-term effects in the cultural heritage research and innovation fields. An expert stakeholders' workshop[18] gathering more than 80 participants prepared the drafting of the ARCHE "Report on future trends on Cultural Heritage R&I."[19]

Three Stakeholders' virtual workshops then led the second step towards the SRIA.[20] They took over three different methods to develop a shared Vision and Mission for ARCHE and the key recommendations for the ARCHE SRIA: Driver mapping, SWOT Analysis, and Visioning. The "Vision and Mission for the ARCHE Alliance"[21] was made public in April 2024 and endorses the following Vision and Mission:

Vision

"By 2040, ARCHE will have created new opportunities for Cultural Heritage research collaboration which will have resulted in the strengthened ability to respond to societal challenges and an improved quality of life."

Mission

"ARCHE will co-create multidisciplinary joint research funding actions, knowledge exchange and capacity building activities in order to strengthen the resilience of cultural heritage in Europe during the twin digital and green transition. Through a unique partnership of funding agencies, ministries, researchers, practitioners and citizens, common opportunities and challenges will be addressed, societal resilience will be strengthened and research impact will be scaled up."

It is in this context that, in October 2023, ARCHE partners have been called to express interest in joining four Working Groups that would identify the main SRIA priorities and themes through the compilation of a form designed to facilitate discussions on

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[18] https://www.heritageresearch-hub.eu/event/insight-into-the-future-arche-foresight-workshop/ (accessed 20/09/2024).
[19] https://www.heritageresearch-hub.eu/app/uploads/2024/04/ARCHE_D2.1_Report-on-Future-Trends-on-Cultural-Heritage-RI.pdf (accessed 20/09/2024).
[20] https://www.heritageresearch-hub.eu/event/arche-stakeholders-virtual-workshops/ (accessed 20/09/2024).
[21] https://www.heritageresearch-hub.eu/app/uploads/2024/05/D2.4-Vision-and-Mission-of-the-ARCHE-Alliance_FINAL-6.pdf (accessed 20/09/2024).

priorities, identifications of inputs from ARCHE project's deliverables as well as blue-sky thinking.[22] All ARCHE partners were represented in the four Working Groups which were defined with the four titles of the Priority Areas of the JPI CH SRIA 2020 (as presented below), in order to enable continuity with this previous SRIA.

The four Working Groups towards the development of the ARCHE SRIA were structured as such:

- WG1. Reflective heritage for resilient society

- WG2. Cultural heritage facing climate and environmental change

- WG3. Cultural heritage in a changing context

- WG4. Sustainable management of cultural heritage

The activities of the Working Groups were supported by the coordination team of CNR, also by providing background documents (e.g., annotated glossary, template forms, gaps analyses, policy-related documents) and by facilitating the meetings of the Working Groups' Co-Chairs towards identifying the structure and priority areas of the ARCHE SRIA. This was complemented by mind-mapping exercises and compilations of different proposals.

Opportunities have been sought to discuss the SRIA development at meetings of the ARCHE project. Indeed, this document was discussed at the ARCHE Stakeholder Workshop "Towards the ARCHE SRIA" in Florence, Italy, on 25 September 2024, the event being followed by an online consultation for external stakeholders in October and November 2024. The results of this consultation will be integrated in the final version of the SRIA, to be presented in 2025 under D2.6 ARCHE SRIA and its Synthesis.

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[22] Themes or ideas allowing for forward-looking concepts that could shape future directions without being constrained by current contexts or scenarios.

2. Strategic Research and Innovation Agenda Preliminary Elements

The future ARCHE SRIA shall identify key research and innovation gaps and opportunities, underly research principles and revise priority research areas. It will be a basis for implementing a research and innovation multi-annual programme of activities based on transnational joint calls for proposals and additional activities.

2.1. Research and Innovation Principles

The following scientific and ethical principles shall guide the ARCHE SRIA's future implementation.

- Diversity, Equity and Inclusion
- Education and training
- Communication, dissemination and impact
- Holistic view towards to cultural heritage
- Digital approach (including an ethical approach to AI)
- Non-Eurocentric frameworks and global collaboration
- The climate impact of cultural heritage and research
- Collaborative and transdisciplinary research
- Open Science and Open Innovation
- Public and business-led research and community engagement
- Complementarity and additionality with existing initiatives

2.2. Priority Areas

The ARCHE SRIA has three Priority Areas:

- Cultural Heritage and Environment: Addressing Global Climate Change
- Cultural Heritage and Society: Enhancing Societal Resilience
- Cultural Heritage and Management: Seizing Opportunities towards Sustainable Development

These priority areas outline the main ideas and preliminary findings resulting from the SRIA design process.

2.2.1. Priority Area A – Cultural Heritage and Environment: Addressing Global Climate Change

Climate and environmental change is having an increasing and lasting impact on cultural and natural heritage. Its diverse effects, such as drought, heat, floods and weather extremes – cause degradation processes and damaging events including soil subsidence, salinization and loss of archeology, monuments, and intangible traditions. Climate change also induces more indirect societal processes which, just like various measures to adjust (to) climate change, also affect heritage (e.g. energy transition, migration and urban pressures, water safety measures). To understand and address this complex interaction, we need comprehensive risk assessments and strategies that enable us to understand, adapt to, and mitigate the causes, effects and impacts of these changes, as well as find creative ways to live with them.

Recognising these risks, the Priority Area focuses on safeguarding and conserving cultural heritage, emphasising its crucial role in enhancing adaptation and mitigation efforts. Moreover, heritage serves as a valuable resource for sustainable development by offering insights into past resilience and adaptation, which can further support the transition to a post-carbon economy and ultimately contribute to the goal of achieving climate neutrality in different sectors by 2050. It is therefore important to demonstrate that cultural heritage is central to climate change understandings, responses and action and there is a need for more holistic and equitable inclusion of diverse knowledge systems in decision and policymaking.

Priority Area A addresses the following core themes:

A.1. Integration of data and knowledge for impact assessment, risk prevention and risk management

Keywords: (digital technologies for) modelling, simulation and prediction, risk assessment and evaluation, vulnerability.

A.2. Role of cultural heritage for climate change adaptation and mitigation strategies

Keywords: heritage-based knowledge (historical, cultural and traditional adaptive practices), local and Indigenous knowledge, nature-based solutions and strategies for climate change adaptation and mitigation.

A.3. Innovative and green solutions for cultural heritage conservation

Keywords: preventive conservation, role of heritage in technological development, new eco-friendly materials, advanced diagnostics.

A.4. Rediscovering nature-culture links, human-nature interactions, and building on local and Indigenous knowledge

Keywords: cultural landscape, adaptive release, nature-based practices.

A.5. Climate change as reflected in different dimensions of cultural heritage

Keywords: Anthropocene, meaning-making, heritigisation.

2.2.2. Priority Area B – Cultural Heritage and Society: Enhancing Societal Resilience

Cultural heritage embodies a sense of identity and belonging and is an inspiration for contemporary creative processes. As a result, cultural heritage practices can help individuals and communities adapt to new ways of living and enhance their coping capacity in the face of challenges posed by environmental and climate change. Priority Area B addresses the role of cultural heritage in strengthening societal resilience and well-being by highlighting the social and societal functions of cultural heritage. It encourages bottom-up, inclusive initiatives that empower communities to actively participate in shaping and safeguarding cultural environments. The Priority Area is based on the recognition of the significance and values that communities attribute to their heritage[23] and on the positive impact that access to cultural heritage has on individual well-being and health.[24] Working locally and internationally and with indigenous communities is vital. The first step in integrating communities' heritage into sustainable policies is involving local stakeholders and researchers in the processes of co-designed research. Co-designed and co-created solutions can also enhance public awareness, strengthen mitigation and adaptation, and ultimately lead to increased resilience.

Priority Area B addresses the following core themes:

B.1. Loss and damage of cultural heritage and creative and innovative responses

Keywords: vulnerability, managing loss; building resilience, perception and conceptualisation of heritage; GLAMs, CCIs.

B.2. Nexus between geopolitical crisis, cultural heritage, and climate change

Keywords: wars and conflicts, resource scarcity, demographic transitions, migrations, human-made and natural disasters, illicit trafficking; difficult heritage; cultural heritage

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[23] Council of Europe. (2005). *Council of Europe Framework Convention on the Value of Cultural Heritage for Society* (Faro Convention). https://www.coe.int/en/web/culture-and-heritage/faro-convention. (accessed 03/09/2024).
[24] Fancourt, D., & Finn, S. (2024). The effects of cultural engagement on health and well-being: A systematic review. Frontiers in Public Health, 12, 1369066. https://doi.org/10.3389/fpubh.2024.1369066. (accessed 03/09/2024).

and heritage science diplomacy, international dialogue and relations, heritage for peacebuilding.

B.3. Local and Indigenous knowledge and practices related to cultural heritage as a resource for societal resilience

<u>Keywords</u>: know-hows and skills, transmission; memories and values; local traditions, leveraging traditional knowledge, recognition of diverse knowledge systems.

B.4. Role of cultural heritage in fostering well-being and quality of life in a changing climate

<u>Keywords</u>: wellbeing, health, eco-anxiety, social benefits, cultural diversity, quality and sense of place, social cohesion, belonging, community, inclusion.

B.5. Cultural heritage and climate change intertwined narratives

<u>Keywords</u>: climate activism, dissonant and contested heritage, political and public rhetorics, democracies, identity, heritage as a space for dialogue, understanding, critical thinking.

2.2.3. Priority Area C – Cultural Heritage and Management: Seizing Opportunities towards Sustainable Development

In order for cultural heritage to truly unleash its potential for just futures and social and societal resilience, it requires a solid management framework that would guide the efforts and resources towards its research, conservation, preservation, interpretation and valorisation. Furthermore, this framework would need to be sustainable in itself, so as not to exacerbate the negative effects of environmental change, to attain the climate neutrality objectives, and to allow for the positive results of activities oriented towards cultural heritage to embed themselves in the communities they are supposed to serve.

Management frameworks, thus, would need to actively encourage the involvement of all cultural heritage stakeholders as partners engaging in a balanced dialogue from the bottom-up level all the way to the top-down one. In addition, they would require tools and mechanisms with an incremental view towards the short, medium and long-term, that would be resource efficient (whether the resource in question is financial, natural, human or of any other kind) and sustainable.

They would be needed to facilitate co-design research processes that would inform policies enabling the role of cultural heritage for future-making while not sacrificing on the role cultural heritage can play in the present. The accountability of these management systems can be ensured by regular monitoring and impact assessment that would maintain the relevance of these policies.

Priority Area C will look into management scales and specific processes, with a view to mainstreaming heritage in all areas of society and meeting the climate neutrality objectives.

Priority Area C addresses the following core themes:

C.1. Cultural heritage in international sustainability governance frameworks

<u>Keywords</u>: governance, assessment, policy analysis and evaluation, SDGs, resource coordination, interregional exchanges, research-informed policies.

C.2. Sustainable and climate-neutral cultural heritage management practices and plans

<u>Keywords</u>: adaptive (re)use, durability, curated decay, preventive and curative conservation, maintenance, resilient infrastructures, energy efficiency.

C.3. Connection between climate change and cultural heritage accessibility

<u>Keywords</u>: physical and digital access, developing resilient accessibility to cultural heritage, visitor experience, new technologies, AI, public-private relations, cultural mediation.

C.4. Economics of cultural heritage for climate action

<u>Keywords</u>: circular economy, resource management, employment, heritage-led innovation, tourism, business models, urban and rural development policies, climate positivity and post-fossil economy, economic value of cultural heritage.

C.5. Relations between climate justice and the right to cultural heritage

<u>Keywords</u>: Equality and equity, social justice, cultural rights, global public goods and commons, ownership of cultural heritage, human rights.

2.3. Cross-Cutting Themes for an Open, Innovative and Inclusive Cultural Heritage Research for Climate Neutrality

The SRIA aims at integrating the preservation of cultural heritage in the context of climate change with the broader goal of achieving climate neutrality. Reaching climate neutrality requires a comprehensive set of actions that establish the necessary social, cultural, and institutional foundations to effectively address climate change. The three cross-cutting themes — Communication, Education and Public Awareness (CEPA), Science, Technology, Innovation (STI), and Science-Policy-Society Interface — address this need. Their expansion across the three Priority Areas facilitates the transfer across a breadth of societal sectors of the outcomes of cultural heritage initiatives', thereby contributing to the advancement of climate neutrality.

The cross-cutting themes will be taken into account, in combination with the main research priority areas, at different stages of the SRIA implementation as key elements for the drafting of the topics and sub-topics of the joint funding opportunities and other additional activities implemented by the Partnership.

These cross-cutting themes are collectively grouped under the umbrella of "Open, Innovative and Inclusive Cultural Heritage Research for Climate Neutrality".

2.3.1. Communication, Education and Public Awareness (CEPA)

I.1. Cultural heritage as a strategic resource for education, training and transmission of knowledge, skills and diversities of memories and values.

I.2. Cultural heritage and CCIS providing opportunities for life-long learning and capacity-building.

I.3. Development of closer collaboration between GLAMs and cultural heritage institutions in research.

I.4. Engagement of the broader society, also via the promotion of citizen science.

2.3.2. Science, Technology and Innovation (STI)

II.1. Uses and Implications of AI.

II.2. Development of the use of research and technology infrastructures

II.3. Greening of heritage science practices.

2.3.3. Science-Policy-Society Interface

III.1. Enabling the Science-Policy-Society interface to be recognised in evidence-based policy-development related to climate change and related sustainability challenges.

III. 2. Feeding heritage research outputs in science/policy processes related to global environmental changes including climate change (e.g., Paris Agreement, The European Green Deal, Sendai Framework for Disaster Risk Reduction, Agenda 2030, Pact for the Future, and Intergovernmental Panel on Climate Change[25])

III.3. Enabling multi-stakeholder dialogues and consultations on the role of cultural heritage towards attaining resilience and sustainability.

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[25] https://www.ipcc.ch/

III.4. Cultural heritage enabling dialogues and cooperations between local, regional, national and international levels

Annexes

Annex 1 – Glossary

Adaptation
The process of adjusting to current or expected climate change impacts. In human systems, the aim of adaptation is to reduce risks, increase resilience or seize on beneficial opportunities. In natural systems, human intervention may facilitate adjustments to expected climate change impacts (OCE, Office for Climate Education, n.d.).

Adaptive release
A proposed term for the active decision of accommodating and interpreting "the dynamic transformation of a heritage asset and its associated values and significance".[26]

Anthropocene
A proposed term for the present time interval, which recognises humanity's profound imprint on and role in the functioning of the Earth system. Since it was first proposed in 2000, the term has evolved in breadth and diversely, now ranging from a proposed definition of a new geological epoch, a widely-used metaphor for global change, a novel analytical framework, a meme about the relationship of society to nature, and the framing for new and contested cultural narratives. Different starting periods have been proposed for the geological definition of the Anthropocene, including early agriculture and domestication, colonial species exchange, the onset of the industrial revolution, nuclear bomb deployment in 1945, and the post-WWII period characterised by the great acceleration of global changes and the spread of techno-fossils (Glossary of IPBES - Anthropocene). A proposal to formalise the 'Anthropocene' as a defined geological unit has been rejected by the International Commission on Stratigraphy in 2024; however, the concept remains "invaluable descriptor in human-environment interactions".[27]

Build back better (BBB)
The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems,

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[26] For further details, please refer to the following article: Caitlin DeSilvey, Harald Fredheim, Hannah Fluck, Rosemary Hails, Rodney Harrison, Ingrid Samuel & Amber Blundell (2021): When Loss is More: From Managed Decline to Adaptive Release, The Historic Environment: Policy & Practice, DOI: 10.1080/17567505.2021.1957263
[27] For further details, refer to the document available at:
https://www.iugs.org/_files/ugd/f1fc07_40d1a7ed58de458c9f8f24de5e739663.pdf

and into the revitalisation of livelihoods, economies and the environment. Annotation: The term "societal" will not be interpreted as a political system of any country (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Capacity
The combination of all the strengths, attributes and resources available within an organisation, community or society to manage and reduce disaster risks and strengthen resilience.

Annotation: Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.[28]

Circular economy
It is a model of production and consumption,[29] which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended.[30]

Climate
An average pattern of weather conditions – such as temperature, precipitation, humidity, wind, air pressure – for a particular region over a long period of time (months, years, decades, centuries or more) (OCE, Office for Climate Education, n.d.).

Climate change
Climate change refers to several global phenomena, for example: changes in temperature, precipitation, extreme events, sea level rise and ocean acidification. The term is most used to describe the current human-induced climate change that started around 1850 due to an increase in the global average temperature. The term "global warming" is also used (OCE, Office for Climate Education, n.d.).

Climate justice
This term is used to acknowledge the social and political dimensions of the challenges associated with climate change, rather than considering only their environmental dimension. It relates the differences observed between those more responsible for climate change and those more affected by its consequences, to the notion of justice (in particular, social and environmental justice) (OCE, Office for Climate Education, n.d.).

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[28] Source: https://www.preventionweb.net/terminology/capacity?id=7831
[29] For further information:
https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI%282016%29573899_EN.pdf
[30] Source: https://www.europarl.europa.eu/topics/en/topic/circular-economy

Climate neutrality

The term refers to the idea of achieving net zero greenhouse gas emissions by balancing those emissions, so they are equal to, or less than, the emissions removed, as well as accounting for regional or local biogeophysical effects of human activities, such as changes in surface albedo or local climate. In basic terms, it means we reduce our emissions through climate action to ensure no net effect on the climate system.[31]

Commons

The term "commons" can be used to refer to a broad set of resources, natural and cultural, that are shared by many people. Traditional examples of commons include forests, fisheries, or groundwater resources, but increasingly we see the term commons used for a broader set of domains, such as knowledge commons, digital commons, urban commons, health commons, cultural commons, etc.[32]

Conservation of cultural heritage

The conservation of cultural heritage refers to the measures taken to extend the life of cultural heritage while strengthening transmission of its significant heritage messages and values. In the domain of cultural property, the aim of conservation is to maintain the physical and cultural characteristics of the object to ensure that its value is not diminished and that it will outlive our limited time span.[33]

Conservation of natural heritage

The conservation of natural heritage refers to the protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence.[34]

Coping capacity

It is the ability of people, organisations and systems, using available skills and resources, to manage adverse conditions, risk or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during disasters or adverse conditions. Coping capacities contribute to the reduction of disaster risks.[35]

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[31] For further details, refer to: https://unfccc.int/news/a-beginner-s-guide-to-climate-neutrality
[32] Source: https://iasc-commons.org/about-commons/
[33] Source: UNESCO Institute for Statistics, 2009 UNESCO Framework for Cultural Statistics and International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), Risk Preparedness: A Management Manual for World Cultural Heritage, 1998 and; UNESCO, Traditional Restoration Techniques: A RAMP Study, 1988, Conservation of cultural heritage | UNESCO UIS
[34] Source: UNESCO Institute for Statistics, 2009 UNESCO Framework for Cultural Statistics and heritage statistics, https://uis.unesco.org/en/glossary (UNESCO Institute for Statistics, n.d.)
[35] Source: https://www.preventionweb.net/terminology/capacity?id=7831

Cultural Heritage

Cultural heritage consists of the resources inherited from the past in all forms and aspects - tangible, intangible and digital (born digital and digitised), including monuments, sites, landscapes, skills, practices, knowledge and expressions of human creativity, as well as collections conserved and managed by public and private bodies such as museums, libraries and archives. It originates from the interaction between people and places through time and it is constantly evolving. These resources are of great value to society from a cultural, environmental, social and economic point of view and thus their sustainable management constitutes a strategic choice for the 21st century. (The Council of the European Union, 2014).[36]

Sub-terms

Tangible (movable and immovable)

It refers to physical artefacts produced, maintained and transmitted intergenerationally in a society. It includes artistic creations, built heritage such as buildings and monuments, and other physical or tangible products of human creativity that are invested with cultural significance in a society.[37]

Intangible cultural heritage

It is the practices, expressions, knowledge and skills that communities, groups and sometimes individuals recognise as part of their cultural heritage. Also called living cultural heritage, it is usually expressed in one of the following forms: oral traditions; performing arts; social practices, rituals and festive events; knowledge and practices concerning nature and the universe; and traditional craftsmanship.[38]

Digital heritage

The digital heritage consists of unique resources of human knowledge and expression. It embraces cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources. Where resources are "born digital", there is no other format but the digital object.[39]

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[36] Definition of cultural heritage mentioned in the Council conclusions of 21 May 2014 on cultural heritage as a strategic resource for a sustainable Europe (2014/C 183/08) and recalled in the European Framework for Action on CH: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XG0614(08)&from=EN

[37] Source: https://resources.riches-project.eu/glossary/tangible-and-intangible-cultural-heritage/

[38] Source: https://whc.unesco.org/en/faq/

[39] Source: UNESCO Charter on the Preservation of Digital Heritage, available at https://unesdoc.unesco.org/ark:/48223/pf0000179529

Cultural Landscapes
Combined works of nature and humankind, they express a long and intimate relationship between peoples and their natural environment.[40]

Disaster risk
The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity. Annotation: The definition of disaster risk reflects the concept of hazardous events and disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socioeconomic development, disaster risks can be assessed and mapped, in broad terms at least. It is important to consider the social and economic contexts in which disaster risks occur and that people do not necessarily share the same perceptions of risk and their underlying risk factors (Freeman, 1984).

Disaster risk reduction (DRR)
It is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development.

Annotation: Disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans. Disaster risk reduction strategies and policies define goals and objectives across different timescales and with concrete targets, indicators and time frames. In line with the Sendai Framework for Disaster Risk Reduction 2015-2030, these should be aimed at preventing the creation of disaster risk, the reduction of existing risk and the strengthening of economic, social, health and environmental resilience. A global, agreed policy of disaster risk reduction is set out in the United Nations endorsed Sendai Framework for Disaster Risk Reduction 2015-2030, adopted in March 2015, whose expected outcome over the next 15 years is: "The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Early warning system
An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely

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[40] Source: UNESCO Cultural Landscape Overview, available at
https://whc.unesco.org/en/culturallandscape/

action to reduce disaster risks in advance of hazardous events (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Extreme events
Unusual events that can have a high negative impact on humans and nature, for example tornadoes, storm surges, landslides, droughts and heatwaves (OCE, Office for Climate Education, n.d.).

Gender lens
Gender lens takes the existing differences between women and men into account when analysing a situation or when developing specific approaches or programmes.[41]

Global environmental change
It refers to the alterations in our planet caused by human activities and population growth, such as climate change, marine pollution, ozone layer depletion, soil degradation, and urbanisation. These changes pose threats to human health, including impacts on food and water quality, air pollution, disease transmission, and extreme weather events.[42]

Global public goods
They are those that are available to all ("nonexcludable") and that can be enjoyed over and over again by anyone without diminishing the benefits they deliver to others ("nonrival"). The scope of public goods can be local, national, or global.[43]

Greenhouse gas
Greenhouse gases cause the greenhouse effect. They include water vapour, carbon dioxide, methane, nitrous oxide and ozone (OCE, Office for Climate Education, n.d.).

Hazard
A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Heritage
It consists of both natural and cultural heritage, according to the World Heritage Convention; UNESCO, 1972.[44]

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[41] UN ESCWA-UNFPA Glossary, available at https://www.unescwa.org/sd-glossary
[42] Source: AI generated definition based on: Environmental Research, 2019;
https://www.sciencedirect.com/topics/earth-and-planetary-sciences/global-environmental-change
[43] Basics of Global Public Goods, available at
https://www.imf.org/en/Publications/fandd/issues/2021/12/Global-Public-Goods-Chin-basics
[44] For further details, visit the Basic Texts of the 1972 World Heritage Convention at
https://whc.unesco.org/en/basictexts/

Heritage science

Drawing on diverse humanities, sciences and engineering disciplines, heritage science is an umbrella term encompassing all forms of scientific inquiry into human works and the combined works of nature and humans that are of value to people. Heritage science focuses on enhancing the understanding, care, sustainable use and management of tangible and intangible heritage to enrich people's lives today and in the future.[45]

Landscape

Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.[46]

Life cycle assessment (LCA)

LCA is defined by the ISO 14040 as the compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle.[47]

Mitigation

Human intervention to reduce global warming by reducing greenhouse gases (GHG) emissions or by enhancing GHG sinks.[48]

Open Innovation

Open Innovation is based on the fundamental idea that useful knowledge is now widespread throughout society. No one organisation has a monopoly on great ideas, and every organisation, no matter how effective internally, needs to engage deeply and extensively with external knowledge networks and communities. An organisation that practices open innovation will utilise external ideas and technologies as a common practice in their own business and will allow unused internal ideas and technologies to go to the outside for others to use in their respective businesses.[49]

Open Science

Open science is an approach to research based on open cooperative work that emphasises the sharing of knowledge, results and tools as early and widely as possible. It is mandatory under Horizon Europe, and it operates on the principle of being 'as open as possible, as closed as necessary'.[50]

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[45] Source: ICCROM at https://www.iccrom.org/section/heritage-science
[46] Source: Council of Europe Landscape Convention, https://rm.coe.int/16807b6bc7
[47] Source: https://eplca.jrc.ec.europa.eu/lifecycleassessment.html
[48] Source: https://www.eea.europa.eu/en/about/contact-us/faqs/what-is-the-difference-between-adaptation-and-mitigation
[49] Source: https://digital-strategy.ec.europa.eu/en/news/what-open-innovation
[50] Source: https://rea.ec.europa.eu/open-science_en#

Preventive conservation
All measures and actions aimed at avoiding and minimising future deterioration or loss. They are carried out within the context or on the surroundings of an item, but more often a group of items, whatever their age and condition. These measures and actions are indirect – they do not interfere with the materials and structures of the items. They do not modify their appearance. Examples of preventive conservation are appropriate measures and actions for registration, storage, handling, packing and transportation, security, environmental management (light, humidity, pollution and pest control), emergency planning, education of staff, public awareness, legal compliance.[51]

Preservation
The aim of preservation is to obviate damage liable to be caused by environmental or accidental factors, which pose a threat in the immediate surroundings of the object to be conserved. Accordingly, preventive methods and measures are not usually applied directly but are designed to control the microclimatic conditions of the environment with the aim of eradicating harmful agents or elements, which may have a temporary or permanent influence on the deterioration of the object.[52]

Resilience
The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Stakeholder
Any group or individual who can affect or is affected by the achievement of the organisation's objective (Freeman, 1984).

Sustainable development
Development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs (OCE, Office for Climate Education, n.d.).

Sustainable management
It is defined as the application of sustainable practices in commerce, agriculture,

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[51] Source: Terminology for conservation (2008) of ICOM-CC available at: https://www.icom-cc.org/en/terminology-for-conservation
[52] Source: UNESCO Institute for Statistics, 2009 UNESCO Framework for Cultural Statistics and UNESCO, Traditional Restoration Techniques: A RAMP Study, 1988, https://uis.unesco.org/en/glossary

environment, production, and other fields by management in a manner that is beneficial to present and future generations.[53]

Vulnerability

Sensitivity of a population when exposed to climate change hazards and its consequences. Example: a low-lying region with coastal protection infrastructures and resources is less vulnerable to sea level rise than a low-lying region with no coastal protection infrastructures and few economical resources (OCE, Office for Climate Education, n.d.). The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

Annotation: For positive factors which increase the ability of people to cope with hazards, see also the definitions of "Capacity" and "Coping capacity" (UNDRR, United Nations Office for Disaster Risk Reduction, n.d.).

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[53] Source : https://www.mdpi.com/journal/sustainability/sections/management_sustainability

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