

Vulnerability and adaptation of cultural heritage to climate change

Supporting decision-making in adapting cultural heritage sites to climate change

Workshop in the New Lanark UNESCO World Heritage Site

Workshop report

New Lanark Mill Hotel, New Lanark

March 22 2018



Date and Venue

The workshop took place on the 22nd of March 2018 at the New Lanark Mill Hotel in the New Lanark UNESCO World Heritage Site in Lanarkshire, Scotland.

Organizers

The members of the organizing team were Elena Sesana (PhD student), Dr Alexandre Gagnon and Dr John Hughes from the University of the West of Scotland. The workshop was funded through the Small Grant Scheme of the Scottish Alliance for Geosciences Environment and Society (SAGES).

Participants

The workshop was attended by experts working in different aspects of cultural heritage, including participants from academia: Dr Julie Gibson from the University of the Highlands and Islands; Dr Paul Adderley, Dr Ian Simpson and his PhD student, David McCaughie, from the University of Stirling; and Dr Alan Forster from Heriot Watt University. Many attendees were from Historic Environment Scotland (HES): Ewan Hyslop, Mairi Davies, Alyce Lyall, Maureen Young, Mark Watson, Aurelie Turmel, Callum Graham, David Harkin, Sarah Hamilton, Vanessa Glindmeier, Tiomoid Foley and Hannah Genders Boyd, while Terry Levinthal represented the Institute of Historic Building Conservation (Scottish Committee). The workshop was also attended by members of the management team of the New Lanark UNESCO World Heritage Site, who also conducted the site visit at the beginning of the workshop: Jane Masters and Catriona Burnett.

Agenda

The agenda for the workshop was planned as reported below, however, a delay in the first part caused a shortening of the interactive and discussion section.

10:00 Site visit

12:00 Lunch with tea/coffee

12:30 Welcome and introduction to climate change and cultural heritage by Dr John Hughes

12:40 1st presentation: Crespi d’Adda heritage site by Professor Borgarino

13:00 2nd presentation: New Lanark heritage site by Paige Hughes (World Heritage and Volunteer Officer at New Lanark Trust)

13:20 3rd presentation: Climate change risk and adaptation by Dr Mairi Davies (HES)

13:40 4th presentation: Adaptation of cultural heritage to climate change risk by Dr Ewan Hyslop (HES)

14:00 Coffee break – Networking

14:30 Short presentation by Elena Sesana + First Roundtable discussion (Vulnerability).

15:30 Short presentation by Elena Sesana + First Roundtable discussion (Adaptation).

16:30 Group discussion and concluding remarks

17.00 End

Abstract

World Heritage sites are becoming increasingly vulnerable to the effects of climate change such as changes in atmospheric moisture, temperature and wind, sea level rise, flooding and the interaction between changes in climate and air pollution. Previous research investigating the impacts of climate change on cultural heritage has mainly focused on large geographical scales (e.g. the European continent) with limited research performed at a scale relevant to adaptation decision-making. For successful adaptation to take place, site managers need to be aware of the potential impacts of climate change and best practice approaches to adapt in order to increase the sites' resilience to current and projected changes in climate. This includes the development or adaptation of existing management plans, for instance. However, there is a lack of frameworks, strategies and tools to assess the vulnerability of cultural heritage to climate change (Sabbioni et al., 2010). For this reason, a vulnerability assessment framework was developed to help site managers to identify the risks and vulnerabilities of cultural heritage to climate change. This climate change vulnerability assessment framework was tested on three UNESCO World Heritage Sites (WHS), including New Lanark, the location of this workshop.

The aim of this workshop was to disseminate the developed methodology for assessing the vulnerability of a cultural heritage site to climate change. The assessment was presented and tested on the site where the workshop took place as well as in Skara Brae (Orkney) and Crespi d'Adda (Italy). Feedback from site managers and HES was gathered prior to the wider dissemination and publication of these guidelines and strategy through face-to-face interviews. Even though the need to consider climate change in site management plans is mentioned in a number of academic studies (Sabbioni et al., 2010, Cassar and Pender, 2005, Phillips, 2015), there is limited research on adaptation of cultural heritage to climate change (Phillips, 2015). Hence, the workshop debated strategies to adapt to the main risks identified in the three case study sites and, through that process, the needs for information and knowledge from site managers and government stakeholders responsible for adaptation were established as well as the identification of ideas for future research directions.

Objectives

The specific objectives of the workshop were:

- To encourage collaboration amongst researchers working in the area of the impacts of climate change on cultural heritage and with government institutions (e.g. Historic Environment Scotland) and site managers.
- To present and discuss the applicability of an integrated vulnerability assessment methodology in the field of cultural heritage and issues regarding adaptation to climate change risks.
- To share practitioners' approaches between two different WHS from Scotland and Italy, albeit both with industrial heritage characteristics, in the identification of the environmental risks to the conservation of cultural heritage and processes for adaptation. This includes reviewing current structures in considering climate change in the management of cultural heritage as well as determining the drivers, barriers and information requirements for mainstreaming climate change into conservation frameworks.

The Workshop

The workshop opened with a visit of the New Lanark UNESCO WHS guided by heritage site managers Jane Masters and Catriona Burnett. During the first part of the visit Jane explained the characteristics, development and history of the site; while in the second part of the visit, Catriona presented the new conservation project made at the double row where we were able to see the original historical interiors of one of the preserved homes that will constitute the planned museum. Lunch followed the site visit.

The workshop session after lunch started with an introduction by Dr John Hughes who clarified the purpose of the workshop and made a brief introduction on the need to investigate the consequences of climate change on cultural heritage. The second presentation prepared by Dr Maria Paola Borgarino from the *Politecnico di Milano* and presented by Elena Sesana focused on the description of the Crespi d’Adda WHS and on the explanation of the Outstanding Universal Value (OUV) of the site. Crespi d’Adda is an industrial heritage site located in Italy. The purpose of the presentation was to compare two similar industrial heritage sites and the understanding of how the risks from a changing climate and other changes in the natural environment are considered in the management of the site. Another presentation providing a brief description of the New Lanark WHS was made by Paige Hughes (World Heritage and Volunteer Officer at New Lanark Trust) for the audience who was not present during the site visit in the morning. The OUV of the site were also explained during the presentation.

Then presentations from HES described the importance of considering climate change in the management of heritage sites. Dr Ewan Hyslop highlighted the threats that climate change is having on the Scottish cultural heritage and the different approaches in adapting cultural heritage to climate change. Mairi Davies then explained the risk assessment developed by HES for the identification of the risks from natural hazards on their properties. This is a methodology that can be revisited and applied in other contexts and countries.

Following a networking session during tea time, the workshop continued with an interactive session, which consisted of analysing the vulnerability and adaptation of three different WHS to climate change: New Lanark, Crespi d’Adda and the archaeological site of Skara Brae within the Heart of Neolithic Orkney, which is also a UNESCO WHS. The workshop participants were divided into three groups, one for each of the three heritage site.

The first exercise consisted of assessing the vulnerability of the cultural heritage sites to climate change using the framework that was explained as part of this workshop. A rapporteur in each of the three groups was selected to feedback to the wider audience on the main points identified during the roundtable discussion, which was guided by a series of questions written on a flipchart. Before the application of the framework, data were provided for consultation: the OUV of the three WHS, climate change projections, maps predicting the variation of decay on heritage materials on the basis of projected changes in climate (Sabbioni et al., 2010), and the results of semi-structured interviews with experts working in cultural heritage preservation conducted in the case study sites, which highlighted the main climate change threats that they perceive as affecting the sites. In addition, information was provided by experts on the case study sites, notably the managers of the

New Lanark WHS, and Julie Gibson and Alyce Llyal who currently work in the Heart of Neolithic Orkney and who participated in the discussion on the archaeological site of Skara Brae. For the Crespi d’Adda WHS, Elena Sesana provided information on the data collected through interviews with site managers. This information was used so that the participants can apply the concept of exposure, sensitivity and adaptive capacity as presented in the vulnerability assessment framework.

The second exercise focused on adapting the cultural heritage sites to the vulnerabilities identified in the first part of the interactive workshop. The discussion centred on the following main topics:

1. Possible adaptation solutions, their timing and the resources required to implement them
2. Acceptability of the solutions. Whether the proposed adaptive solutions are compatible with the values of the site.
3. Governance. Who should be involved and make decisions in relation to adapting cultural heritage sites to climate change ? Which stakeholders should be included in the decision-making?

Following the workshop, a short questionnaire was sent to the participants to collect opinions, criticisms, reflections and thoughts on what have been discussed during the workshop.

The main findings from the workshop and of the short questionnaire were included as part of an article titled: "Adapting Cultural Heritage to Climate Change Risks: Perspectives of Cultural Heritage Experts in Europe", which is published in *Geosciences* as part of a special issue titled: “Preservation of Cultural Heritage and Resources Threatened by Climate Change. the article is Open Access and is available sing those links:

Abstract: <http://www.mdpi.com/2076-3263/8/8/305>

HTML Version: <http://www.mdpi.com/2076-3263/8/8/305/htm>

PDF Version: <http://www.mdpi.com/2076-3263/8/8/305/pdf>

Follow-up action plan

The vulnerability assessment framework discussed at the workshop is a key component of the doctoral research of Elena Sesana. More information on this will be disseminated in the near future.

References:

- CASSAR, M. & PENDER, R. 2005. The impact of climate change on cultural heritage: evidence and response. In: CONSERVATION, I. C. F. (ed.) 14TH TRIENNIAL MEETING THE HAGUE PREPRINTS.
- PHILLIPS, H. 2015. The capacity to adapt to climate change at heritage sites—The development of a conceptual framework. *Environmental Science & Policy*, 47, 118-125.
- SABBIONI, C., BRIMBLECOMBE, P. & CASSAR, M. 2010. The atlas of climate change impact on European cultural heritage. Scientific analysis and managment strategies., London, Anthem Press.