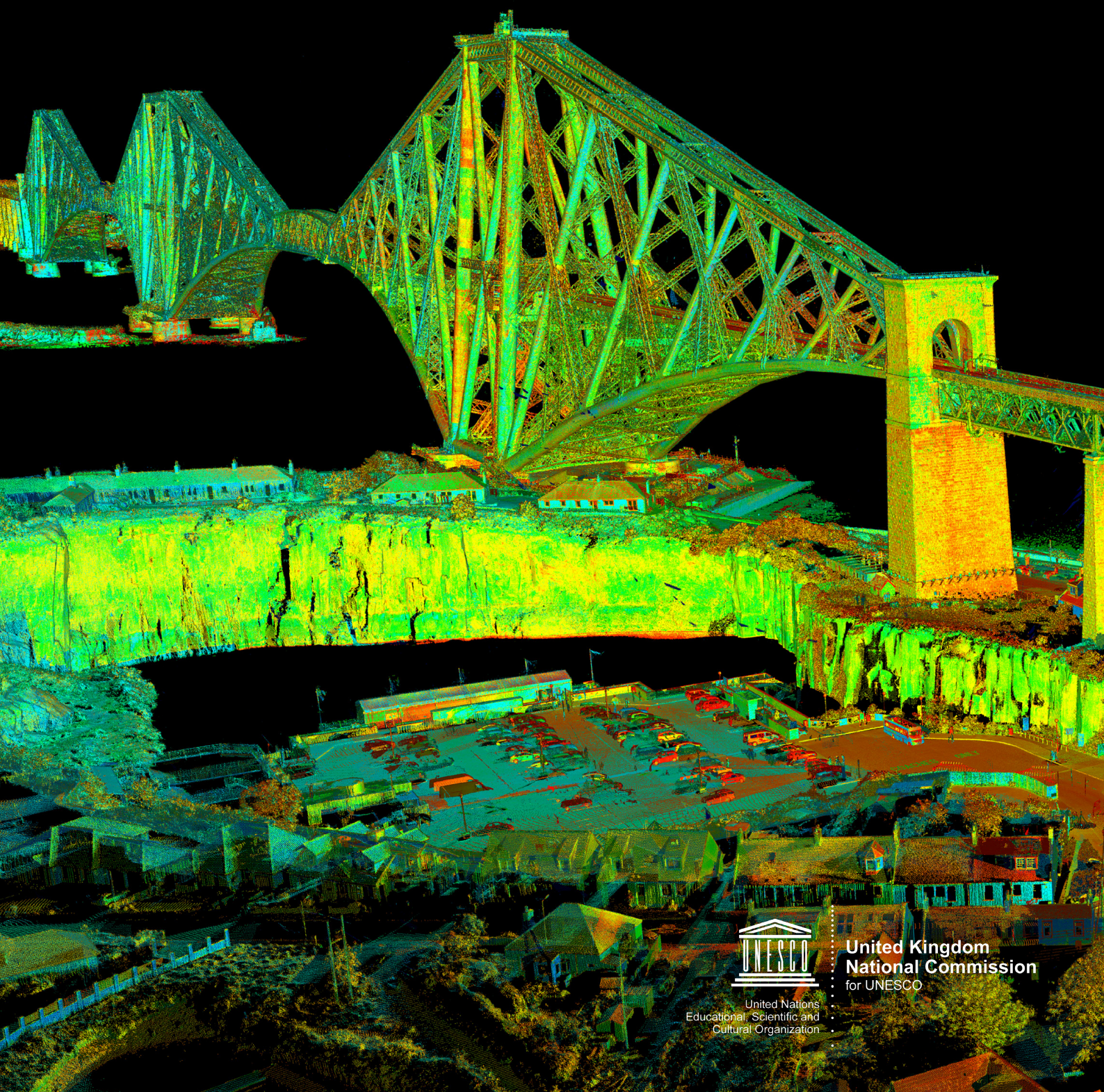


Cultural Heritage Innovation

Opportunities for international development



United Nations
Educational, Scientific and
Cultural Organization

United Kingdom
National Commission
for UNESCO

July 2019

Front Image: Digitally documenting the Forth Bridge, a UNESCO World Heritage Site spanning the Firth of Forth, Scotland. Photo: The Centre for Digital Documentation and Visualisation LLP (a partnership between Historic Environment Scotland and The Glasgow School of Art).

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Foreword

It is a pleasure to introduce this report into the innovative capacity of the cultural heritage sector within the UK and how it can aid international development. The sheer range of UK institutions and examples of innovative practices in cultural heritage for the benefit of people around the world, and the UK economy, contained within these pages demonstrates the importance of the UK cultural heritage sector.

We would like to thank the UK National Commission for UNESCO for undertaking this review and using its extensive networks within the heritage field to draw inputs from such an impressive range of vibrant institutions and to thank the contributing organisations. There are so many commendable examples of innovation and its impacts within this report. Not just in the uses of new technologies and techniques to preserve and record our important shared heritage, but equally in how these assets can be communicated and shared to bring economic benefit and the broadest potential engagement.

The strengths that this report raises show how a wide a range of sectors and communities can contribute to the realisation of the UK's Industrial Strategy. Cultural Heritage is an important aspect of the knowledge economy and our world class institutions in the field show how a global outlook from all areas of the UK can support prosperity at home and international development.

Just as this report highlights the broad spread of excellence, and innovation across the entire UK in the heritage sector it also raises important recommendations on how the introduction of more innovative practices can be advanced and supported to enhance the impact of these efforts for international development and the strength of the UK sector. It is now up to us to realise this potential.

Chris Skidmore MP

UK Minister of State for
Universities, Science, Research
and Innovation

Rebecca Pow MP

Parliamentary Under Secretary
of State for Arts, Heritage and
Tourism



Department for
Business, Energy
& Industrial Strategy



Department for
Digital, Culture
Media & Sport

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The Reanimating Cultural Heritage Project is a collections-based research project leading to reconnection with source communities, southern Sierra Leone. Photo: Paul Basu | www.sierraleoneheritage.org.

Executive Summary

This report provides an overview of 37 projects which demonstrate novel techniques and innovative models which could be used to help promote sustainable development in ODA countries

The UK National Commission for UNESCO (UKNC) has collected information from UK heritage organisations showing that a wide range of innovative¹ activity is taking place, much of which does or could link to Official Development Assistance (ODA)². Based on information from 20 organisations, involving over 140 partners in more than 40 countries, this brief provides an overview of 37 projects which demonstrate novel techniques and innovative models which could be used to help promote sustainable development in ODA eligible countries and contribute to UK government priorities.

The work being undertaken by UK universities and heritage institutions is broad-ranging, diverse and impressive, illustrating the UK's eminence in heritage science and research and its people-centred approach. Some projects are rooted in physical on-site conservation, some on the detailed scientific study of artefacts, some on managing and democratising data, others on communicating and sharing an improved understanding of aspects of the past. Many have visitor experience related outcomes that would contribute to the 10% of global GDP (and 1 in 10 jobs) created by tourism and travel.³

The nature of the innovation varies widely from the development of specific new technologies such as prototype sensors, applying technologies such as 3D documentation and imaging in innovative ways or settings, to employing creative methods to share expertise, and engage communities. Further cross-cutting benefits include professional and policy development and cultural exchange.

Combating pests and pollutants, using mobile applications to bring the past to life, learning from submerged communities, and the protection of

1 For the purpose of the survey, 'innovative' was defined as the process by which new ideas generate economic or social value.

2 Official Development Assistance (ODA), often referred to as overseas aid, is government support which meets the internationally agreed criteria for funds provided to developing countries or multilateral institutions to fight poverty and promote development. To count as ODA, an activity must promote the economic development and welfare of developing countries as its main objective. www.gov.uk/government/publications/official-development-assistance/official-development-assistance

3 World Travel and Tourism Council 2017 <https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2017/world2017.pdf>

cultural heritage from natural disasters and conflict are just some of the areas where this work is helping to conserve heritage, foster community cohesion and stimulate inclusive growth. Some UK bodies are also developing new approaches to contemporary challenges from climate change to repatriation issues.

The cultural heritage sector is already actively contributing to sustainable development in ODA countries, but this snapshot identified several challenges facing the sector in delivering and promoting its development work to maximum potential. The low profile of the cultural heritage sector's agency in international development, assessing impact, and access to funding are among the challenges to address.

The UK's return in 2018 to the top spot in the Portland Soft Power 30 is underpinned by its strengths across the Engagement, Culture, Education and Digital sub-indices. As the report notes, however, *'If the UK is to maintain its global influence, it will need its top ranking universities and tools of digital diplomacy ringing on all cylinders'*⁴.

This brief therefore concludes with recommendations from the UKNC outlining a range of ways Governments and their agencies, international bodies, funders and the institutions active in this field could better deploy the UK's outstanding expertise in working with cultural heritage assets, to advance the economic and social welfare of ODA countries. The UKNC will use its convening power, and that of the international network of 200+ UNESCO National Commissions, to support and facilitate these recommendations.

Recommendations

Profile:

- 1 Government departments and funding bodies should raise the profile and promote the value of cultural heritage in international development.
- 2 Funding bodies should commission – possibly collaboratively – more research to gather evidence of the impact of cultural heritage projects as a driver and enabler of development. This could include longitudinal data to demonstrate long-term benefits.
- 3 Britain is GREAT campaign and the British Council, and other diplomatic networks should work together to profile innovative heritage projects that could be applied in ODA eligible countries.

⁴ <https://softpower30.com/>

'If the UK is to maintain its global influence, it will need its top ranking universities and tools of digital diplomacy ringing on all cylinders'

Funding:

- 4** Governments, culture and heritage agencies and funders should signpost funding opportunities more strongly, to increase and engage a wider range of heritage bodies.
- 5** To promote inclusive growth, funders should consider offering support before and during the application process.
- 6** The UK Government's Cultural Protection Fund should be continued and developed further, beyond 2020.

Human resources:

- 7** In drawing up funding criteria, funding bodies should communicate the value of interdisciplinary research and delivery.
- 8** To maximise opportunities for researchers and staff in ODA countries, funding bodies should draw up criteria which are appropriate to ODA country research contexts.
- 9** Education providers should recognise and promote the need for emergency and post-disaster heritage training.

Brokering and knowledge exchange:

- 10** Foreign and Commonwealth Office, the British Council and UNESCO in-country offices should facilitate and broker networks and contacts.
- 11** Governments should facilitate visa applications and other logistical issues, especially preceding and during themed international 'years'.

Sharing information:

- 12** All funding bodies should require that outputs from projects are made public and promoted in the UK and ODA eligible countries in order to share knowledge and maximise impact.
- 13** Project sponsors should ensure that maximum value is obtained from individual projects by sharing policies and training with other countries.-
- 14** All funding bodies should require long term digital storage and data management as a condition of a grant.
- 15** All funding bodies should require adequate provision for translation and dissemination where appropriate as a condition of grant.



3D laser scanning at the Ring of Brodgar and across Scotland is being used on an unprecedented level.
Photo: The Centre for Digital Documentation and Visualisation LLP

Background

is work was undertaken in recognition of the importance of cultural heritage to sustainable development and its potential to contribute to the achievement of the United Nations Sustainable Development Goals (SDGs), also known as the Global Goals.

the role of cultural heritage is recognised in SDGs 4: 11 and elsewhere in the 2030 Agenda. The UK government is also committed to supporting research and innovation domestically and around the world and has recently launched its position paper on the SDGs, which recognised the important role of science and technology.

In 2017 the UK National Commission for UNESCO (UKNC) was commissioned by the Department for Business, Energy and Industrial Strategy (BEIS) to:

- Develop a high-level overview of innovative practices in cultural heritage being spearheaded by UK organisations and
- Identify the potential for future collaboration with ODA countries.

To gather an overview of existing best practice, the UKNC surveyed a range of organisations and bodies from across the UK involved in the study and practice of cultural heritage including museums and memory institutions, universities, NGOs, funding bodies and professional associations and networks.

Participants were invited to provide details of up to three projects which, in their opinion, showed evidence of innovation and had the potential to be further developed with ODA countries. For the survey, innovation was defined as the process by which new ideas generate economic or social value. Most projects demonstrated research or technological innovation; some projects also included innovative operational techniques, methodologies and ways of working.

Respondents were also asked to identify ways in which any future collaboration could be supported and facilitated by government and funders. A copy of the survey questions is available in Appendix 1. A total of 20 UK organisations responded to the survey with details of 37 projects. This report

The UKNC surveyed a range of organisations and bodies from across the UK involved in the study and practice of cultural heritage

provides a summary of those findings and draws out key recommendations.

The cultural heritage sector is vast, varied and multidisciplinary. This brief does not seek to provide a fully representative inventory or analysis of existing practice but provides an overview and some highlights based on evidence from the projects submitted. Some projects are ongoing while others have been completed.



Birmingham Museums Trust is working on a six-year project to clean and reassemble the Staffordshire Hoard at Birmingham Museum and Art Gallery. Photo: Birmingham Museums Trust.

Cultural heritage: collective approaches

The survey responses demonstrate the diversity of organisations involved in cultural heritage and the inherently multidisciplinary nature of the sector in both research and delivery. The respondents are made up of a range of organisations including museums, universities/colleges, non-governmental organisations (NGOs) and professional associations which vary in size and focus from small and medium-sized enterprises to national organisations.

The organisations who responded to the survey can be categorised as follows (some fall into more than one category). A full list of respondents is available in Appendix 2.

Non-ministerial government department	1
Non-Governmental Organisation	4
Charitable Trust	1
Museum / National Library	5
Professional Association / Network	3
Non-departmental public body	1
Funding body	1
University / College	5

For some organisations, research and funding for cultural heritage and development is at the core of their operations, while a larger number of organisations are involved in more occasional projects. The UK has many centres of excellence in international cultural heritage research and practice:

The **Arts and Humanities Research Council (AHRC)**, which stands out as a funder, supports and funds projects across the heritage sector, three of which are highlighted in this report. AHRC has identified heritage as one of its three main priorities (along with languages and design). It takes a broad view of heritage including tangible, intangible, digital, intellectual and artistic as well as their associated connections and processes. It has funded over 700 awards through the Global Challenges Research Fund, existing funding schemes and

The UK has many
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schemes led by other Research Councils. The organisation's Heritage Strategy⁵ (updated March 2018) recognises the diversity of the sector and that some areas of heritage such as language, skills, indigenous knowledge and practices can be under-reported compared to physical sites and artefacts. Important research strands for AHRC include post-conflict transitions and peace-building; the role of heritage in community identity and cohesion; the wider societal benefits of heritage such as education, environmental conservation and mental health and well-being; and collections management and curation practices. As one of the seven Research Councils, along with Research England and Innovate UK, brought together under the new strategic approach championed by UK Research & Innovation, future activity is likely to foster interdisciplinary working.

University College London (UCL) Institute of Archaeology emerged from the survey as an exemplary centre for research. Encompassing archaeology, cultural heritage and museum studies, it carries out research in the archaeological sciences, heritage studies and world archaeology and hosts the AHRC Leadership Fellow for Heritage. Three of UCL's projects are included in this brief – they cover 8 countries and involve government departments, other universities and national museums as project partners. UCL also has a dedicated Institute for Sustainable Heritage which carries out research in partnership with other universities, stakeholder and professional organisations and private sector bodies, both nationally and internationally. Research themes include heritage risk and resilience, heritage science, modern and contemporary heritage and future heritage. Both institutes also provide training and teaching for future heritage professionals. UCL is also a lead partner in the Culture, Health and Wellbeing Alliance which has generated international interest.

The strong showing of universities and museums confirms these institutions as key knowledge hubs, acting as drivers of innovative thinking across the UK and internationally. Even allowing for bias in submissions, this survey also highlights how UK universities, museums and heritage organisations take the lead in initiating and delivering these projects.

The relatively high number of NGOs responding deserves mention. Alongside museums and universities, civil society organisations, as demonstrated in the Heritage Alliance's *International Report 2018*⁶, deliver training, education, consultancy, conservation and renovation programmes to many parts of the world, often with emphasis on civil society and inclusive growth.

5 <http://www.ahrc.ac.uk/documents/strategy/heritage-strategy/>

6 http://www.theheritagealliance.org.uk/tha-website/wp-content/uploads/2018/03/THAReport2018_Final_Pages.pdf

The strong showing of universities and museums confirms these institutions as key knowledge hubs, acting as drivers of innovative thinking across the UK and internationally

It was particularly striking that all 37 projects submitted involved collaborations with one or more partner organisations within the UK or internationally. Several projects involved collaboration between different parts of the UK and the majority involved some form of international collaboration – in total spanning over 140 partners in more than 40 countries, including UK ODA eligible countries. The partners include multinational bodies such as UNESCO and NATO, other universities, museums and research bodies, government departments and NGOs, as well as the private sector. Overall, they illustrate an impressive level of experience across all parts of the UK in managing disparate parties whether that is for funding, for research, or in delivery.

This too highlights the diversity of the cultural heritage sector. These wide-ranging partnerships result in rich and productive projects with cultural heritage often cutting across the silos in public, private, academic and commercial practice. This was particularly notable in heritage science projects.

A high level of collaboration has a further positive outcome. While UK resources are being used to promote international collaboration for in-country benefit, at the same time there is a return on investment in the form of professional development. UK experts and teams also build their own capabilities through the experience of working with overseas partners.

The survey did not request information on financial sources, however, the following are particularly significant.

European funding sources have been essential for heritage projects and research in the UK for many years. UK partners have benefited notably through the Creative Europe / Culture Programme and the Erasmus Programme. The value of inward investment into research institutions (especially universities) with a focus on heritage is even more significant through, primarily, the Framework Programmes (FP) for Research and Technological Development and its successor Horizon 2020. Heritage science research, in particular, has benefited from EU funding by €121.27 million between 1998-2014 (FP5, FP6, FP7). Between 2008 and 2013, the EU contribution to UK institutions was €4.88 million, while funding from UK research councils in the same period was £21.94 million. From 2014 to 2017, the EU Horizon 2020 contribution to heritage science research alone has been €104.68 million of which UK institutions have been awarded €14.81 million.

These wide-ranging partnerships result in rich and productive projects with cultural heritage often cutting across the silos in public, private, academic and commercial practice. This was particularly notable in heritage science projects

Furthermore, the European Research Council (ERC) plays a vital role in encouraging high quality research in Europe through competitive funding supporting investigator-driven research across all fields, based on scientific excellence. The ERC, a flagship component of Horizon 2020, complements other funding activities in Europe such as those of the national research funding agencies.

Global Challenges Research Fund Some of the projects submitted to the survey are already receiving funding from the Global Challenges Research Fund (GCRF)⁷. GCRF is a £1.5 billion fund set up by the UK Government in late 2015 to support cutting-edge research that addresses the challenges faced by developing countries.

GCRF is part of the UK's ODA budget and is delivered through a range of partner organisations across the UK. GCRF has three challenge areas: equitable access to sustainable development, sustainable economies and societies and human rights, good governance and social justice.

The fund supports projects which address the research agenda for enabling change and the Sustainable Development Goals (SDGs), and maximise the practical impact of research and innovation to improve the lives and opportunities of the global poor.

The **Cultural Protection Fund (CPF)**⁸ is also part of the ODA budget and a new source of funding for cultural heritage projects 2016-20. Pioneered by the British Museum's five-year *Iraq Emergency Heritage Management Training Scheme* to train Iraqi heritage professionals in rescue archaeology, the Department for Digital, Culture, Media and Sport (DCMS) is now working in partnership with the British Council, through the new £30 million fund, to address the destruction of cultural heritage affected by conflict. It also provides opportunities to local communities for training and education, enabling and empowering them to value, care for and benefit from their cultural heritage. The Fund focuses on projects in 12 countries: Afghanistan, Egypt, Jordan, Lebanon, Libya, Iraq, Occupied Palestinian Territories, Sudan, Syria, Tunisia, Turkey and Yemen.

The CPF is supporting the significant training element in the *Endangered Archaeology in the Middle East and North Africa (EAMENA)* project which is active in 7 of the Fund's 12 target countries across the Middle East and North Africa, as well as the *Training in Action* project led by Durham, UCL and KCL in Libya and Tunisia.

⁷ www.ukri.org/research/global-challenges-research-fund/

⁸ <https://www.britishcouncil.org/arts/culture-development/cultural-protection-fund>

e Newton Fund⁹ is administered by BEIS as part of the ODA budget. Established in 2014, it aims to use science and innovation to promote the economic development and social welfare of partner countries, and address the well-being of communities. Up to £150 million of investment is available (until 2021) to 18 ODA countries, delivered through 15 UK partners (including AHRC). The fund focuses on middle-income countries with a view to building long-term partnerships and joint investment. The types of activity that are funded include joint research on development topics; student and researcher fellowships and mobility schemes; challenge funds to develop innovative solutions on topics of interest to developing nations; and science and innovation capacity building.

e Conflict, Stability and Security Fund¹⁰ is open to ODA countries and (unlike some other funds) UK Overseas Territories. The fund's priorities are guided by the Strategic Defence and Security Review and the UK Aid Strategy and it helps to deliver and support security, defence, peacekeeping, peace-building and stability activity.

Other sources of funding include philanthropic trusts, individuals and corporates.

⁹ <http://www.newtonfund.ac.uk/>

¹⁰ <https://www.gov.uk/government/publications/conflict-stability-and-security-fund-cssf/conflict-stability-and-security-fund-an-overview>



Nepali and Iranian trainees at UNESCO World Heritage Site of Lumbini, Nepal Photo: Durham University.

Cultural heritage in action

The projects submitted cover a host of sectors within the broad sphere of cultural heritage with the potential for transferability to developing countries.

Participants were asked to identify from a supplied list which areas their projects covered: physical conservation; digitisation, rematerialising and archiving; materials analysis; dating; remote sensing; underwater/marine investigation and conservation; social media and other. Clusters within 'other' emerged during analysis. The cross-cutting nature of cultural heritage means many projects are multidisciplinary and incorporate more than one theme or sector.

Areas covered	
Physical conservation	13
Digitisation, re-materialising, archiving	11
Social media / interpretation	9
Materials Analysis	8
Remote Sensing	7
Capacity building and professional development	7
Heritage management and archaeology	6
Dating	5
Miscellaneous	4
Underwater Investigation and conservation	2

Some key themes emerging from the projects submitted are summarised below. Subsequent sections look in more detail at the nature of the innovation and implications for developing countries. The responses focussed more strongly on tangible and digital than intangible heritage, perhaps influenced by the context of the project. This is a possible area for future investigation.

Physical conservation

The largest grouping of projects (13 in total), included some form of physical conservation of buildings or fixed or moveable objects. For fixed

Many projects incorporate wider benefits such as helping to involve, educate and engage local communities

structures, these range from the conservation and/or preservation of ancient sites, through experimental capping of masonry walls, to the preservation of modern concrete and cement. Object-focussed projects include the analysis of marine iron and a collaborative public approach around the conservation of Anglo-Saxon treasures. Many projects which have physical conservation as their primary objective involve innovative approaches and techniques such as remote sensing or materials analysis and incorporate wider benefits such as helping to involve, educate and engage local communities.

Traditional repair methodologies are being combined with the repair of modern structures in a project led by the National Trust for Scotland (NTS). There is little or no precedent for this type of project which is restoring the modern monuments (50-years-old) that form part of the Battle of Bannockburn Memorial.

An international project, *Ancient Merv*, led by UCL and involving partners in Turkmenistan, Qatar, France and Denmark is establishing methodologies for the active management of the Ancient Merv UNESCO World Heritage Site (one of the most important cities along the Silk Road). The project is being used as a learning tool, to develop a local skills base, share research and enhance the educational opportunities the site offers, as well as to aid methodological and technical development for the management of other World Heritage sites.

A ten-year project involving Historic England has questioned the traditional approach to conserving ruined masonry walls, providing evidence that soft-capping (as opposed to hard-capping) has economic as well as conservation benefits.

Pioneering work is being undertaken to assess the impact of displaying organic and inorganic materials together and what effect the resultant gases could have on collections. A collaboration between UCL, the National Physical Laboratory (NPL) and the Mary Rose Trust, *Assessment of Environmental Risks during Display*, aims to develop robust analytical methods of acceptable accuracy and repeatability which do not currently exist.

The Mary Rose Trust is also part of a project, with UCL and Diamond Light Source, to research conservation strategies for iron. Building upon the very large body of expertise, the Mary Rose Trust has developed from its collection of archaeological iron from the marine environment, and employing the expertise and instrumentation available at Diamond Light Source, the project will analyse corrosion processes in iron.



The Institute of Conservation Twitter Conference used social media to deliver low-cost networking and knowledge-sharing with a world-wide audience of conservators. Photo: Institute of Conservation

Exploiting Digital Technology

Eleven of the projects submitted are using technologies around digitisation, rematerialising and archiving. A number of these also involve the use of remote sensing. This report reinforces that digital heritage is a growth area where the UK has significant expertise, as recognised in the DCMS Culture is Digital report in March 2018¹¹.

Digital content can be fragile and requires careful management, whilst also offering significant opportunities and challenges in terms of public access, accountability, sustainability and education

Digital content can be fragile and requires careful management, whilst also offering significant opportunities and challenges in terms of public access, accountability, sustainability and education. New models of archival practice and business models for archives and memory institutions, using distributed ledger technology (DLT), are being developed by the National Archives (TNA). The National Library of Wales has pioneered an end to end, open source digital archive solution which provides a foundation for a national solution to the preservation of documentary heritage and could be adopted by overseas partners and supported by partnerships.

3D laser scanning and other innovative digital technologies have been employed to an exceptional level of detail to digitally document Scotland's 5 (as of 2009) UNESCO World Heritage Sites and 5 international heritage sites. Led by Historic Environment Scotland with the Glasgow School of Art and CyArk, the Scottish Ten spans 6 countries (including China, India and Australia) and is enabling conservation, asset management, interpretation of, and virtual access to, the sites involved.

An interdisciplinary project, *MINIARE*, is using a range of advanced non-invasive scientific methods as well as art historical, codicological and palaeographic analysis to study illuminated manuscripts. Co-ordinated by the Fitzwilliam Museum, with partners in Europe and the USA, the project has resulted in a large number of manuscripts being studied, analysed and compared for the first time.

Satellite imagery is being employed to develop a spatial database recording endangered archaeology in the Middle East and North Africa. Led by Oxford University's School of Archaeology, *Endangered Archaeology in the Middle East and North Africa (EAMENA)*, will make fundamental information on each site, including the level of risk, rapidly available to all heritage professionals and institutions.

¹¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687519/TT_v4.pdf



Recording just two of the many Eastern Qing Tombs, China. Photo: The Centre for Digital Documentation and Visualisation LLP.

The impact of climate change on the coastal communities of Wales and Ireland will be monitored in a new five-year project led by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW). *CHERISH* will provide the first 3D baseline fixed survey points and data for selected heritage assets, which will be used to map, monitor and predict the impact of climate change.

Social Media and Public Engagement

Nine of the projects are using social media to raise awareness of their work or drive professional development and wider education, demonstrating potential for transferability. Social media has the potential to increase the diversity of engagement – a long-standing concern of the conservation and heritage sector. The professional body for conservators, the Institute of Conservation (Icon), organised a Twitter Conference using social media to deliver low-cost networking and knowledge-sharing with a world-wide audience of conservators and the public. Participants were able to discuss the papers from 50 speakers through tweets and retweets. The event comprised over 1,000 tweets and attracted over 2 million impressions – reaching an audience far greater than traditional Icon conferences.

Schools, colleges, museums and local communities have been successfully engaged in maritime archaeology through the Maritime Archaeology Trust's *Outreach Bus* (funded by the Honor Frost Foundation). Trialled first in the UK and Northern Europe, the Bus toured Cyprus, supported by promotional materials, articles and social media.

A chance find by a metal detectorist near Lichfield in 2009 led to a project which successfully animated the local and international community, generating interest beyond its immediate historical context. Using a people-centred approach involving extensive media coverage and video blogging, providing insight into the conservation process, Birmingham Museums Trust worked with partners in the UK as part of a Conservation Advisory Panel as well as in France and the USA on a six-year project designed to clean and reassemble the 4,000-plus fragments of gold and silver Anglo-Saxon treasure (the Staffordshire Hoard). As a result, the people in the region have developed a stronger sense of local identity and pride through association with the project and the high profile achieved has facilitated new international partnerships and co-operation.

The Science Museum's touring *Blueprint Exhibitions* for contemporary science are enabling their partners around the world to extend their reach and influence. Hosts are able to feature new or local stories with the Science Museum's content, concept and designs, reaching new international audiences.

Projects are using social media to raise awareness of their work or drive professional development and wider education



X-ray fluorescence (XRF) analysis of a 14th century manuscript. Photo: The Fitzwilliam Museum, Cambridge.

New techniques and models

The nature of the innovation in the cultural heritage sector varies. Some projects are using technologies such as 3D documentation and imaging in innovative ways or settings. In other cases, techniques which are well-established in other fields are being applied in new ways in a heritage context. Other examples demonstrate models employing creative methods to share expertise, promote professional development and stimulate engagement.

New Techniques

The survey identified a number of projects which use existing or emerging technology to improve the accessibility of heritage assets and safeguard heritage against loss.

Historic England was part of a large project, *MEMORI*, involving 12 organisations in 10 countries, which aimed to develop a combined sensor and reader to measure common internal and external air pollutants which affect heritage assets. The project involved extensive research on the effects of organic acids on organic materials – a significant knowledge gap. A prototype sensor is now commercially available and has significant potential for the future of preservation.

Another Historic England project, *The Times of their Lives*, is part of a five-year, cross-UK initiative which has made ground-breaking progress towards the construction of more precise chronologies for the Neolithic period in Europe. The project's innovation lies in the combining of Bayesian statistical modelling with Neolithic archaeology and radiocarbon dating. As a result, it has altered how we can study change in the distant past, to the scale of generations and even decades as opposed to centuries, offering a new kind of European prehistory together with the opportunity to rethink wider archaeological approaches to the study of time.

The Mary Rose Trust is aiming to develop cost-effective analytical

traceable techniques to monitor the gases produced by displaying organic and inorganic materials together. It is also making creative use of electron microscopy, synchrotron X-ray diffraction and X-ray absorption spectroscopy to analyse the corrosion process of the extensive collection of iron artefacts in its care. This will give a unique insight into the effectiveness of previous conservation strategies and inform future ones.

Birmingham Museums Trust is working with the Collections Trust to map indoor pests and provide an integrated pest management (IPM) website. *What's Eating Your Collection?* collates information on integrated pest management, including an overview of IPM as a process, a guide to insect identification, and a bibliography. It also allows users to create 'hotspots' for insect pests, which allows the tracking nationally of the presence of museum pests across the UK. This is the first attempt to map where such indoor insect pests are found. The project recognises the potential impact of climate change on the nature and manifestation of pests and the significance of this information for memory institutions.

The Scottish Ten project's use of new 3D scanning technology to analyse and monitor ten sites across the world contributed directly to 2 sites (India's Rani-ki-Vav and Japan's Meiji Industrial Heritage) becoming inscribed by UNESCO as World Heritage Sites. It is also serving as a diplomatic tool, enabling countries from across the globe to collaborate and offering Historic Environment Scotland the opportunity to showcase its innovation internationally.

The National Archives' (TNA) *Archangel project* is exploring the use of distributed ledger technology for digital archiving. Led by Surrey University, this interdisciplinary feasibility study is seeking to design, develop and evaluate transformational technologies and business models to ensure the long-term sustainability of digital public archives. TNA are building international links with academics and archivists and envisage a new socio-economic-technical model for digital archiving.

New models

New models around process and delivery also emerged from the survey. Some of these are being used to promote professional development worldwide in the heritage sector and to educate and engage local communities and the public about the value of their cultural heritage. This underlines the UK's characteristic, and highly respected, people-centred approach. New technologies provide opportunities and challenges for those working

in a wide range of skills and professions involved in cultural heritage.

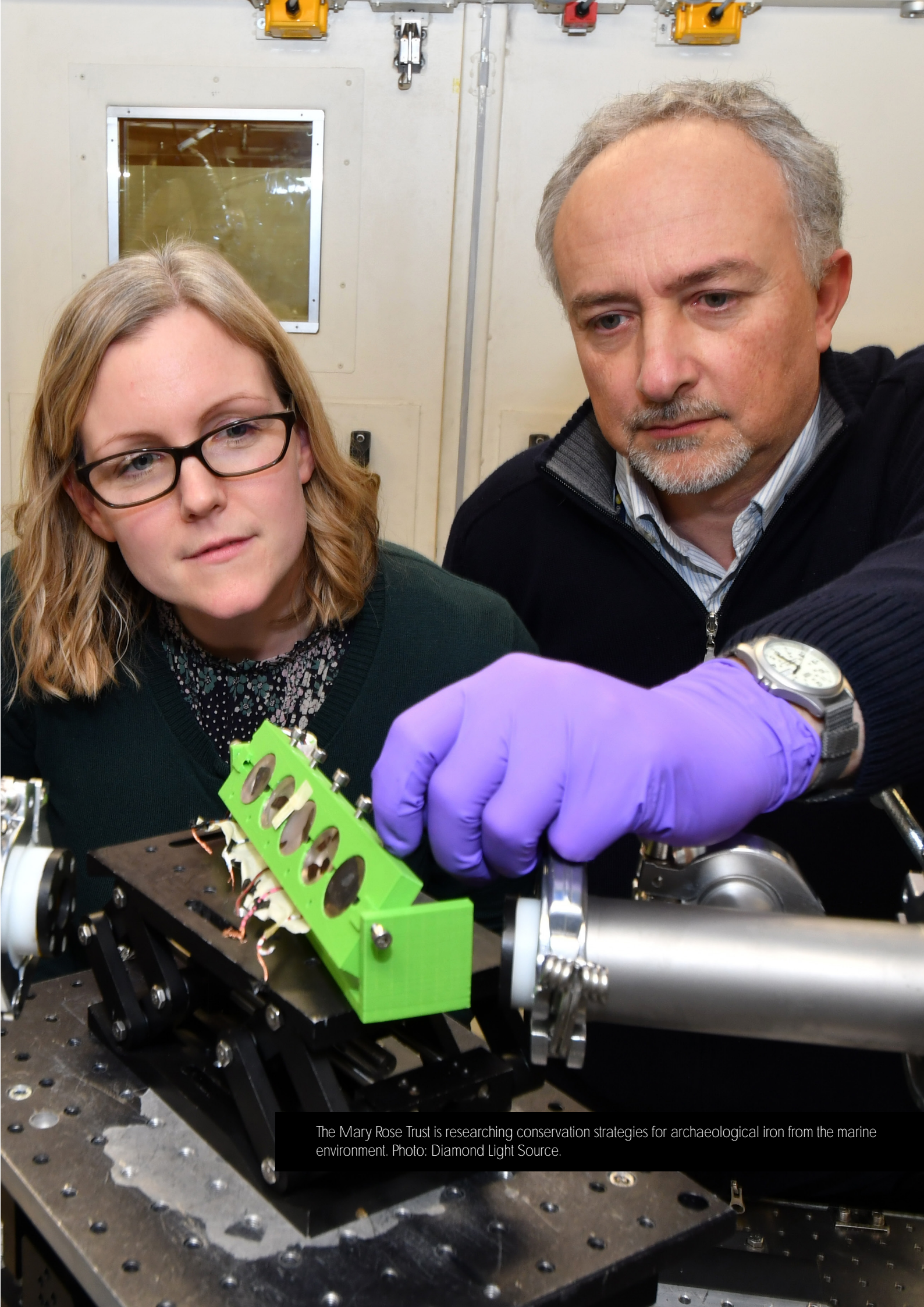
The rapid pace of change requires the development of new expertise while sustaining traditional skills. Several projects incorporate vital skills development, new management processes and the sharing of information for the wider sector and internationally.

The V&A's *Culture in Crisis* programme aims to foster international collaboration and promote a cross-disciplinary approach to protecting cultural heritage across the globe, including in post-conflict and post-disaster environments. The programme recognises the impact of cultural heritage loss on communities and the different positive role its preservation can have in rebuilding and recovering these areas following wars and disasters. It includes support for law-enforcement, nationally and internationally, and working with the British Armed Forces to develop strategies to prevent the illicit trade of cultural goods. The *Culture in Crisis* network seeks to unite artists, designers, architects, conservationists, archaeologists and social activists, creating a more holistic approach to promoting and preserving heritage. A ten part series of recordings exploring 'designed solutions' to threats posed to our cultural heritage is part of the programme.

Icon's *Twitter Conference* proved a successful means of providing inclusive access to information and discussion. The project transposed a traditional networking and knowledge-sharing event onto an online platform, increasing the event's accessibility and outreach. It allowed local stories to become global issues while democratising the debate by enabling anyone in attendance to participate and discuss.

Icon is also engaged in developing guidelines for ethical sampling and best practice in documentation – especially in the light of changing digital systems. The *Icon Documentation Network* fosters collaboration across cultural heritage conservation. The Network was established with the belief that the advent of technology requires a more focussed approach to the development of tools and methodologies for documentation. The group meets twice a year and covers surveying, 3D capturing techniques, photography and digitisation, analytical records, copyright issues and documentation as a vehicle for public outreach.

Birmingham Museums Trust is working with the Science Museum, Imperial War Museum, Museum of London, and Arts Council England to develop a *Hazards e-Learning Tool* which collates information on how to recognise and manage hazards such as arsenic and asbestos, which are commonly found in certain types of collections. The sixth in a series of



The Mary Rose Trust is researching conservation strategies for archaeological iron from the marine environment. Photo: Diamond Light Source.

e-learning tools, it will be the first time this information is available in one place and the resulting website is accessible worldwide.

The *Reanimating Cultural Heritage* project offered a digital solution to bringing together Sierra Leone's dispersed collections of cultural heritage.

The UK team worked with the Sierra Leone National Museum and NGOs to develop the *Sierra Leone Heritage* website, which includes ethnomusicological recordings and specially commissioned videos showing the museum objects in use.

Other projects emphasise the need to retain basic skills through apprenticeships, manuals and procedural guidelines.

The Federation of British Historic Vehicle Clubs (FBHVC) has worked with partners worldwide to develop an International Charter (*The Turin Charter*) providing guidelines and practical advice on the preservation and maintenance of historic vehicles. They are also leading a collaborative project to promote an accredited Apprenticeship scheme in the UK, in recognition of the value of the industry to the UK economy (estimated at £5.5 billion a year in 2016), faced with an existing skills-gap and compounded by the loss of retiring practitioners. Through these projects the FBHVC is helping to raise awareness and increase the profile of historic vehicles as a valuable and integral part of wider cultural heritage both in the UK and internationally.

Management models

Oxford University's *EAMENA* project is using satellite imagery to rapidly record and make available information about archaeological sites and landscapes which are under threat. The partners from the 20 countries involved will gain valuable knowledge about their cultural heritage through a shared spatial database. Nine of the partner countries will receive on-going training in heritage management, funded through the Cultural Protection Fund. The involvement of relevant authorities on the ground, the strong emphasis on training and knowledge-sharing, and the international scope of the project make it stand out as a pioneering project in terms of management and collaboration.

The Chartered Institute for Archaeologists (CIfA) is seeking to develop an internationally agreed standard and accreditation for archaeology, in recognition of the international nature of the profession. Under the agreed standard, archaeologists are accredited for their technical and ethical competence, not nationality or country of practice. This is not innovative for professional bodies but is innovative for archaeology. CIfA

acknowledges that it has been a slow project that has required diplomacy and patience. There is, however, significant interest internationally.

UCL is leading a two-year project in Libya and Tunisia which intends to serve as a replicable model for Libyan and Tunisian heritage professionals to train new staff, creating a sustainable cultural protection model. UCL's *Ancient Merv* project in Turkmenistan has developed new approaches to serial transnational world heritage nominations and management. These have been followed up by several commissioned studies for World Heritage serial site nominations. The emphasis on a holistic approach has led to high-level government meetings in the region to plan transnational tourism initiatives.

Engagement and education

As well as fostering the skills and development of professionals, there are innovative technological and communication models being used to educate and engage children, local communities and the broader public in culture and heritage.

The Science Museum's *Blueprint Exhibitions* allow venues worldwide to host simultaneous contemporary science exhibitions without the costs or environmental concerns associated with a traditional touring exhibition. The Science Museum provides content meeting its acknowledged high quality standards; the host controls all the local costs and the presentation, tailoring the size, design, content and events programmes exclusively to their own context. The project supports and extends continued collaboration with international partners.

Historic Environment Scotland (HES) is working with partners in Germany and Austria to produce mobile applications for the Frontiers of the Roman Empire UNESCO World Heritage Site. Advanced Limes Applications is developing digital content for on-site display using augmented reality and 3D scanned Roman artefacts from museums and 3D models of building reconstructions. Digitally documented artefacts will appear on mobile screens, geospatially located on the sites where they were found, thereby bringing artefacts from museums back out to sites in a virtual environment. The project is applicable for any country with a Roman Frontier running through it – as well as Europe, this includes countries in the Near East and North Africa. It will also use gamification to engage audiences and enhance their understanding, with technology tested by a stakeholder community.

HES is also developing *Go Forth: 3D Forth Bridges Learning Resource* to support STEM subjects, history and Scottish Studies and enhance problem solving, investigation of evidence and digital literacy. The aim is to create animations, digital educational games, CAD and coding resources, virtual reality tours and an augmented reality app and learning resource packs which will be freely accessible to school children across Scotland.

The Maritime Archaeology Trust's Outreach Bus reversed the centralising trend in contemporary curation, using social media and a touring exhibition to bring maritime archaeology out to local communities in Cyprus (where the materials remain as part of the long-term legacy of the project).



3D laser scanning at Skara Brae Photo: The Centre for Digital Documentation and Visualisation LLP (a partnership between Historic Environment Scotland and The Glasgow School of Art.)

Potential in ODA eligible countries

Almost a quarter of the projects submitted for this study are already being deployed in 15 ODA eligible countries. The majority of the other projects were considered by our respondents to have potential in developing countries or to be able to deliver valuable research and methodologies which could help to build capacity.

In addition to the direct benefit to the local community of restoring or developing their cultural heritage, the projects provide opportunities for wider economic and social benefits and can offer secure jobs and worthwhile occupations. These projects also act as pilots for future collaborations and, ultimately, as ambassadors for the UK's global aspirations.

Driving development

For projects to be eligible for ODA, the development capacity and welfare of the recipient country must be the prime objective. Accordingly, several projects are specifically seeking to use cultural heritage to support the development and growth of the local economy and improve the well-being of local populations. Areas of potential benefit include heritage tourism, creative and digital economies, and heritage craft skills, which are all means of delivering this objective.

The AHRC-funded *Rising from the Depths Network Plus* involves 16 partners in Europe and East Africa. Funded by the GCRF, this emerging project is seeking to use East Africa's marine and cultural heritage to develop sustainable social, economic and cultural benefits. It will identify how tangible submerged and marine cultural heritage in Kenya, Tanzania, Mozambique and Madagascar and its associated intangible aspects could contribute to social cohesion and sustainable growth and enhance the value and impact of overseas aid in the maritime sector. Identified by UNESCO as an example of best practice in sustainable marine heritage management, the project is hoping to act as a driver for cohesion between the social, economic and environmental aspects of development.

In Northern Vietnam, the *SUNDASIA* project is focussed on learning from the archaeological, geological and ecological history of the Tràng An Landscape Complex UNESCO World Heritage Site. Led by Queen's University Belfast and involving partners in the UK and Vietnam, the project is exploring how prehistoric tropical communities adapted to cycles of coastal inundation over 60,000 years. Working with local tourist guides, the findings from the project are being used to inform local heritage management practice and develop the sustainable heritage tourism offering.

Conflict and post-conflict

Many projects are looking at ways to minimise the risk to cultural heritage during conflict and also investigating the use of cultural heritage to help unite communities and drive sustainable development in post-conflict situations.

The UNESCO Chair in Cultural Property Protection and Peace at Newcastle University is leading the multinational *Cultural Property Protection and Peace* project involving international partners from the military and heritage sector. Previous work in cultural property protection (CPP) has often been conducted in isolation, either by armed forces or by heritage managers, making it difficult to implement CPP across the spectrum of armed conflict and emergency response. This project combines theory and practice, linking specialist expertise in military activity, heritage management and geo-spatial data with partner organisations and communities conducting CPP activities in the field. It seeks to harness global standards and global and national legal mechanisms to develop CPP policies in the UK and beyond, and contribute to the work of armed forces and international bodies to stop illicit trade in cultural artefacts. Partners include international bodies such as UNESCO, NATO, ICOM, ICOMOS, ICCROM and Blue Shield Committees across the world, as well as the UK Department for Digital, Culture, Media and Sport and Ministry of Defence. The work of the Blue Shield has led to improvements in managing CPP in conflict in several armed forces, on exercises, in procedures, and in standing structures, as well as significant advances in understanding the implementation of international humanitarian law in practice.

The *Reanimating Cultural Heritage* project explored how the cultural sphere could contribute to Sierra Leone's post-conflict recovery. Funded by AHRC, the project established a connection between the Sierra Leonean Ministry of Cultural Affairs, National Museum and local NGOs, and museums and archives in the UK and elsewhere holding significant Sierra Leonean

collections. It centred on a series of collaborations including the Sierra Leone National Museum, the British Museum, Brighton Museum and Art Gallery, Glasgow Museums, the World Museum Liverpool, the National Railway Museum and the British Library Sound Archive. The project also engaged in capacity building activities in the cultural sector in Sierra Leone and commissioned the production of videos on cultural heritage themes from Sierra Leonean partner organisations including Ballanta Academy of Music, iEARN-Sierra Leone, and Talking Drum Studios. It brought together dispersed collections of objects, images and sound recordings in an innovative digital resource and employed participatory methods to pilot and evaluate the digital resource in Sierra Leone. The reception of 'digital repatriation' in source communities has not previously been critically assessed.

The *EAMENA* project was established in January 2015 to respond to the increasing threats to archaeological sites in the Middle East and North Africa. Involving partners across the region including Syria, Palestine and Lebanon, the project will introduce remote sensing for the rapid documentation of archaeological sites and assessment of threats. The project's spatial database will be accessible to all heritage professionals and institutions. Through training and sharing information, the project is intended to increase understanding of cultural heritage in the countries involved and improve the local economy.

It is recognised too that Syria's marine heritage could play a valuable role in the country's re-construction post-conflict. Funded by the Honor Frost Foundation and led by the Universities of Ulster and Southampton, the *Benchmarking Syria* project is seeking to undertake a comprehensive baseline assessment of the nature, extent, needs and threats of the maritime archaeological resource in Syria. The project has benefited from the work of *EAMENA* but explicitly addresses Syria's coastal and marine heritage resource.

Recovery from natural disaster

Safeguarding, recording and where appropriate restoring cultural heritage can be a vital part of helping a damaged community to regain its sense of identity post-disaster.

An international project to assess the protocols involved in re-building Kathmandu's UNESCO World Heritage Site following the 2015 earthquakes is being led by the UNESCO Chair on Archaeological Ethics and Practice in Cultural Heritage at Durham University. Commissioned by the Government of Nepal and UNESCO, and also involving partners from India,

Myanmar and Sri Lanka, the project has established new multidisciplinary partnerships with architects, engineers, historians, conservators, heritage managers, first responders and local communities. The team has co-designed methodologies to record and safeguard heritage sites after natural disasters, as well as focussing on recycling historic building materials. The project aims to transform the way in which post-disaster sites and monuments are reconstructed and establish methodologies for the recording and evaluation of collapsed heritage sites. It will raise awareness and disseminate information among governments, NGOs and key actors in the field.

Climate change

Climate change is a cross-cutting theme in cultural heritage, and one which is getting increasing traction in international discourse. Four of the projects submitted are looking specifically at the impact of climate change in a variety of settings. Three are assessing the effect of climate change on coastal communities in different parts of the world and one is looking at environmental risks due to the changing nature of pests.

The AHRC-funded *SUNDASIA* project is using evidence from prehistoric foraging communities to inform modern responses to climate change and rising sea levels. The project will explore how these communities adapted to cycles of coastal inundation in Southeast Asia and how understanding these processes can inform modern responses to climate-induced rising seas. It will provide a detailed case study of the cultural-economic effects of coastal inundation, providing a valuable model for other archaeologists working in the field and will help develop local heritage management practice in Vietnam.

East Africa's rich marine cultural heritage is under threat from climate driven coastal change, coastal development and unsustainable fishing practices. *Rising from the Depths* will establish and maintain a diverse trans-boundary network of researchers, government officers, scientists, policy makers, UN officials, NGOs, heritage professionals and industry specialists who will collaborate to establish ways of protecting the marine cultural heritage, stimulating income and fostering local identities.

RCAHMW is leading the project, *CHERISH*, to assess the impact of climate change on Irish Sea coastal communities in Wales. The reefs, islands and headlands of the Irish Sea have a rich cultural heritage and are home to a number of designated heritage assets, yet they remain largely unexplored and unmapped and their environmental context poorly understood. They are at

constant risk through exposure to extreme weather and storms, which are predicted to increase in intensity and frequency due to climate change. The project will map past environments and model predicted changes over the next 100 years using innovative data capture, modelling and visualisation products. Selected heritage assets expected to be impacted by climate change – on land and under the sea – will be surveyed, sampled and dated.

The project is aiming to raise knowledge and awareness of the historic environment and climate change, including the integration of project data within open access shared spatial data infrastructure (SDI) to enable full reuse of all datasets across and beyond Europe including via the EU Climate-ADAPT Platform.

Birmingham Museums Trust's UK-focussed *What's Eating Your Collection?* website is the first attempt to map where indoor insect pests are found. It is hoped it will lead to an understanding of distribution, and identify hot spots for certain insects and whether the spread is related to climate change.

Capacity building

Many projects showed potential for building capacity and capabilities among project partners. Sharing knowledge, upgrading infrastructure, enabling cultural organisations to manage local heritage assets and developing indigenous heritage skills are all key potential outcomes. The survey also showed that there is a significant corpus of individuals in the UK capable of leading innovative cross-disciplinary research and delivering complex multi-partner projects.

Open access to research findings and open source solutions are also common outcomes to aid information sharing and skills development.

Historically, cultural heritage has been a low priority in Sierra Leone, one of the poorest countries in the world, which has been riven by conflict and disease outbreak. The *Reanimating Cultural Heritage* project contributed to a new awareness among Sierra Leoneans at home and abroad of the significance of their country's heritage, and helped develop the capacity of cultural institutions to contribute to strengthening civil society. It has also informed museum policy-making more widely and exemplified how museums can play a role in strengthening international relations and provide a platform for future research and capacity building initiatives.

Libya and Tunisia are renowned for their prehistoric, classical and medieval



Workshop participants undertaking a rapid condition assessment at the Byzantine site of Umm er-Rasas in Jordan in January 2018. Photo: EAMENA, University of Oxford.

sites and historic landscapes. Instability in the region has put many of these sites at risk from conflict damage, looting, vandalism and illegal construction. The two-year project, *Training in Action*, will train 40 staff from Libyan and Tunisian national heritage organisations in documentation techniques, preventative conservation and heritage management and enable them to train further staff – enhancing the reach and sustainability of the project.

The Science Museum investigated and promoted the concept of Science Capital as part of its *Enterprising Science* project. Working with King's College London and UCL, the project translated academic research into practical public programmes, seeking to understand how young people of all backgrounds engage with science and how their engagement could be supported. The Science Museum Group launched the *Academy of Science Engagement* in 2018 and plans to extend the project overseas, emphasising the importance of training in STEM education for teachers, communication professionals in museums, and scientists themselves.

Gender Equality

UNESCO has identified gender equality as a cross-cutting priority so respondents were also asked whether their projects could contribute to this. Thirty of the projects identified that they could contribute to gender equality either through targeted initiatives or general capacity building.

Cultural heritage projects and research have a role to play in promoting gender equality as well as in integrating communities and in giving a voice to minority or marginalised ethnic groups (whose heritage is often lost or ignored). However, the disappointingly vague responses to this question indicate that this is an area which warrants further attention. It is recognised as a future area of focus by AHRC along with broader issues around inclusion, diversity and human rights and how developments in heritage affect local and marginalised communities. Similarly, the potential risks involved with some innovations, if they are not rooted in a sound understanding of local context and working with local partners, need to be understood and addressed.

United Nations Sustainable Development Goals (SDGs) or Global Goals

Although respondents were not specifically asked to relate their projects to the SDGs, the survey results provide clear evidence that cultural heritage has a role to play in the delivery of SDGs¹² and their associated targets.

Some respondents reflected that, due to the cross-cutting, multidisciplinary nature of cultural heritage, its role and impact in sustainable development are not fully recognised by funders and are under-represented. Within the SDGs themselves the role of cultural heritage is very submerged. Culture and heritage only receive a specific mention in the targets associated with SDG 11¹³ and SDG 4¹⁴— although they can make important contributions to many others through, for example, health and well-being and economic growth.

Although it is welcome that the role of cultural heritage has been acknowledged within the SDGs, there is a concern that, without raising the profile and understanding of the role cultural heritage can play in sustainable development, it may not be fully appreciated, utilised or evaluated as part of the SDG process. Ideally, sustainable development goals should incorporate heritage as a powerful tool, especially with regards to economic and social impacts, with heritage also incorporating a sustainable approach, to safeguard it for future generations.

¹² See Appendix 3

¹³ 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

¹⁴ 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage

Supporting further collaboration

Respondents were asked how further collaboration with eligible overseas partners could be made easier and/or supported, for example by governments or funders. Replies identified three areas: people, resources and brokering.

People

‘When it comes to the understanding and protection of cultural heritage the UK has world class institutions and legal framework, but it is punching well below its weight on the international stage. There is a “crisis in culture” in many areas of the world, not just because of conflict, but as a result of rapid population growth.’

This comment from a respondent underlines a critical disconnect between policy and practice as well as an urgent need to address it. At the highest level, the UN Hangzhou Declaration 2013, seeking a more holistic approach, puts culture on an equal par with the economic, social and environmental pillars of sustainable development. The UN’s Sustainable Development Goals, however, still only partially capture the full extent of the contribution cultural heritage can offer. The UK’s own national policies in this field are still developing; for example as recently as 2015, the UK Aid Strategy¹⁵ and GCRF strategy and agenda¹⁶ do not specifically mention the role of cultural heritage in international development.

Since the DCMS Culture White Paper¹⁷ in 2016, there have been a series of documents urging agencies and arms-length bodies to raise the level of international engagement through the medium of cultural heritage. This instrumental approach expects the cultural heritage sector to deliver a range of outcomes: to foster international cultural relations and retain the UK’s high soft power ranking, to respond to global crises and to achieve sustainable economic and social benefit in developing countries.

¹⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/478834/ODA_strategy_final_web_0905.pdf

¹⁶ <https://www.ukri.org/files/legacy/research/gcrf-strategy-june-2017/>

¹⁷ <https://www.gov.uk/government/publications/culture-white-paper>

BEIS Single Departmental Plan¹⁸ aims to build the profile of the UK on the international stage (2.4) and, elsewhere, to focus efforts in areas where the UK can build on its distinctive strengths (1.3). DCMS Single Departmental Plan¹⁹ includes promoting and protecting cultural property in the UK and overseas as well as building a presence overseas. Behind these Departmental objectives lies the Industrial Strategy, which recognises the value of the UK's heritage and the contribution it can make to positive outcomes – applicable of course both in the UK and in UK projects internationally.

Despite all these aspirations, the profile of cultural heritage and the cultural heritage sector within international development remains stubbornly low. This invisibility is a challenge for those seeking to initiate – and fund – heritage-related projects to drive sustainable development internationally.

Yet several pathways already exist: the GREAT campaign²⁰ successfully promotes British business abroad, frequently using cultural heritage images to support its messages. AHRC's revised *Heritage Strategic Priority Area: Future Directions*²¹ sets out its strategic objectives and framework with an emphasis on developing heritage 'as an innovative and broad cross-disciplinary field' and on strengthening global interconnections.

The British Council, with its network of over 200 in-country offices, has published *Cultural Heritage for Inclusive Growth*²² (2018) showing how the UK's people-centred approach to heritage can benefit all levels of society, bringing social cohesion and economic growth to developing countries. It intends to pilot this approach in three countries, while DCMS' Cultural Protection Fund Annual Report 2017-18 brings together the first social and economic impacts of its funding.

The practice of cultural heritage in international development is gradually percolating down from national and international policy-makers but progress is slow. Its role here needs to be more clearly understood, expressed and more widely promoted by those working in, or providing funding for, international development and global challenges.

18 BEIS Single Departmental Plan 23.05.18

19 DCMS Single Departmental Plan 23.05.18

20 <http://www.greatbritaincampaign.com/>

21 <https://ahrc.ukri.org/documents/strategy/heritage-strategy/>

22 <https://www.britishcouncil.org/arts/culture-development/cultural-heritage>

Resources: financial and human

Britain's own historic collections are key to several projects; without its collection of marine iron, the Mary Rose Trust would be unable to explore corrosion; the Antonine Wall inspired Historic Scotland to develop the app on Roman frontiers which has potential for application in every country with a Roman Frontier running through it. To extract maximum value from this national research infrastructure, not only do their condition and management need to be properly funded at home but also they need to attract resources both financial and human to support research excellence and innovation. Even more pressing is the need to communicate that expertise in sharing knowledge and practice with other countries.

Funding

The UK government has established a number of dedicated funding streams which are enabling UK organisations to lead innovative cultural heritage projects around the world. These include the Cultural Protection Fund, the Global Challenges Research Fund, the Newton Fund and the Conflict, Security and Stability Fund. BEIS in its Single Departmental Plan commits to specifically increasing research and development investment across the economy to 2.4% of GDP by 2027.

Major global institutions and foundations such as UNESCO, the World Monument Fund, Global Heritage Fund, Arcadia and the new Geneva-based ALIPH fund, channel public and private philanthropy through cultural heritage programmes. Other smaller funds also exist such as the ICOM UK travel grant scheme which, in partnership with the British Council, provides funding for non-national museums to develop international partnerships.

Yet, a large number of responses still see funding as a significant challenge. More funding would undoubtedly boost greater collaboration and research opportunities. Lack of funding can also make it difficult to access technical expertise and facilities, particularly for memory institutions who carry out projects within a much wider remit. There was a suggestion that the Cultural Protection Fund should be extended to further countries and to include natural disasters.

Other respondents highlight the need for better access to information on funding sources or support for sector organisations in making applications. To promote ethical partnerships, funders should ensure adequate funding provision for under-resourced partner countries. If

funding bodies wish to broaden the pool of applicants, they should resource pre-application advice.

It can take time for the legacy of a heritage-related project to be fully assessed and understood, particularly in relation to sustainable development.

The long-term impact of cultural heritage projects, their genesis and, not least, their value for money is a recurring motif which is perhaps better addressed by bodies other than those who undertake projects on the ground.

The multi-disciplinary nature of the culture heritage sector is both a strength and a challenge; cultural heritage projects often cut across traditional professional silos but it can also mean the sector is undervalued and organisations can struggle to access funding. Heritage professionals tend to be dispersed within big institutions, or based in small, more focussed ones – both of which can make it hard for them to speak as one. Similarly, successful development projects rely on strong partnerships with developing countries which can take time to foster. This is scattered profile has repercussions on access to funding.

Recommendations:

- 4** Governments, culture and heritage agencies and funders should signpost more strongly funding opportunities to increase and engage a wider range of heritage bodies.
- 5** To promote inclusive growth, funders should consider offering support before and during the application process.
- 6** The UK Government's Cultural Protection Fund should be continued and developed further, beyond 2020.

Human resources

The projects featured in this brief involve impressively diverse collaborations with partners in over 40 countries.

Collaborative partnerships require a range of skills for successful interaction and creative engagement. Even though many of the projects featured in this study include an educational and/or training element, more targeted capability building is needed to upskill potential associates in the wide range of skills now needed to exploit new digital and creative opportunities. Furthermore, in some ODA countries, researchers have to work within strict

boundaries which can make engagement with trans-national, interdisciplinary projects a challenge. The concept and benefits of cross/interdisciplinary research are not recognised everywhere, and this can be a barrier.

The heritage sector is of value to the UK economy as it is to recipient economies. It is important that sufficient attention is given to UK training and skills development and retention including equipping professionals to participate in international work and retaining UK expertise in global cultures. The AHRC's future strategy recognises the importance of nurturing interdisciplinary links, strengthening global connections and extending partnerships and the leadership role the UK heritage sector can play within this.

More specifically, the survey highlighted that the need for post-disaster heritage training is not recognised by many agencies. The deliberate destruction and theft/looting of cultural property in armed conflict in recent years has highlighted that the heritage sector is poorly equipped to deal with this. It has historically operated in isolation from other key sectors in this field and, not least, is at odds with the tempo at which armed conflict operates.

There is, unfortunately, a growing area which needs a higher level of investment if the UK is to retain its current reputation. At a broader level, in addition to the formal role of Higher Education Institutions, primary and secondary education also plays an important role in promoting the value of cultural heritage and the role research innovation can play within it.

Recommendations:

- 7** In drawing up funding criteria, funding bodies should communicate the value of interdisciplinary research and delivery.
- 8** To maximise opportunities for researchers and staff in ODA eligible countries, funding bodies should draw up criteria which are appropriate to ODA-country research contexts.
- 9** Education providers should recognise and promote the need for emergency and post-disaster heritage training.

Brokering and Knowledge Exchange

There is a strong focus on learning from exchange and best practice so,

unsurprisingly, knowledge exchange is a primary concern.

The recurring reference to networks shows how important personal and institutional connections are in developing projects and in raising funding from multiple sources. To assist this crucial factor, digital directories of contacts working in similar fields were suggested. Using existing frameworks and networks, through the British Academy and British Council for example, could accelerate the process of collaboration more effectively than through one-off projects.

Funders and governments could adopt a brokering role by promoting opportunities for international partnerships and funding more widely with sector organisations. Similarly they could share their knowledge of global partners and of approaches to fostering international relationships, including principles of ethical partnership. In particular governments and especially through the British Council could support international collaboration through introductions to relevant government departments overseas, by assistance with organising international conferences, seminars and meetings, and with assistance with the costs of travel, translation and legal fees.

Throughout all this, mobility is key.

Recommendations:

10 FCO, British Council and UNESCO in-country offices should facilitate and broker networks and contacts.

11 Governments should facilitate visa applications and other logistical issues, especially preceding and during themed international 'years'.

Sharing information and knowledge

Many of the projects are providing open access solutions or sharing their research publicly, enhancing the UK's reputation internationally as a leader in this field. Respondents also indicate that they would benefit from learning more of others' approaches and having more opportunities to promote their own projects. It is important this exchange of knowledge and best practice is facilitated in funding provisions and by Government Departments managing ODA funding. This may need a more inclusive approach, to avoid project outputs being the preserve of academics, but to benefit the whole of society. It was, however, recognised that digital content can be fragile and that

accessibility is at risk due to changing formats and the fast pace of technological change. In an ODA context there is a real risk that information – lost or inaccessible – means that the full value of investment, ie public money, is not realised.

Recommendations:

- 12** All funding bodies should require that outputs from projects are made public and promoted in the UK and ODA eligible countries in order to share knowledge and maximise impact.
- 13** Project sponsors should ensure that maximum value is obtained from individual projects by sharing policies and training with other countries.
- 14** All funding bodies should require long term digital storage and data management as a condition of grant.
- 15** All funding bodies should require adequate provision for translation and dissemination where appropriate as a condition of grant.

Aligning national and international objectives

The UK regained its position at the top of the soft power ranking in 2018 with engagement, culture, digital and education scoring particularly highly. Focus on retaining this standing post-Brexit is likely to intensify. In this context, the UK Government's pledge to continue spending 0.7% of gross national income on ODA is a beacon to the rest of the world. More specifically, BEIS Single Departmental Plan notes that the UK should build on its 'distinctive strengths', one of which must be our heritage, as recognised by the Britain is GREAT campaign.

The cultural heritage sector can help achieve all these goals. To maintain and build its international reputation for research excellence and collaboration, it is essential however to strengthen the interconnections between research, policy and practice. While the professions are enthusiastic and institutions are ready and able, Government recognition and practical support through BEIS and DCMS is critical to a more integrated approach. The recommendations above offer practical options to support that process.

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The views contained in this policy brief are those of the UK National Commission for UNESCO and do not necessarily reflect those of the UK Government or the individuals or organisations who have contributed to this brief.

Appendix 1

Survey questions

- Project Name
- Start month/year/End month/year
- Which of the following areas does the project cover? (Select one or more options from pre-supplied list: digitisation, re-materialising, archiving; physical conservation; materials analysis; social media/interpretation; remote sensing (geophysics, LIDAR); dating; underwater/marine investigation and conservation; other)
- If 'other', please specify
- Project summary
- What was the role of your organisation? (Project lead / partner)
- Did the project involve international collaboration? (Yes/No)
- If yes, please list other organisations/groups involved
- What was innovative about this project?
- Do you think this project could be applied in ODA countries? (Yes/No/Don't know/Already is)
- Could the project be eligible for ODA in the future? (Yes/No/Don't know/Already is)
- Could it help address UNESCO's priority to promote gender equality? (As a consequence of general capacity-building / rough targeted initiatives)
- In what way could further collaboration, with eligible overseas partners, be made easier and/or supported (eg by government/funders)?
- Any particular overall learning from this project?

Appendix 2

Full list of contributors and projects

Organisation	Projects
Arts and Humanities Research Council	Can we rebuild Kasthamandap? Promoting post-disaster rescue excavations, salvage and subsurface heritage protections protocols in Kathmandu Rising from the Depths Network: Utilising marine cultural heritage in East Africa to help develop sustainable social, economic and cultural benefits Human Adaptation to Coastal Evolution: Late Quaternary evidence from Southeast Asia (SUNDASIA)
Birmingham Museums Trust	Staffordshire Hoard Conservation Programme Hazards e-Learning Tool What's Eating Your Collection? Website
Chartered Institute of Archaeologists	Internationalisation
Federation of British Historic Vehicle Clubs	Charter of Turin Handbook FBHVC Vehicle Restoration Apprenticeship Scheme
Fitwilliam Museum, University of Cambridge	MINIARE
Historic England	Soft capping ruined masonry walls MEMORI (Measurement, effect assessment and mitigation of pollutant impact on movable cultural assets. Innovative research for market transfer) The Times of their Lives: Towards precise narratives of change in the European Neolithic through formal chronological modelling
Historic Environment Scotland	Advanced Limes Application Scottish Ten Go Forth: 3D Forth Bridges Learning Resources
Honor Frost Foundation	Benchmarking Syria Maritime Archaeological Outreach Bus – Maritime Archaeological Trust
Institute of Conservation	Icon Twitter Conference Documentation Network Heritage Science Group Ethical Sampling Guidance

Organisation	Projects
Mary Rose Trust	Characterising marine archaeological iron degradation and the efficacy of treatments to date: worth a shot? Assessment of Environmental Risks during Display
the National Archives	Archangel – exploring distributed ledger technology (blockchain) for digital archiving
National Library of Wales	Piloting Preservation Pathways in Wales: Archivematica and Fedora
the National Trust for Scotland	Battle of Bannockburn Memorial Fabric Repairs the conservation and sensitive adaptation of Logie Schoolhouse, Angus
Royal Commission on the Ancient and Historical Monuments of Wales	CHERISH
School of Archaeology, University of Oxford	Endangered Archaeology in the Middle East and North Africa (EAMENA)
Science Museum Group	Blueprint Exhibitions Enterprising Science
UCL Institute of Archaeology	Ancient Merv Reanimating Cultural Heritage ‘Training in Action’ Libya and Tunisia (in partnership with Durham University and KCL)
UK Blue Shield, Newcastle University	Cultural Property Protection and Peace
UNESCO Chair, Archaeological Ethics and Practice in Cultural Heritage, Durham University	Post-disaster archaeology in Nepal
Victoria and Albert Museum	Culture in Crisis



Working with community stakeholders in a gallery redevelopment training project at the Sierra Leone National Museum. Photo: Paul Basu | www.sierraleoneheritage.org.

Appendix 3

United Nations Sustainable Development Goals

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Goals that specifically mention the role of cultural heritage

Goal



Target

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development



Strengthen efforts to protect and safeguard the world's cultural and natural heritage



Of the 17 UN Sustainable Development Goals listed above, Cultural Heritage is particularly well placed to support:

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Goal 4: Ensure inclusive and quality education for all and promote lifelong learning

Goal 5: Achieve gender equality and empower all

Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all

Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation

