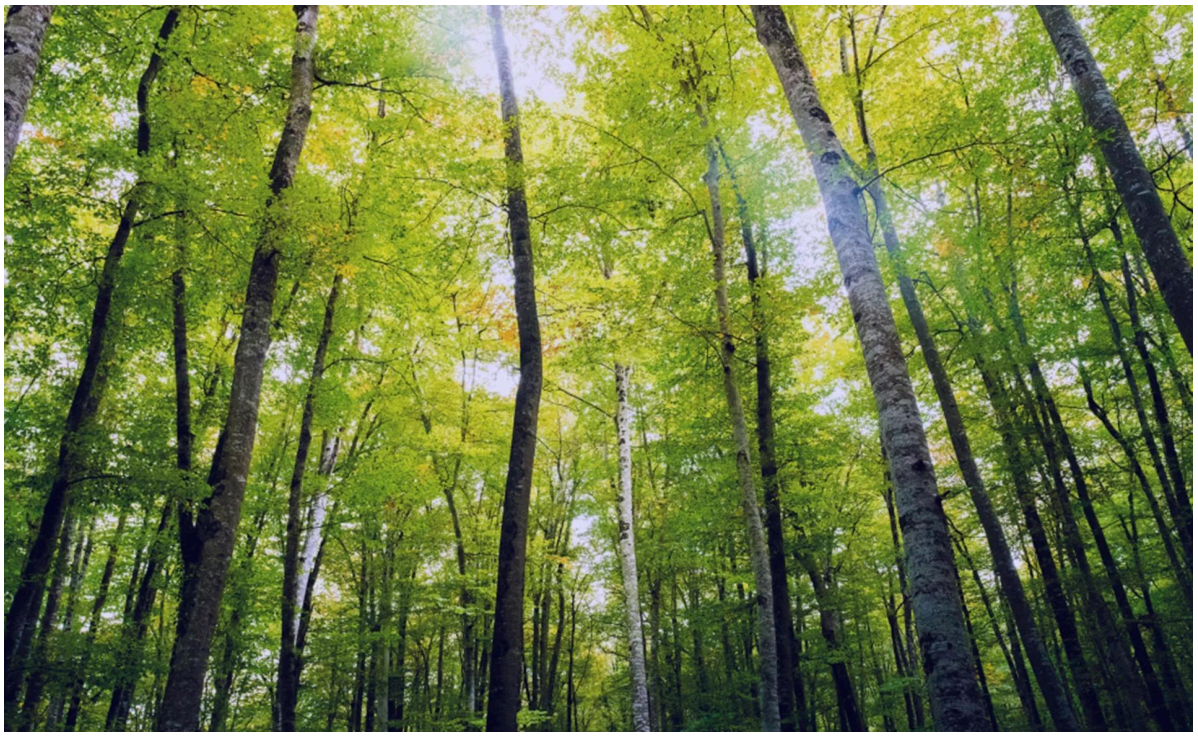
The Exhibitions Group

The Carbon Impacts of International Lending and Borrowing

A Research Report by The Exhibitions Group.

Executive Summary by Reyahn King, Executive Director.



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Executive Summary

Lending, internationally and domestically, for exhibitions is one of the biggest contributors to greenhouse gas emissions from museums and galleries. Internationally transporting artworks and materials and narrow parameters for environmental controls are together the biggest contributors to greenhouse gas emissions in the sector. The stipulations found in many international loan agreements for museum objects require unnecessary air freight, in-person couriers, unsustainable packaging, and prohibitive environmental conditions, all contributing towards significant carbon emissions.

Arts Council England (ACE) therefore commissioned The Exhibitions Group to conduct research that would lead to museums taking more environmentally responsible decisions when lending and borrowing. The research methodology included desk research, a survey, online forums, and interviews.

Most respondents in research interviews agreed that there was a desire for change, especially at a senior level in museums. The Exhibition Group's 2024 survey showed that 80% of respondents thought they'd agree to update environmental parameters, subject to reputational reassurance. Joint statements, policies and guidance available internationally also suggests a desire for change.

National Museum Directors' Council (NMDC) has led UK museums towards greater commitment to climate mitigation, not least through a joint commitment made at Museums COP 2023. The Bizot Group of Museums signed up to a Refreshed Green Protocol in September 2023 which is significant for its tone supporting the need to consider emissions alongside conservation considerations.

There are plenty of guidelines available on how to reduce negative environmental impact when lending and borrowing to exhibitions. There are also tools being developed for carbon estimation, calculation and thinking about environmental responsibility.

However, interviewees commented that the desire to do the right thing to be environmentally responsible rubbed up against an equal or greater sense of responsibility towards collections care.

For respondents to The Exhibition Group's survey, the drivers for organisations' loan conditions remain primarily curatorial or conservation concerns. The top drivers were physical safety of the object and relevance and significance of the exhibition, closely followed by security concerns. Any environmental impact of the loan was the sixth most important factor in a choice of seven drivers.

Arts Council England's *Government Indemnity Scheme environmental conditions review 2023* makes clear that the GIS guidelines are just that, not standards, and allows for case-by-case judgement and updated environmental condition parameters. But The Exhibitions Group's review of 12 lending organisations' loan agreements showed that of the sample agreements, 90% specified a RH (Relative Humidity) range of 40 – 60%, with no more than 5 – 10% -/+ in 24 hours, and a stable temperature of 16 – 25 c - following Bizot guidance as standards. Air freight continues to be used when not strictly necessary. More could be done to encourage road transport and to encourage efficient loads and shared transport including adapting couriering methods.

Pace of Change

In interviews, surveys and desk research, it was apparent that very many museums are taking some actions towards climate mitigation. However, there is a real danger that a tendency towards research and cautious testing of every potential measure away from 'standard practice' is meaning significant slowness in the adoption of less environmentally damaging practices.

Recommendations for the sector

Collaborate

1. Collaborate with others, including NMDC, Bizot, CiMAM and NEMO to drive best practice in international lending and borrowing.

- Adopt Bizot Green protocol
- Support NMDC's measures, including but not limited to those relating to international lending and borrowing, which already have traction amongst all the NMDC members

2. Use UNSDGs, United Nations Sustainable Development Goals to align more easily with international approaches as part of a push to reach Agenda 2030.

3. Embrace a paradigm shift where museum stewardship properly extends to the planet as well as collection objects

Educate

4. Undertake Carbon Literacy Training for all staff
5. Be consistent in the use of tools, carbon calculators and shared datasets across the sector.
6. Celebrate and share quick wins and achievements

Mobilise

7. Update policies to be more environmentally friendly by inserting clauses into loan procedures, agreements and policies on lending and borrowing
8. Monitor progress against specific targets
9. Address capacity and resource issues internally
10. Transition to Green energy

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Section 1: Background

1.1 Methodology

Arts Council England commissioned The Exhibitions Group to conduct research that would enable and encourage museums to take more environmentally responsible decisions when lending and borrowing. This scoping work explored barriers and opportunities for practical change to reduce carbon emissions linked to international loans.

The research was carried out by members of The Exhibitions Group's team of paid consultants: Reyahn King, Ann Barnes, Dana Andrew and Sam Isbell.

There were regular updates and reports to the commissioning representatives of Arts Council England, Isabel Wilson and Natalie Patel.

The methodology of research included:

1. Desk research to review existing documentation, sector strategies and policies, aspirations, opportunities and barriers, best practice and relevant international comparators. (Note: the hack of the British Library's online system limited access to some published material, particularly journal articles.)
2. Sector and stakeholder engagement to identify research questions, opportunities, barriers to using a shared template.
    a. Online Survey - 103 respondents (16 outside UK)
    b. 21 online interviews and 1 in person interview with a wide range of professionals engaged in touring exhibitions (3 International participants)
    c. Round table discussion with Collections professionals in National Museum Directors' Council
    d. Informal online voting and discussion with Plus Tate cohort
    e. International Forum round table discussion (10 international participants, 22 from UK)
3. Headline review of loan agreements

The Exhibitions Group was assisted by Teo and the Bizot Group to disseminate the survey internationally. Nevertheless, international engagement in the survey and in response to interview requests was less than ideal for research into international practices.

It was notable that positive responses to invitations to be interviewed were overwhelmingly from organisations or individuals already actively interested in addressing climate change mitigation and this will have skewed some of the research results.

1.2 Arts Council England (ACE)

Arts Council England is the development agency for non-national museums in England. The Museums and Cultural Property team, who commissioned this research, works closely and directly with museums, the visual arts, a group of museum organisations (such as the Gallery Climate Coalition (GCC), NMDC, MA, AIM, Art Fund etc), other colleagues in ACE, and Museums Development partners.

Arts Council England manages a range of national schemes including the Government Indemnity Scheme (GIS) and Museum Accreditation. It also invests in museums and galleries in England via its National Portfolio of funded organisations (NPOs) on a 3–4 year cycle alongside a range of Investment Principle Support Organisations (IPSOs). IPSOs are tasked with helping embed the four Investment Principles in museum practice. The four IPs include Environmental Responsibility. Project funding is also available in support of museum and gallery activity. This research builds upon work from the 2023 review of the GIS environmental conditions guidance commissioned by ACE.

ACE requests that its NPO funded organisations use Julie's Bicycle Creative Climate Tools to measure and report on carbon emissions on an annual basis to Arts Council England.

1.3 The Exhibitions Group (Formerly Touring Exhibitions Group)

The Exhibitions Group is an Investment Principles Support Organisation and a membership organisation, dedicated to supporting the cultural sector to make and tour exhibitions . The Exhibitions Group does this through:

- Professional development in the form of training, workshops and courses
- Exhibitions Connect annual event
- Partnerships (currently with Art Fund Going Places and MAGNET)
- Providing resources and an online manual
- An Exhibitions Marketplace that enables venues and exhibition makers to find partners, share exhibitions and locate exhibition tours

Previous research conducted or commissioned by The Exhibitions Group includes *Principles for Lending and Borrowing* NMDC/ The Exhibitions Group 2021 - informed by ACE's 'Ready to Borrow' programme, the Weston Loan Programme with Art Fund and The Exhibitions Group's 'Preparing to Borrow' programme and *Lending and Borrowing Experiences Survey Report* (2017)[1]; The Exhibitions Group Commissioning agreement resource (available to members) ; *Economics of Touring Exhibitions: Models for Practice* 2016[2] ; *Mapping the Touring Landscape* 2005.

1.4 The Purpose of the Research Project

Lending, internationally and domestically, for exhibitions is one of the biggest contributors to greenhouse gas emissions from museums and galleries. Arts Council England wished to identify the potential for change that would enable and encourage museums to take more environmentally responsible decisions.

Internationally transporting artworks and materials - specifically via air freight[3] - and narrow parameters for environmental controls together make the most significant contributions to greenhouse gas emissions in the art sector. The stipulations found in many international loan agreements for museum objects require unnecessary air freight, in-person couriers, unsustainable packaging, and prohibitive environmental conditions, all contribute towards these significant carbon emissions.

ACE has a strategic role to play in helping to make meaningful progress in the reduction of carbon emissions and wants to understand which levers could have the greatest impact; whether this might be through the harmonisation of international loan agreements or other means.

The Exhibitions Group already provides the sector with training around touring exhibitions and together with Art Fund Going Places and the Design Museum has developed a decision tool, Rethinking Touring Exhibitions, to support museum professionals to make more environmentally sustainable touring exhibitions. This research aligns with The Exhibitions Group's goals to inform the sector and understand the landscape of touring exhibitions.

[1] Dew, Charlotte. The Exhibitions Group. Preparing to Borrow Programme. Supported by Art Fund and Garfield Weston Foundation, 2017.
[2] Economics of Touring Exhibitions: Exhibitions-Sector Survey and Research Report to Develop Resources and New Workshops to Support the Sector. Supported by Arts Council England and TESS Demountable, 2016.
[3] https://galleryclimatecoalition.org/shipping/

Section 2: Research Findings

2.1 Stakeholder Findings and Appetite for Change

An aspiration to reduce carbon emissions of museums has emerged internationally for a significant period of time. However, this has not always been matched by action and practical change is slow to happen.

Most respondents in interviews agreed that there was a desire for change, especially at a senior level in museums. The Exhibitions Group's 2024 survey similarly showed that 80% of respondents thought they'd agree to update environmental parameters subject to reputational reassurance. The amount of joint statements, policies and guidance available internationally also suggests a desire for change.

Borrowers as well as lenders may influence positively. The Art Gallery of Ontario includes the following language in their initial loan request letters to signal their environmental intentions: "Environmental sustainability is a high priority for the AGO. As such, we consider the greener option first when selecting methods of transport, proposing consolidated shipments and responding to requests for in-person couriers. In each instance we will propose considered alternatives that we hope lenders will agree to on the basis of professional collaboration, trust and reciprocity." The AGO maintains gallery conditions to the Bizot protocol. Where more sensitive objects might require tighter control they ask for this to be flagged early so they can look to passive solutions such as microclimates or customised display furniture.[4]

However, several interviewees commented that the desire to do the right thing to be environmentally responsible rubbed up against an equal or greater sense of responsibility towards collections care. It appears that both these factors are approached by some museum professionals with inadequate awareness of research, available information, tools or best practice updates.

From a collections care perspective, this ranges from lack of awareness of updates to national or international guidelines, to lack of knowledge about scientific research that shows less damage to objects from a broader range of environmental parameters than previously thought.

[4]Interview with Jessica Bright, Art Gallery of Ontario, 8 April 2024

From an environmental responsibility perspective, people feel overwhelmed by the scale of the problem, the different methodologies and approaches on offer, carbon calculation complexity and the challenges of estimating the impact any action will have. As a result, staff lack confidence to make more sustainable decisions.

Most of the interviewees were already embarked on a journey to improving their organisation's environmental responsibility but there was a shared sense that for colleagues not yet on board, "Education is a big thing… people don't know where to start."[5]

2.2 Existing Guidance and Tools

There are plenty of policies and guidelines available internationally on how to reduce negative environmental impact when lending and borrowing to exhibitions.[6]

These include the *Bizot Green Protocol September 2023 refresh* and accompanying Handbooks[7], the Network of European Museum Organisations / Deutscher Museums Bund *2023 Guidelines: Climate Protection in Museums*[8], Icon - Institute of Conservation *Environmental Statement 2020. (Addendum 2020)*[9], CiMAM - International Committee of Museums and Collections of Modern Art *Toolkit on Environmental Sustainability in the Museum Practice 2021.*[10]

The guidelines above reference environmental parameters and the urgent need to reduce the energy used to support narrow ranges of temperature and Relative Humidity in exhibition spaces. Arts Council England's *Government Indemnity Scheme environmental conditions review 2023* makes clear that the GIS guidelines are just that, not standards, and allows for case-by-case judgement and adapted parameters.

[5] Interview with Sadie Twigger and Sam Flynn, MOMART, 7 May 2024
[6] Since the research was concluded further tools and research are ongoing including by Ki Culture, TEO and Bizot itself.
[7] Groupe BIZOT Group. (2023). The Bizot Green Protocol Latest refresh: September 2023. Retrieved from https://cimam.org/documents/238/Bizot_Green_Protocol_-_2023_refresh_-_Sept_2023.pdf; Groupe BIZOT Group. (2023). Handbook #2 MOBILITY Towards greener transport.
[8] Guidelines: Climate Protection in Museums by NEMO Network of European Museum Organisations and Deutscher Museums Bund, published in English December 2023 (in German May 2023)
[9] Icon Institute of Conservation. (2020) Environmental Statement 2020. (Addendum 2020)
[10] CiMAM Toolkit on Environmental Sustainability in the Museum Practice, May 2021, updated July 2021 by CiMAM International Committee of Museums and Collections of Modern Art retrieved from: https://cimam.org/documents/159/CIMAM_Toolkit_on_Environmental_Sustainability_in_the_Museum_Practice._2021.pdf

Bizot is a group of the world's leading museums. Bizot created a green protocol in 2015 and updated their advice regarding lending and borrowing for exhibitions with the most recent refresh to Bizot's green protocol in September 2023[11]. Bizot's revised suggested parameters are 40–60% relative humidity and 16–25°C temperature with a daily variation of 10%. Bizot's Green Charter has been accepted by museums across the world including Tate, Musee du Louvre, Metropolitan Museum of Art, British Museum, Musee du Prado, Art Institute of Chicago. The Refresh supports the consideration of green options first when making decisions about collections, acknowledges the need to change practice and recommends lengthening exhibition runs. The Bizot Protocol September 2023 Refresh recognised that some museums are using tighter conditions which may reflect specific local conditions. The accompanying Handbook notes that scientific knowledge suggests these narrower parameters may not be needed.

Bizot's Protocol is accompanied by handbooks intended to provide museum colleagues with evidence, tools and case studies to ease the adoption of Bizot Green Guidelines in relation to environmental conditions in exhibition and other museum spaces and to adopt more sustainable practices relating to the movement of objects particularly in the search for alternatives to air freight.

It is worth noting however as CiMAM did, in their news report on the Bizot Green Protocol Refresh on 1 December 2023, that these new parameters reflect long accepted science and should not be seen as standards but as guidelines from which to operate extended climate control suitable for objects as judged on a case-by-case basis:

"While we argue that the risk posed to collections by variations in temperature and relative humidity within Bizot's parameters is minimal for most collections, it is also important to be clear that the figures 40–60% relative humidity and 16–25°C temperature with a daily variation of 10% have no fundamental scientific meaning. Rather, they represent figures that seemed reasonably acceptable ten years ago. We propose that they should be seen as a starting point for implementing sustainable environmental management strategies. In other words, we do not advocate replacing one prescriptive solution (50 ± 5% RH, 21±2°C) with another (40–60% RH, 16–25°C). On the contrary, we advocate a more nuanced determination of environmental parameters based on the conservation needs of the objects, as derived from scientific research and experience, and on the sustainability objectives of the institution."[12]

[11] Groupe BIZOT Group. (2023). The Bizot Green Protocol Latest refresh: September 2023. Retrieved from https://cimam.org/documents/238/Bizot_Green_Protocol_-_2023_refresh_-_Sept_2023.pdf
[12] CiMAM News (1 December 2023) Retrieved from: https://www.cimam.org/news-archive/bizots-refreshed-green-protocol-2023/

National Museum Directors' Council (NMDC) has led UK museums towards greater commitment to climate mitigation. NMDC published case studies of good practice in 2021[13]. A very well attended Museums COP event on 31 October 2023 resulted in unanimous adoption of the first UK Museums Joint Commitment to Tackle Climate Change. The event secured consensus from museum leaders on collective action to decarbonise the sector and mitigate the impacts of the climate and biodiversity crises.[14]

NMDC Museums committed to several actions including to:

- Introduce more sustainable collections management
- Develop and implement decarbonisation plans which include relaxing carbon-hungry environmental parameters.

2023 Museums COP Key Recommendations were:

- Development of a new central resource linking to current advice and guidance on sustainability, including clear signposting to appropriate resources for different types of museums
- Cross-organisational training programme to be rolled out in 2024
- Carbon Literacy Training to be sustained, expanded, and strategically funded
- All museums to adopt a 'greener option first' principle in all areas of their practice, including more intelligent and lower-energy environmental conditions for collections, more sustainable exhibition design and transportation of objects

CiMAM (International Committee of Museums and Collections of Modern Art) have produced a Sustainability Toolkit. CiMAM "encourages its members to commit to implementing the necessary changes for achieving climate neutrality according to the United Nations' Sustainable Development Goals (SDGs)." The toolkit "aims to help contemporary art museum professionals start implementing the necessary changes to become carbon neutral." It includes sections: (1) Examples of Immediate Actions (2) Sustainability Action Plans (3) Carbon Footprint Calculators and Certificates (4) Sustainability Consultants (5) Inspiring Projects, Platforms, and Resources (6) Reading List.[15]

[13] National Museum Directors' Council. (2021). Green Museums: Tackling the Climate Crisis. Retrieved from https://www.nationalmuseums.org.uk/media/documents/nmdc_green_museums_tackling_the_climate_crisis_2021.pdf

[14] 'NMDC National Museum Directors' Council. (2024 forthcoming) *UK Museum COP Report, 2024*. See also: Nationalmuseums.org.uk/climate-crisis/uk-museum-cop

[15] CiMAM Toolkit on Environmental Sustainability in the Museum Practice, May 2021, updated July 2021 by CiMAM International Committee of Museums and Collections of Modern Art retrieved from: https://cimam.org/documents/159/CIMAM_Toolkit_on_Environmental_Sustainability_in_the_Museum_Practice._2021.pdf

There are other tools being developed for carbon calculation, estimation and thinking about environmental responsibility. Gallery Climate Coalition tools and Julie's Bicycle tools use the same metrics underpinning their tools so the two can be used alongside each other (with the possible exception of materials data). The UK Registrar's Group is working alongside Gallery Climate Coalition to develop GCC's current more commercially oriented tool to work for public sector museums and to enable estimation as well as calculation after the fact. This should greatly help individuals within museums to make informed decisions that will enable them to reduce their organisation's carbon footprint. GCC's tool is the most international in its focus and more focused on international exchange of objects. GCC's tool has been adopted by the Bizot Group making it the best tool for the UK sector to work with and remain in step with international colleagues.

In 2023 Design Museum and Urge Collective published *Exhibition Design for our Time: a guide to reducing the environmental impact of exhibitions - draft for consultation*[16]. This included guidance and tools around planning, designing and operating temporary exhibitions which Design Museum Research has since developed and made available as an Impact Model toolkit[17]. Design Museum, Art Fund and The Exhibitions Group have developed a tool, Rethinking Touring Exhibitions[18], that supports decision-making processes when planning and implementing touring exhibitions, building on the model provided by the Design Museum's exhibition decision tree[19].

It is also worth noting the conservation risk tool HERIE, developed and made available by the Cultural Heritage Research Group of the Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences.[20]

[16] Design Museum and Urge Collective (2023) Exhibition Design for our Time: a guide to reducing the environmental impact of exhibitions - draft for consultation. Retrieved from: file:///C:/Users/REYAHN~1/AppData/Local/Temp/MicrosoftEdgeDownloads/e74438e5-4852-49a6-9ad9-25bdd67e3a73/Design%20Museum%20Guide_PAGES-Exhibitions.pdf
[17] Retrieved from: https://designmuseum.org/learning-and-research/design-museum-research/working-to-make-change
[18] Retrieved 8 April 2025 from: https://bibli.artfund.org/m/3e8464ce9bb9c25/original/ArtFund_GoingPlacesSustainableTouringExhibits.pdf
[19] Design Museum and Urge Collective (2023) Exhibition Design for our Time: a guide to reducing the environmental impact of exhibitions - draft for consultation. p. 17. Retrieved from: file:///C:/Users/REYAHN~1/AppData/Local/Temp/MicrosoftEdgeDownloads/e74438e5-4852-49a6-9ad9-25bdd67e3a73/Design%20Museum%20Guide_PAGES-Exhibitions.pdf
[20] Retrieved from: https://herie.pl/Home/Info

2.3 Current Practices of Lending and Borrowing

Traditionally, museums have positioned collections care as pre-eminent when making decisions around lending and borrowing to exhibitions. Some museums and the Bizot Green Protocol now, theoretically, place the responsibility to the environment alongside collections care. In practice, however, collections care remains paramount.

More generally, action with regard to climate change mitigation remains of lesser importance to museums than other functions, considered 'core'. The Network of European Museum Organisations NEMO surveyed museums about the climate crisis in 2022[21] and found that only 4 in 10 museums have methods to measure carbon reduction efforts and 2 in 10 use a green energy supplier.

The Exhibitions Group's survey focused on narrower measures around lending and borrowing but the survey also found that curatorial and conservation concerns outweigh other drivers when setting loan conditions[22].

On the other hand, some large national institutions around the world are showing leadership. Tate includes this statement in their policy, freely available on their website: "Tate is committed to addressing the climate emergency and will consider the impact and sustainability of a loan request when assessing the request. We ask that borrowers outline where possible what steps they are taking to mitigate the impact of the transport and exhibition of the works."

2.3.1 Environmental Conditions

The Exhibitions Group carried out a review of 12 lending organisations' loan agreements, based on those that were available online or provided by the institutions, and Spectrum and UKRG policies. Considerable variation is evident in the length and level of detail among existing agreements. Loan agreements vary in layout and format, with some being stand-alone documents and others being part of the loan arrangement and process details.[23]

[21] NEMO. *Museums in the Climate Crisis*. (2022). https://www.ne-mo.org/fileadmin/Dateien/public/Publications/NEMO_Report_Museums_in_the_climate_crisis_11.2022.pdf
[22] See Appendix 2. The Exhibitions Group (2024). *Sustainable Lending and Borrowing Survey*. Q3
[23] Review carried out by Sam Isbell at The Exhibitions Group, March 2024, of Art Gallery of Ontario, British Museum, Craft Council, Craftspace, Horniman Museum & Gardens, Imperial War Museum, Museum of London, National Museums Liverpool, Spectrum Policies, Sheffield Museums, Tate Galleries, UKRG Policies, V&A

Out of the sample agreements, 90% specified a RH (Relative Humidity) range of 40 – 60%, with no more than 5 – 10% -/+ in 24 hours, and a stable temperature of 16 – 25 c - following Bizot guidance. Organisations generally do not ask for evidence of mechanical control but for evidence of stable conditions.

In The Exhibition Group's 2024 survey of lending and borrowing practices, most respondents also used environmental parameters close to Bizot and/or GIS guidelines. Lorraine Finch found that most UK organisations are following the guidelines recommended by the Government Indemnity Scheme. As has been found previously by Finch, these tend to be applied as general standards rather than as recommended on a case-by-case basis[24]. Anecdotally, potential borrowers are following the guidelines as standards, as much as lenders, out of a cautious anxiety that their failure to maintain these parameters would lead to rejection of future loan requests.

Whilst usually stated as requirements, in practice many organisations stated their willingness to apply them flexibly as appropriate to the object being lent. There are examples of a bespoke approach taken by lenders where borrowers find it hard to achieve the 'standards' requested. The Art Gallery of Ontario share readings from previous years of the relevant months, as they have very distinct seasons. As lenders, they don't ask for evidence of previous readings.[25]

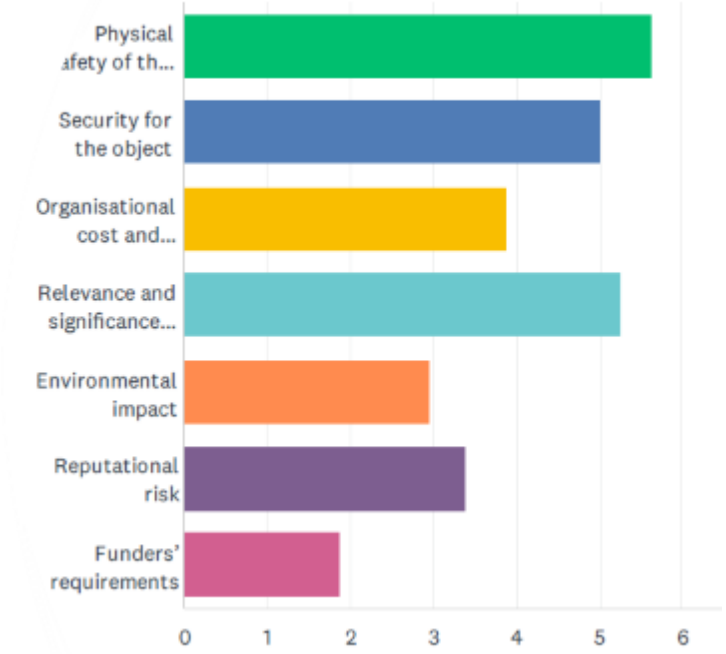
Tate makes clear that it endorses the Green guidelines of the Bizot Group and that in relation to environmental conditions:

"The following notes are provided as a guide to the standard environmental requirements for certain classes of works of art. Sometimes more stringent requirements may have to be imposed but very often Tate is prepared to accept lesser standards of environmental control, especially when the borrowing institution can demonstrate by submitted records that its environmental conditions are known."

For respondents to The Exhibitions Group's survey, the drivers for organisations' conditions of loan are primarily curatorial or conservation concerns[26]. The top drivers were physical safety of the object and relevance and significance of the exhibition, closely followed by security concerns.

[24] Finch, L., (2023). *Report on the review of the Government Indemnity Scheme environmental guidelines. LFCP.* p. 6.
[25] Interview with Jessica Bright, Chief of Exhibitions, Collection & Conservation, & Program Director, Art Gallery of Ontario, 8 April 2024
[26] See Appendix 2. The Exhibitions Group (2024) *Sustainable Lending and Borrowing Survey*. Q3.

Any environmental impact of the loan was the sixth most important factor in a choice of seven drivers:



Overall, the The Exhibitions Group survey has found low sector-wide awareness of either the Bizot protocol refresh or the GIS environmental review. In The Exhibitions Group's survey, 18% of respondents were following the latest Bizot Green protocol and 22% were actively following the latest GIS guidance. 35% had not heard of the Bizot Green Protocol refresh.

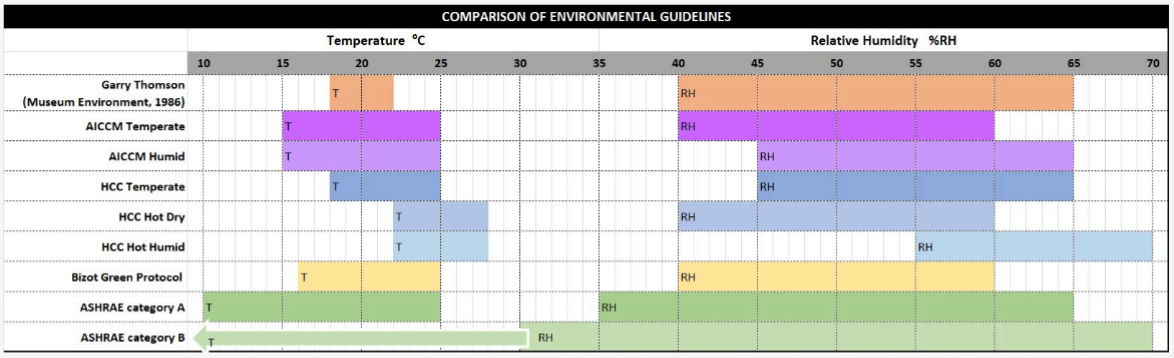
Conservation specialists are aware that the scientific knowledge is changing with regard to what environmental parameters are required to care for collections.

"Already there is deep knowledge about environmental impact showing that they are not so vulnerable as previously thought."[27]

Yet responses to The Exhibitions Group survey suggested that this research, updating scientific knowledge about the robustness of art objects exposed to wider environmental parameters, was not well known.

[27] Interview with Professor Lukasz Bratasz, Head of Cultural Heritage Research Group of the Jerzy Haber Institute of Catalysis and Surface Chemistry of the Polish Academy of Sciences, Kraków, 15 March 2024

Nevertheless, some organisations are turning off mechanical environmental controls and monitoring the impact of doing so both for environmental and cost reasons. Sheffield Museums turned off mechanical control and monitored the environment whilst measuring external conditions. They found that the space adapted and sat within range in Spring and Autumn. Sheffield turns off the controls during changeover when the exhibition space is empty and if they had an exhibition that allowed less tight controls they would also do so. They monitor when the readings are out so they can reassure potential lenders about specific loans.[28]



AICCM continues to endorse the Heritage Collections Council (HCC) *Guidelines for Environmental Control in Cultural Institutions* (Table 3). The HCC guidelines are particularly useful for collections housed in passive or non-climate controlled buildings. AICCM also recognises the *Bizot Green Protocol* (Table 4) as an international guideline that may be applicable and agreeable to individual organisations that are lending cultural objects across differing geographical locations, countries or global hemispheres.

When considering international lending, it is also important to bear in mind the wide diversity of geographical and climatic environments within which museums are operating. This complicates the use of guide parameters because the external environment will create different pressures on both HVAC and passive systems. In this context, the Australian Institute for the Conservation of Cultural Material endorses the Heritage Collections Council's *Guidelines for Environmental Control in Cultural Institutions*[29] alongside the *Bizot Green Protocol.* These allow for different environmental ranges for RH in temperate and humid regions.

[28] Interview with Alison Morton, Museums Sheffield, 5 April 2024
[29] Australian Institute for the Conservation of Cultural Material ... Retrieved from https://aiccm.org.au/conservation/environmental-guidelines/

2.3.2 Transport of Loan Objects

Air freight continues to be used when not strictly necessary. It is sometimes chosen just for reasons of speed. A few interviewees suggested that better planning would enable more sustainable transport options.

Even when road freight is used, museum requirements can mean that the transport is used inefficiently. Suitable insurance/indemnity was seen as a driver for sole use vehicles for monographic exhibitions and for high value loads. Many museums require that if a part load is considered, the specific museum's crate must be 'last on, first off'. The net result of multiple museums requesting this is that several vans with single loads will travel separately for what could have been a shared journey. All museums can't have 'last on, first off' status if transport is to be shared.

Museums are reluctant to consider part-load or consolidation options for sharing vehicles when transporting works that are a) fragile, b) by a single artist and c) high value[30]. Some museums commented that they wanted to use part loads but these were only sometimes enabled by international transport agencies. This may be to do with the timing requirements of installation as at least one museum found they were able to have works returned to them as part load but not on the outbound journey.

Shipping by sea tends to be avoided by museums although commercial galleries do use shipping especially for return journeys from art fairs. There are valid security and other concerns about shipping. Insurers including Hallett Independent and Lloyds / AXA XL have been working with the Gallery Climate Coalition to counter the perception that insurers won't accommodate art being shipped by sea. As part of Gallery Climate Coalition's Sustainable Shipping Campaign, guidelines have been created to manage some of the associated risks of sea transit. See *Lloyd's Market Association (LMA) Joint Specie Committee Guidelines on Insurance for Sea Freight*.[31] The approach of insurers working to further environmental responsibility and enable the use of sea freight for art shipping has been to release clauses for people in the industry to adopt in loan agreements which already include stipulations.

[30] Comment by Ben Adams, Constantine, emailed June 2024
[31] Lloyd's Market Association (LMA) *Joint Specie Committee Guidelines on Insurance for Sea Freight*. For more information see GCC website https://galleryclimatecoalition.org/ssc/insurance-for-sea-freight/

The Art Gallery of Ontario has experimented with sea freight for exhibition prints in a non-climate controlled container and found that the climate was very stable except during loading and offloading.[32] Conversely, British Council have tried sea transports and encountered high risk issues such as getting stuck in bond, typhoons and delay. British Council no longer ship by sea.[33] Nomad Exhibitions ship some exhibitions by sea and National Museums Scotland's exhibition 'Monkeys: A Primate Story' went from Australia to Spain by sea in a refrigerated container.[34]

When couriering, 72% of The Exhibitions Group Survey respondents stated that they determine courier needs on a case-by-case basis dependent on the needs of the objects. 25% use a virtual courier. 35% have no courier requirement subject to defined circumstances and guidelines. 18% opt for a shared courier with other organisations. 12% choose a split courier arrangement for international loans[35]. Some museums, such as Sheffield museums, never courier.[36]

2.3.3 Data Collection and Decision Making

NEMO's *Museums in the Climate Crisis* Survey of 2022 found that 2 in 3 museums report lack of skills and knowledge at different levels of the organisation. Likewise, interviewees suggested that there is sometimes a mismatch between museums' high-level commitments and practice on the ground by those actually implementing decisions about loans.

Carbon calculation tools can be developed inhouse or using existing systems. Anecdotally, the range on offer is contributing to a sense of overwhelm for some museum staff. However, the ability to benchmark, evaluate progress longitudinally and compare options with partners and suppliers should encourage the sector to adopt shared tools, methods and underpinning assumptions.

[32] Interview with Jessica Bright, Chief of Exhibitions, Collection & Conservation, & Program Director, Art Gallery of Ontario, 8 April 2024
[33] Interview with Moira Lindsay, Head of Collection, British Council, 18 April 2024
[34] Interview with Tim Pethick, Director of Nomad Exhibitions, 6 June 2024
[35] See Appendix 2. The Exhibitions Group. (2024). *Sustainable Lending and Borrowing Survey.* Q7
[36] Interview with Alison Morton, Museums Sheffield, 5 April 2024

2.3.4 Tendering

Museums are increasingly asking transport agents to include greenhouse gas emissions estimation in their tenders as well as to demonstrate the environmental measures they are taking.[37] Transport agents are being asked to provide calculations for the carbon impact of their transportation methods and to evidence their actions towards environmental responsibility through, for example, the type of fuel used for transportation. However, agents commented that when more sustainable, practical methods were offered in response such as alternative vehicles it was sometimes hard to reach agreement. For example, using smaller vans without air conditioning would significantly reduce emissions, especially as technology is not yet enabling electric, air-conditioned larger vehicles, but transport agents had found that museums considered that these did not meet their conservation requirements.

NEMO's *Museums in the Climate Crisis* survey[38] found that 66% of European museums don't know about guidelines for sustainable tendering for exhibitions. In the NEMO Survey of 2022, 52% had guidelines for more sustainable exhibitions in place and of these, 11% followed guidelines for more sustainable transport.

2.3.5 Speed of Change

In interviews, surveys and desk research, it was apparent that very many museums are taking some actions towards climate mitigation. However, there is a real danger that a tendency towards research and cautious testing of every potential measure is delaying adoption of less climate-damaging practices. An existing paradigm around 'doing things by the rules' and caution amongst professionals is making progress slow:

"we're all naturally quite risk-averse and historically being good at your job is doing everything by the rules. And so there needs to be, I believe, a culture shift in understanding that flexibility is welcome"[39]

For many organisations, capacity means that loan policies have not been updated in many years and so paperwork and guidance has not kept pace either with the urgency of the climate crisis or the changes in scientific knowledge about the needs of collections.

[37] Interviews with Sadie Twigger and Sam Flynn, MOMART, 7 May 2024 and Siân Tipler, Constantine, 9 May 2024
[38] NEMO, Museums in the Climate Crisis, (2022)
[39] Summary Notes from Online Forum. 26 March 2024

Organisations leading climate research include the Getty Conservation Institute in the United States of America and the National Gallery of Victoria in Australia (NGV). They are carrying out research into artwork responses to climate fluctuations under Bizot Green Protocol parameters and their findings will hopefully create more confidence in the sector.

NGV endorse the Bizot Green Protocol, have a substantial range of measures explained in the sustainability section of their website, and are engaging in a new Energy Performance contract which has already delivered a 16% reduction in greenhouse gas emissions. They are collaborating to support a transition to adopt wider settings as standard in loan agreements as part of their sustainability actions. They have recognised the high energy consumption in art museums by operating HVAC systems and responded with an Adaptive Climate Control Strategy. The phased implementation of the Bizot Green Protocol at NGV International began in 2014 with a move to endorse the Bizot Green Protocol. Phase 1 lasted from 2014 - 2018 and was a research, consultation and testing phase. Revised loan guidelines were endorsed in 2018 and NGV conservators received training from the Getty Conservation Institute. The NGV Facilities began researching and implementing building improvements.

Phase II 'soft Bizot' included initial trials at a temperature between 20C and 23C (with 24 hour fluctuations of no more than 1.5C), RH between 46% and 56% (with 24 hour fluctuations of no more than 4%) which demonstrated reduced energy use. Phase III, full rollout of Bizot Group protocol implementation, began in 2021[40].

NEMO's 2022 survey found that 70% of responding museums stated that climate change was a relevant topic in their museum. However, only 12.6% fully knew their carbon footprint and 50% partially knew it. 35.5% did not emphasise sustainability in the planning and management of their premises and properties - or respondents did not know if they did. Only in the area of lighting did the majority of museums (58.4%) report climate friendly or neutral installation. The majority of museums did not use climate friendly energy production. 58.7% did not use a green energy supplier. [41]

The current pace of change and the time to support more research may be insufficient to mitigate the climate crisis in the necessary timescale.

[40] National Gallery of Victoria Melbourne 'Collection Environments: Adaptive Climate Control Strategy'. See: https://www.ngv.vic.gov.au/explore/collection/collection-environments/adaptive-climate-control-strategy/#:~:text=The%20practice%20of%20maintaining%20tightly,energy%20consumption%20by%20art%20museums

[41] NEMO *Museums in the Climate Crisis*, (2022) pp. 19–20

Section 3: Opportunities and Barriers to Reducing Greenhouse Gas Emissions as a Result of International Loans for Exhibitions

3.1 Opportunities for Practical Change

3.1.1 Clauses for Insertion into Loan Agreements

Sector support agencies and organisations with a sector-wide remit and vision welcomed the idea of a shared loan template agreement more than individuals working within collections care or the operational side of exhibitions. Even organisations that were supportive of the idea in theory were unsure about its practicability. Given the wide range of loan agreements in play, deriving a universal template would pose challenges, potentially necessitating museums to prepare additional new paperwork.

Several of those interviewed thought template agreements were impractical but did think that clauses for insertion into organisations' existing paperwork would be realistic. Any clauses for insertion would need to be sufficiently broad and flexible to allow for the full variety of the sector's needs from the range of type of objects with different collection care requirements, to the different types of exhibitions spaces in which they are to be housed on loan, and internationally different regulations.

Alternatively, museums could simply take it on themselves to revise their paperwork to ensure clauses that highlight consideration of carbon impacts are included as part of their processes.

3.1.2 Collaboration with Bizot and NMDC

As shown above, significant groupings of museums across the world have published statements, policies and guidelines.

Organisations who have put their weight behind change include all the signatories to the September 2023 Bizot Protocol Refresh, museums in the UK who are part of the National Museum Directors' Council as well as individual institutions such as Tate and National Gallery of Victoria, Melbourne.

As part of their ongoing work on the protocol, Bizot has addressed the question of suitable wording for clauses that could be added to existing loan processes and templates. Bizot is not a formal organisation and as such does not have authority but the handbooks, clauses, charter and the pre-eminent status of its member institutions means that Bizot provides a lever which should be supported. It would probably be more effective for the UK to reflect or support Bizot than to propose different or parallel approaches. NMDC agreed in 2023 to formally endorse the Bizot Green Protocol.[42]

3.1.3 Transport and Packing

More could be done to encourage road transport and to encourage efficient loads and shared transport. In particular, it seems that couriers make additional and separate journeys currently when virtual, split or shared couriering would be more sustainable. Couriers could also travel with the artworks in the same transport more frequently than currently happens. Tim Pethick of Nomad Exhibitions considers that shipping by sea may by one of the biggest levers to reduce carbon emissions.[43]

Commercial firms engaged in logistics for art transport emphasised the potential for better use of crates and packing materials[44] to minimise volume, weight, storage and therefore expenditure of energy on transport as well as reducing waste. Solutions include crates designed to carry more than one artwork; reuse, remaking and recycling crates; hiring crates; and using more environmentally friendly materials for crates and packing. A cross-institutional group of partners including Tate, the National Gallery, English Heritage, The National Trust, Glasgow Museums, National Galleries of Scotland and Manchester Art Gallery has been established to look at sustainability and packing for paintings.[45]

Several respondents to The Exhibitions Group survey have already adopted reusable crates:

"For 15 plus years we have been reusing and retrofitting cases and crates. This is fine… However, it must be noted that our material is stored in folders and then within boxes, against other folders and other boxes, creating a lot of buffering in storage."

[42] 'NMDC UK Museum COP Report, 2024', forthcoming, advance sight provided by Kathryn Simpson,NMDC
[43] Interview with Tim Pethick, Director of Nomad Exhibitions, 6 June 2024
[44] Interviews with Verity Brown, Rokbox, 17 May 2024; Sadie Twigger and Sam Flynn, MOMART, 7 May 2024; Ben Adams and Sian Tipler, Constantine, 9 May 2024.
[45] Stannage, S. (2023). *From ethics to enterprise: understanding and doing sustainability in the conservation of cultural heritage*. p. 10

"The German market already reuses crates".

"We always use hire crates…"[46]

Momart remake cases and some lenders now ask for a more sustainable case when approaching them. Momart are also increasing the amount of consolidated cases that hold multiple art works in a crate and the reuse of old cases/materials for new casing. These are made by Rokbox, Turtle and others. Constantine likewise have invested in hire crates and storage for them, ensuring a rental crate system and have an agreement with Turtle to provide crates. Research has shown that reusable crates significantly reduce the global warming impact of trips.[47]

It is worth noting that using alternative packing materials appeared to be the easiest adaptation to loan conditions for organisations to consider with over 80% of respondents to The Exhibitions Group's survey stating that they were likely or very likely to agree to alternative packing materials if this allowed reuse, recycling or more carbon friendly materials. None said they would be unlikely to accept this[48].

3.1.4 Conservation Research and Advice

There are many advocates for mitigating climate change in museums working in conservation such as Lorraine Finch, Founder of LFCP and Professor Lukasz Bratasz of the Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences. These and others have been advocating for updated parameters and other actions. Getty Conservation Institute Managing Collection Environments (MCE) initiative have produced *Managing Collection Environments: Technical Notes and Guidance. Guidelines.* [49] The Getty's initiative is "designed to empower collections professionals to develop approaches to preservation that engage with the wider goals of sustainability."

The initiative insists on a more holistic approach that includes communication, consensus building and systems theory[50]. In the Guidelines' introduction Joel Taylor writes: "The certainty of prescriptive approaches to preservation has eroded to reveal that no single field of study holds the solution and no one solution can be applied universally.

[46] See Appendix 2. The Exhibitions Group. (2024). *Sustainable Lending and Borrowing Survey.* Q9. p. 17
[47] https://stich.culturalheritage.org/crates
[48] Appendix 2, TEG *Sustainable Lending and Borrowing Survey* Q9
[49] Taylor, Joel, Michael C. Henry, Vincent Laudato Beltran, Walt Crimm, Matthew Eckelman, Jane Henderson, Jeremy Linden, Michał Łukomski, Bob Norris, Sarah Nunberg, and Cecilia Winter. (2023.) Managing Collection Environments: Technical Notes and Guidance. Guidelines. Edited by Joel Taylor and Vincent Laudato Beltran. Los Angeles: Getty Conservation Institute. Retrieved from: https://hdl.handle.net/10020/gci_pubs_mce_technical_notes
[50] Ibid. p. 17

A better understanding of the climatic zone, building qualities, resources, capacity, and needs means that instead of battling the outside climate we can work with it. With effective analysis, we understand what is possible, and with a broad perspective on the needs of a collection, we understand what is necessary for preservation.

Good communication and broadened perspectives can make traditional opponents into natural allies in developing preservation approaches that contribute to institutional and global sustainability efforts without compromising the collection."[51]

There is also research available about the impact of a variety of parameters on even those objects previously thought to be particularly vulnerable such as paintings on panel. Most of this research has been or is being carried out within controlled and monitored conditions provided by museums or galleries. There is less confidence about the longer-term impact of conditions such as those found in churches and historic houses. Nevertheless, for the purposes of lending and borrowing, conservation research shows that updated parameters pose less risk than previously thought.[52]

United Kingdom Registrars Group (UKRG), and the Institute of Conservation (Icon), support a more case-by-case approach to collections management and decision-making about acceptable risks. This would require either more preventive conservation confidence amongst a wider range of museum staff or, simply, more conservators working for museums.

3.1.5 United Nations Sustainable Development Goals

Those organisations with organisational goals aligned to the UNSDGs, United Nations Sustainable Development Goals, seem to be more closely synced to the pace of change needed to achieve net zero targets. The SDGs are billed as part of the United Nations' Agenda 2030 as "a comprehensive framework for achieving a global sustainable society".[53]

For example, the National Gallery Singapore aim to achieve net zero by 2045 in alignment with the Singapore government's target.

[51] Ibid. p.17
[52] Interview with Professor Lukasz Bratasz, Head of Cultural Heritage Research Group of the Jerzy Haber Institute of Catalysis and Surface Chemistry of the Polish Academy of Sciences, Kraków, 15 March 2024; Panel presentation by Lorraine Finch at TEG Connects event, 17 April 2024.
[53] United Nations 'Transforming our World: the 2030 Agenda for Sustainable Development' 2015.

They reuse and repurpose display infrastructure for exhibitions, take a flexible approach to international loans at institutions in Asia where the environmental parameters may be hard to achieve, use smaller vehicles to transport smaller loads, consolidate shipments and incorporate sustainability into the Gallery's procurement practices.[54]

All of this is supported by a clear message publicly available on their website from their previous CEO Chong Siak Ching:

"While art lies at the heart of the Gallery's identity and mission, we cannot ignore the effects our business and operations have on the environment…"

3.1.6 Insurance

Many in the insurance industry recognise that climate mitigation is essential to combat the enormous risk posed to the industry itself by climate change. There is an opportunity to work alongside insurers to achieve recognition and adoption of new guidelines.

"Insurers aren't mandating the levels of environmental protection that lending institutions are"[55]

Commercial insurers manage risk without necessarily being risk averse or requiring stipulations to remove risk. They are pragmatic[56]. In temporary exhibitions, environmental conditions are much less likely to cause damage than handling.

3.1.7 Building Improvements and Energy Supply

NEMO, the Network for European Museum Organisations, have collated leading policy and practice approaches to reducing energy use by museums across Europe in their report *Museums, Climate and Politics: Taking political action in the sustainable transition*.

In Belgium cultural associations can apply for subsidies for energy saving measures including relighting, external wall insulation, installation of a heat pump etc. The French National Energy Climate Plan foresees the renovation of public buildings in order to achieve energy savings.

[54] Interview with Anasthasia Andika and Johnny Chen, National Gallery of Singapore, 21 March 2024 and NGS website https://www.nationalgallery.sg/sustainability
[55] Interview with Christopher Bentley, Head of Fine Art & Specie, UK & Lloyds / AXA XL, 26 April 2024
[56] Interview with Adam Prideaux, Managing Director, Hallett Independent, 12 April 2024

Italy's National Recovery and Resilience Plan "proposes the adoption of minimum environmental criteria for cultural events, including exhibitions, and the promotion of a green approach through the cultural and creative chain." Cities such as Helsinki strongly urge cultural organisations to become carbon-neutral (by 2030) and assist in monitoring.

At an institutional level, Museo Reina Sofia in Madrid has invested in heating, ventilation and air conditioning upgrades, energy-efficient lighting, and renewable energy sources and has implemented waste separation, recycling, reuse and sourcing of sustainable materials for exhibitions.The Rijksmuseum is the first museum to achieve the highest BREAAM score for management of an existing building. As part of their recent renovation, they have integrated new technologies and sustainable elements including natural lighting, ventilation systems and eco-friendly materials.[57]

NEMO's report demonstrates that shifts in the right direction are being made through infrastructural initiatives.[58] Similarly the source of energy supply is important. These will impact the carbon emissions of climate-controlled spaces significantly.

3.2 Barriers to Practical Change

3.2.1 Lack of Awareness of Best Practice

The Exhibitions Group's desk research, survey, the online forum and informal consultation all suggested that there is a lack of awareness, misinterpretation and incapacity to stay abreast of collection management and lending and borrowing best practice in the context of climate change even when updated protocols and parameters have been endorsed by reputable and national or international organisations. Likewise, in NEMO's survey of 2022, lack of knowledge and lack of available training was the third most reported impediment to enabling the museum to make a sustainable transition[59].

A shared dataset is vital if museums are to benchmark, compare and procure in an informed way that reduces museums' emissions overall. Results of actions and activities are not always predictable without carbon calculation and museums need to measure the efficacy of their actions and hold themselves accountable by monitoring their impact and improving it year on year.

[57] NEMO, Network of European Museum Organisations. (2023). *Museums, Climate and Politics: Taking political action in the sustainable transition.* pp. 5–6, 11–12, 16, 27, 32, 33
[58] Ibid. pp.5–33
[59] NEMO Museums in the Climate Crisis, (2022) p. 28

However, some museum staff are unsure which calculation tool to use or how to measure the impact of touring exhibitions internationally. GCC have launched a carbon estimator as well as their calculator[60].

3.2.2 Capacity and Funding

In NEMO's 2022 Survey museums were asked what was impeding their sustainable transition. Most (60%) said this was down to lack of funds[61]. Capacity is a limiting factor that inhibits museums' ability to change quickly. Environmental responsibility can be seen as another 'add-on' to the day job. There is likely to be a capacity issue for non-national museums if asked to assess all objects individually by conservation experts in order to decide appropriate environmental parameters. This may indeed be one reason why a general 'standards' approach applied to whole types of object has been applied to date.

"Is it even feasible to consider working on literally object by object basis in terms of capacity and processes? Or is there an opportunity to ask some challenging questions about increasing the parameters for certain types of objects or in certain circumstances?"[62]

[60] Retrieved 8 April 2025 from https://calculator.galleryclimatecoalition.org/quick-calculator
[61] NEMO Museums in the Climate Crisis, (2022) p. 28 f
[62] See Appendix 4 - Summary Notes Online Forum into making international lending and borrowing more sustainable

Section 4: Recommendations for the Sector

4.1 Commentary on the Recommendations

Significant work is already under way whilst also knowing that UK museums are seen as international leaders. If UK museums champion this work, it will have international bearing.

Ensuring awareness and proper understanding of Bizot Green Protocol and GIS guidance across the whole UK museums sector and at all levels of museum organisations will greatly support better decision making that will enable reductions of carbon impacts.

Celebration of good progress, best practice and case studies should be used to motivate and encourage adoption of change.

AIM, the Association for Independent Museums, and Art Fund are creating museum resource hubs that will include sustainability. The Exhibitions Group has launched an Environmental Responsibility hub. Design Museum has information along with Impact Guides and calculation tools for exhibition making on its website.

In planning further education and resources, existing sources that already work well should be prioritised over creating new untested and bespoke materials. NEMO's *Guidelines for Climate Protection in Museums*, for example, are very clear and usable.

Education is needed about how to estimate and calculate carbon emissions, for example, on how to use Julie's Bicycle and Gallery Climate Coalition tools together to enable carbon estimation for exhibitions alongside venue reporting.

Whatever systems are used, museums need to be aware of the importance of the consistent use of carbon calculators and shared datasets across the sector.

An international collaborative approach should include adoption of the use of UNSDGs UN Sustainable Development Goals to ensure a shared language and framework for working internationally.

Shifting the dial on greenhouse gas emission may be most quickly achieved by museums switching energy suppliers to green sources. This may be easier for organisations to achieve in the short term than changes to environmental parameters and buildings.

4.1 Recommendations

Collaborate

1. Collaborate with others, including NMDC, Bizot, CiMAM and NEMO to drive best practice in international lending and borrowing.

- Adopt Bizot Green protocol
- Support NMDC's measures, including but not limited to those relating to international lending and borrowing, which already have traction amongst all the NMDC members

2. Use UNSDGs, United Nations Sustainable Development Goals to align more easily with international approaches as part of a push to reach Agenda 2030.

3. Embrace a paradigm shift where museum stewardship properly extends to the planet as well as collection objects

Educate

4. Undertake Carbon Literacy Training for all staff

5. Be consistent in the use of tools, carbon calculators and shared datasets across the sector

- This report suggests the use of Gallery Climate Coalition tools for international exhibitions' greenhouse gas emissions' estimation and calculation
- Signpost and encourage use of existing environmental sustainability guidance and tools - supporting the development of new tools and guidance only where necessary.
- The Exhibitions Group, AIM, NMDC, Design Museum and others have Environmental Responsibility Hubs and signpost tools and information

6. Celebrate and share quick wins and achievements such as

- More environmentally sustainable methods of packing and transporting
- Introduction of LED lighting

Mobilise

7. Update policies to be more environmentally friendly by inserting clauses into loan procedures, agreements and policies on lending and borrowing

8. Monitor progress against specific targets, such as

- Reduction in use of couriers
- Adoption of more environmentally friendly packing practices
- Reduction in greenhouse gas emissions from HVAC systems

9. Address capacity and resource issues internally

- Devise ways to provide additional support for conservation services to museums to enable case by case consideration of loans

10. Transition to Green energy

- Switch to green energy suppliers
- Support longer term transition through capital projects to create Low and Zero energy solutions for museum infrastructure

APPENDICES

Appendix 1. Literature reviewed for desk-based research.
Appendix 2. The Exhibitions Group (2024) Sustainable Lending and Borrowing Survey
Appendix 3. List of Interviewees and Contributors
Appendix 4. Summary Notes Online Forum into making international lending and borrowing more sustainable
Appendix 5. Initial list of conservation studies

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