Exhibition Design for our Time

A guide to reducing the environmental impact of exhibitions | MENAT edition

Image courtesy of Art Jameel
Contents

المقدمة
Introduction

دراسة الأثر
Investigating impact

إجراءات تطوير تصاميم المعارض
The exhibition design development process

قياس الأثر
Measuring impact

التكليف بتصميم وبناء للمعارض
Commissioning the design and build of exhibitions

أفكار ختامية
Final thoughts
In March 2023, Art Jameel, in partnership with the British Council, convened the ‘Culture & Climate Summit’ at the Jameel Arts Centre in Dubai, bringing together leaders in the culture field from across the MENAT (Middle East, North Africa and Turkey) region. The aim of the Summit was twofold: to support organisations in understanding and taking steps towards monitoring and reducing carbon emissions, and to plant the seeds for a regional network that works together to harness culture’s transformative role in the face of the ongoing climate crisis.
This guide, originally developed in 2021 by URGE Collective with the Design Museum, London, has been updated and adapted for the MENAT region, building on conversations during the ‘Culture & Climate Summit’ as well as in-depth interviews with Darat al Funun in Amman, Jordan, NYUAD Art Gallery, Abu Dhabi, UAE, and Salt in Istanbul, Turkey.

While we recognise the vast differences in the structural, political and social contexts of the MENAT region - and the various challenges these pose to efforts at reducing emissions - we hope that this adapted guide, together with the MENAT Impact Model, will serve as a common tool to support cultural organisations in their efforts to measure and reduce their carbon emissions. We hope that it will be a useful planning and reporting tool, and that it will be continually used and updated by organisations across the region, to continue to reflect real data and precise parameters.

Introduction - المقدمة

This guide, originally developed in 2021 by URGE Collective with the Design Museum, London, has been updated and adapted for the MENAT region, building on conversations during the ‘Culture & Climate Summit’ as well as in-depth interviews with Darat al Funun in Amman, Jordan, NYUAD Art Gallery, Abu Dhabi, UAE, and Salt in Istanbul, Turkey.

While we recognise the vast differences in the structural, political and social contexts of the MENAT region - and the various challenges these pose to efforts at reducing emissions - we hope that this adapted guide, together with the MENAT Impact Model, will serve as a common tool to support cultural organisations in their efforts to measure and reduce their carbon emissions. We hope that it will be a useful planning and reporting tool, and that it will be continually used and updated by organisations across the region, to continue to reflect real data and precise parameters.
Carbon footprints, limited water resources, air pollution, waste generation, invasive species, overfishing, land degradation and desertification are just some of the environmental threats facing countries across the MENAT region. As cited by the UAE government1 - ‘on a per-capita basis, the UAE’s energy, water and carbon footprints are amongst the highest in the world.’ With this in mind, cultural organisations have a role to play as catalysts in responding to these threats.

Exhibition-making is one of the activities that contribute to the carbon footprint of cultural organisations, and the way in which we plan, design and operate exhibitions has an important role to play in reducing the overall impact of institutions. The purpose of this guide is to offer practical advice for cultural organisations in the MENAT region who wish to reduce the environmental and social impact associated with their temporary and touring exhibitions.

---


Image - ‘Culture & Climate Summit’ at the Jameel Arts Centre. Courtesy of Art Jameel
Reducing emissions requires considering:

- Buildings and energy use for lighting and climate control, and the source of that energy
- The cultural organisation’s programme: the content and the order of exhibitions, how long they run for and who the organisation partners with to make them happen
- Materials for the production of the exhibition sets and graphics as well as in communications and learning programmes
- How shows are constructed and deconstructed
- The electronic devices and displays used in the exhibition itself and by staff working on its production
- Administrative processes > the efficient use of emails and other digital communications (all of which have an impact), as well as the print, paper and ink used during the production of an exhibition and while it is on view
- How, or even if, objects are transported for an exhibition
- And, crucially, the waste generated during the production of the exhibition and after it closes

This guide builds on findings from the environmental audit of a temporary exhibition presented at the Design Museum in 2021 entitled ‘Waste Age: What Can Design Do?’ carried out by URGE collective with the Design Museum in London, and references the Bio27 Sustainable Cultural Production Guide². Art Jameel would like to thank the Design Museum, London for their generosity in allowing the adaptation of the Guide and Impact Model for the MENAT region.

2. issuu.com/bio_ljubljana/docs/bio27_futuring-toolkit_eng
Images (Left & Right) - ‘Culture & Climate Summit’ at the Jameel Arts Centre. Courtesy of Art Jameel

Introduction - المقدمة

يتطلب أخذ من الانبعاثات مراعاة ما يلي:

- للبنى واستخدام الطاقة للإضاءة والتحكم في المناخ ومساح تلك الطاقة
- برامج المنظمة الثقافية: محتوى المعارض وترتيبها، ومدة استمرارها، ومع من تتعاون
- الأجهزة الإلكترونية والوسائل العرض المستخدمة في المتحف نفسه، والتي يستخدمها الموظفون
- كيف تملك الفاعل لرسائل البريد الإلكتروني والاتصالات الرقمية الأخرى
- كيف تملك الفاعل لرسائل البريد الإلكتروني والاتصالات الرقمية الأخرى
- الأجهزة الإلكترونية والوسائل العرض المستخدمة في المعرض نفسه، والتي يستخدمها الموظفون
- البرامج الثقافية والعارض المتاح المستخدمة أثناء إفتتاح المعرض وأثناء عرضه
- وكيفية فتح المعرض
- كيف يمكن أن يغفل عنها البعض، النفاياتتلود أثناء إنتاج المعرض وبعد إغلاقه
- ومنطقة محلية قد يغفل عنها البعض، النفاياتتلود أثناء إنتاج المعرض وبعد إغلاقه

يستند هذا الدليل على نتائج التدقيق البيئي لعرض مؤقت أقيم في متحف التصميم عام 2021 تحت عنوان “عصر الغزارة: ما الذي يمكن أن يفعله التصميم؟” والذي أجرته مجموعة URGE لحفظ التصميم في لندن، ويستخدم دليل الإنتاج الثقافي للبيئة Bio27 كمرجع للدليل. تقدم مؤسسة جميل للنشر الثقافي لحفظ التصميم في لندن على همم الكريسماساحما بتعديل الدليل وتوضيح الأثر بسحب سباق منطقة الشرق الأوسط وشمال أفريقيا تركيا.

2. issuu.com/bio_ljubljana/docs/bio27_futuring-toolkit_eng
الصور (يسار ويمين) - ‘قمة الثقافة والمناخ’ في مركز جميل للفنون، مع التقدير لمؤسسة فن جميل
The focus of this guide is on reducing the impact of temporary and touring exhibitions. However, we recognise that policies and practices to this end will need to be implemented within the context of the organisation as a whole. Where cultural organisations have made an overall commitment to achieving Net Zero, and have plans to achieve that, exhibition teams may find it easier to secure support and budget to play their part. Likewise, government commitments to Net Zero goals, such as those made by the UAE, create momentum for action at an institutional level.

For cultural organisations in the MENAT region looking to adopt successful climate action policies, it may be helpful to understand how, and to what extent, such practices are being implemented elsewhere. For example, in order to bring together different departments within the museum and build a whole-museum approach, the Design Museum in London has created an Environmental Impact Working Group which includes members from different departments. This approach has also been used in other UK and European cultural organisations, and additional examples are included in the further reading section at the end of this guide.

Image - 'Hiwa K: Do you remember what you are burning?' Courtesy of Art Jameel. Photo by Daniella Baptista
Governmental climate policy and institutional governance have a key role to play. Many MENAT cultural organisations are privately or corporately owned. In the latter case, where corporations have made their own commitments to Net Zero, there may be an opportunity to secure senior buy-in for developing complementary policies at a cultural level. For example, the cultural institution Salt based in Istanbul, Turkey, is founded and funded by the bank Garanti BBVA and is part of a new breed of commercially-run arts and cultural institutions. Garanti has made commitments towards Net Zero, giving Salt the opportunity to align with their policies. However, the government does not follow through with a consistent history of abiding by strict eco-friendly policies, and the ongoing economic crises in Turkey make a sustainable economy less of a priority.

Additional detailed examples from the UK and wider Europe are included in the further reading section at the end of this guide.
Environmental Impact Guide

Introduction - المقدمة

ICAM, Salt Galata, Istanbul

الموره - ICAM, جالاتا، إسطنبول
You can’t manage what you don’t measure so the best place to start is an environmental audit to provide knowledge, and insights as to where your organisation’s impact actually sits.

Image - ‘An Ocean in Every Drop.’
Courtesy of Art Jameel. Photo by Daniella Baptista
Jameel Arts Centre appointed Rawad Massoud from V4 Advisors to undertake a Greenhouse Gas (GHG) audit, for business as usual operations at its Dubai centre in 2020 and 2021. V4 Advisors DMCC is a consulting and advisory service provider with focus on climate change and greenhouse gas emissions reduction whose greenhouse platform is certified by the Greenhouse Gas Protocol.5

At the ‘Culture & Climate Summit’ V4 presented their local regional knowledge informed by experience working across banking, finance, industrial, logistics, medical, educational, hospitality and culture sectors. This helped participants gain an understanding of the importance of an audit followed by a road map and action plan to Net Zero. To integrate regional expertise, URGE consulted V4 on the updated Impact Model for the MENAT region (see Measuring Impact section).

5. www.ghgprotocol.org/Tools_Built_on_GHG_Protocol

Image - ‘Guest Relations.’ Courtesy of Art Jameel. Photography by Daniella Baptista
These audits are important tools in helping to make informed and impactful decisions to do with day to day operations. The Jameel Arts Centre conducted two GHG audits in 2020 and in 2021. This data illustrated challenges and opportunities that shaped operations decisions as described below.

From a usage perspective, the building’s footprint coming from electricity remains rather constant regardless of the amount of visitor footfall. With that in mind, and accounting for periods of fewer visitors as well as hours in which offices are not in use, the Centre has engaged in a multifaceted reduction of Scope 2 emissions due to electricity and water consumption as well as waste output.

These audits are important tools in helping to make informed and impactful decisions to do with day to day operations. The Jameel Arts Centre conducted two GHG audits in 2020 and in 2021. This data illustrated challenges and opportunities that shaped operations decisions as described below.

From a usage perspective, the building’s footprint coming from electricity remains rather constant regardless of the amount of visitor footfall. With that in mind, and accounting for periods of fewer visitors as well as hours in which offices are not in use, the Centre has engaged in a multifaceted reduction of Scope 2 emissions due to electricity and water consumption as well as waste output.

From a usage perspective, the building’s footprint coming from electricity remains rather constant regardless of the amount of visitor footfall. With that in mind, and accounting for periods of fewer visitors as well as hours in which offices are not in use, the Centre has engaged in a multifaceted reduction of Scope 2 emissions due to electricity and water consumption as well as waste output.
Investigating Impact

There are nightly shutdowns of Fresh Air Handling Units (FAHU) in offices and meeting rooms. Day to day, motion-sensing LED lights, adjusted facade lights, and solar-powered event lights further enable a reduction of the building’s footprint. More efficient UV filters are also placed on lobby widows to reduce heat. Remote working days are now two per week, helping to reduce staff travel.

Water sustainability is equally a priority, with refillable water machines installed in the building. These capture humidity in the air, condense it and make drinking water available — reducing the reliance on treated water and creating less water waste in the system. Throughout the premises, there are seven gardens designed by landscape architect Anouk Vogel which benefit from digitally-timed water timers. These gardens host plant species native to deserts, which are able to thrive in Dubai’s climate and avoid the otherwise intensive water needs of imported species. The Jaddaf Waterfront Sculpture Park adjacent to the Centre is irrigated using TSE (Treated Sewage Effluent) provided by the local municipality.
The Jameel Arts Centre partakes in composting initiatives alongside its in-house restaurant, thus contributing to the transformation of food scraps into soil through a local partner. In parallel, recycling bins for plastic bottles, glass bottles, and cartons underscore waste management efforts.

Finally, exhibitions embody the Centre’s commitment to reuse and repurpose materials, prioritising the reuse and adaptation of walls, plinths, wooden panels and other production items. In more details, exhibitions planning engages in reduction of Scope 3 emissions by:

- Prioritising local production over import where possible
- Prioritising the consolidation of artworks shipments
- Prioritising sea-freight over airfreight where possible
- Lengthening the duration of exhibitions from 4 months to 6 months
- Re-using exhibition build for concurrent exhibitions
- Re-using or donating exhibition build materials to divert from landfill
- Recycling exhibition waste where possible to divert from landfill
- Employing virtual meeting tools to plan and produce exhibitions to reduce travel where possible
In 2021, the Design Museum in London invited URGE Collective to collaborate on its ‘Waste Age: What Can Design Do?’ exhibition. The exhibition (which ran from October 2021 to February 2022) asked what design can do to leave our throwaway culture behind. The Design Museum wanted to make an exhibition with as minimal a carbon footprint as possible - and they learned a lot in the process.

The project had two outputs: URGE conducted an Environmental Audit of the exhibition, using Life Cycle Assessment methodology. This was one of the first Life Cycle Assessments conducted on an exhibition in the UK. Through this process URGE observed and advised the Design Museum team as well as the exhibition’s 2D and 3D designers (Material Cultures and Spin, respectively) on the design and build of the exhibition and how to reduce its carbon impact through material and production choices.

In عام 2021، دعا متحف التصميم في لندن مجموعة URGE Collective لتعاون في معرض "عصر النفايات: ما الذي يمكن أن يفعله التصميم؟". طرح المعرض الذي استمر من أكتوبر 2021 إلى فبراير 2022 سؤالًا حول ما يمكن أن يفعله التصميم لترك ثقافة الإهمال وراءنا. أراد متحف التصميم إنشاء معرض بأصغر بصمة كربونية ممكنة - وقد تعلموا الكثير في هذه العملية.

كان للمشروع ناتجان: أجرت مجموعة URGE تدقيقًا بيئيًا للمعرض، باستخدام منهجية تقييم URGE. كان هذا أحد تقييمات دورة الحياة الأولى التي أجريت في معرض في المملكة المتحدة.

من خلال هذه العملية، قدمت مجموعة URGE خدمات الإشراف والاستشارة لفريق معرض "Waste Age" من خلال هذه العملية. قدمت مجموعة URGE خدمات الإشراف والاستشارة لفريق معرض "Waste Age" عن تدقيق وبناء المعرض و adım وتاثيره الكربوني من خلال خيارات المواد والإنتاج.
Data gathered via the audit was used to inform an Impact Model carbon calculator on Excel developed by URGE for the exhibition. The Impact Model enabled URGE to calculate the exhibition’s carbon footprint, as well as to provide the Museum with benchmarking data and best practice insights for future exhibitions. Using the Impact Model it was possible to monitor the three life cycle stages – pre-exhibition, live exhibition, and post-exhibition – and to highlight the technical source of impacts. The Museum’s curatorial, design, facilities and production teams were all involved in the audit process through interviews, and data gathering.

The Impact Model captured data from: stakeholder interviews, desk research, exhibition design reviews, email trackers, facilities procurement, energy and the renewability of energy sources, resource consumption, waste generation, manufacture and transport of exhibition build materials, exhibition specific commissions, the weight, materiality and transport of exhibits, exhibition graphics and collateral, transport and energy requirements of technical equipment, observation of the production process and more.

The audit revealed that, at opening, the total exhibition impact of ‘Waste Age’ was approximately 28 tonnes of CO2e – 30% of which was in the build and 50% in a single installation that the Museum imported from abroad.
Image courtesy of the Design Museum, London
Environmental Impact Guide

Key Findings From the Design Museum’s ‘Waste Age’ Exhibition

Energy

Switching energy supply to a renewable source (a decision taken beforehand by the institution as a whole) was the biggest single contributor to reducing emissions. If the Design Museum had not been using renewable electricity, it is estimated that the impact of the ‘Waste Age’ exhibition would have been approximately 185 tonnes CO2e. Switching to a supplier of renewable energy cut the total possible impact by some 85%.

Exhibits

The exhibits featured in ‘Waste Age’ weighed roughly 2.5 tonnes and the average distance travelled was roughly 1,250 km. Here’s where curatorial decisions have a significant impact on sustainability. Just one exhibit in ‘Waste Age’ was responsible for 2 tonnes of the 2.5 tonnes total weight. Given that many of the exhibits were from the UK, the fact that this one was shipped from afar was also responsible for pushing up the average distance travelled by exhibits. The logistics footprint, excluding this major commission, was less than 20 kg CO2e (or 0.06% of the total footprint) and including it was around 5 tonnes CO2e, plus its embodied carbon was estimated at around 9.3 tonnes CO2e. The total emissions related to the one exhibit was approximately 14.2 tonnes CO2e, and almost half the exhibition’s impact.

Investigating Impact - الدراسة الأثرية

**نتائج الرئيسية لمعرض عصر النفايات في متحف التصميم**

**Key Findings From the Design Museum’s ‘Waste Age’ Exhibition**

**الطاقة**

كان تحويل إمدادات الطاقة إلى مصدر متجدد (وهو قرار اتخذه المؤسسة ككل مسبقا) هو أكبر مساهم متفرد في تقليل الانبعاثات. لو لم كان متحف التصميم يستخدم مصادر الكهرباء المتجددة، فكان من المقدر أن يصل تأثير معرض ‘عصر النفايات’ إلى حوالي 185 طن من ثاني أكسيد الكربون.

**المعرضات**

زن المعرضات المعروضة في ‘عصر النفايات’ حوالي 2.5 طن وكان متوسط السافة القطعية حوالي 1250 كم. هنا يبدأثر القرارات التشريعية على الاستدامة. كان عمل واحد فُقد في ‘عصر النفايات’ مسؤول عن طنين من الوزن الإجمالي البالغ 2.5 طن. نظرًا لأن العديد من المعرضات كانت من المملكة المتحدة، فإن حقيقة أن هذا العمل قد سُجّن من منطقة بعيدة كان مسؤولًا أيضًا عن زيادة متوسط السافة التي نطقتها المعرضات. كانت الصورة اللوجستية، إضافة إلى ذلك، أقل من 20 كم من ثاني أكسيد الكربون، بلغ إجمالي الانبعاثات المتعلقة بالعرض الواحد حوالي 14.2 طن من ثاني أكسيد الكربون، وما يقرب من نصف تأثير العرض.
The build

The biggest single contributor to the carbon footprint of the exhibition build was the 4,800 standard stainless steel decking screws used to hold everything together. They had an impact of 1.9 tonnes CO2e – roughly 7% of the total exhibition footprint. Using a timber frame system instead of a standard aluminium frame saved 1.5 tonnes CO2e, and reduced the impact by about two thirds. Using unfired bricks instead of fired bricks saved 6 tonnes CO2e, the second most significant saving after switching to renewable electricity. The museum also made savings by retaining some of the walls from its previous exhibition, and also re-purposed silicate blocks from this exhibition to make new plinths.

Re-use

The second life of materials was key to keeping ‘Waste Age’s’ carbon footprint low. The Design Museum managed to secure new homes for:

- All of the wood, wool and timber used in the exhibition build, which was donated to a local construction company
- 800 fired bricks which were also donated to the same construction company
- Perspex cases: most would tour with the exhibition to Paris, some were given to Royal College of Art students
- 250 fired bricks, 10 silicate blocks and 10 adobe bricks which were donated to a local interior designer
- All of the felt was donated to a local fashion designer for a collection

Digital communication

The Design Museum sent around 11,000 emails while making ‘Waste Age’. About 11GB of data was shared during the exhibition production process. The two together equate to around 1 tonne of CO2e. Those involved in the development of the exhibition also spent around 750 hours on video calls. No more than 3% of the total footprint for ‘Waste Age’ was associated with digital communication.
Reducing impact starts with curatorial decisions

Including just one large scale installation had a huge impact on the carbon footprint of ‘Waste Age.’ So was it necessary? Did including this one installation add so much to the exhibition that it was worth the environmental cost in transporting it? Could the museum have included it in another way, perhaps using digital technology? In order to lower overall emissions, curators will need to consider these factors when deciding on the content of exhibitions.

Chase data

Gathering detailed information and following up with suppliers throughout the audit helped the Design Museum make informed decisions. The team was able to challenge assumptions and demonstrate that some unexpected options – such as using recycled plastic rather than cardboard for exhibition captions – were in fact the lower impact choice.
Choose materials wisely

The Design Museum worked with architects Material Cultures to ensure all the materials used in ‘Waste Age’ were natural, biodegradable or recyclable, but could alternative materials have been used in the exhibition structure? Could the screwed together timber frame have been replaced with an aluminium structure that could be re-used for future exhibitions?

Challenge convention

Both the 3D design and audit processes encouraged the team to question accepted methods of planning and building exhibitions. Minimising a carbon footprint isn’t something that can be achieved instantly, but the more alternatives are explored, the more viable and genuinely effective options are found.

Work together

Only the combined expertise of many specialists made the audit process possible. Communication between museum departments revealed how making changes can have knock-on effects, such as setting up an Environmental Impact Working Group to help the museum teams confidently carry cooperation forward and ensure that environmental responsibility is embedded in their culture.

Investigating Impact - الأثر دراسة

 trabal تحت التصميم مع مكتب "ثقافات المواد" المعماري لضمان أن جميع المواد المستخدمة في "عصر النفايات" كانت طبيعية أو قابلة للتحليل البيولوجي أو قابلة لإعادة التدوير، ولكن هل يمكن استخدام مواد بديلة في هيئة العرض؟ هل يمكن استخدام الإطار الخشبي لللوازم في الألومنيوم يمكن إعادة استخدامه في العرض المستقبلية؟

تحدي الألوه

تمكن الفريق، بفضل عمليات التصميم ثلاثية الأبعاد والتدقيق، من التشكيك في الأساليب المقبولة للتصميم وبناء العروض. إن تقليل البصمة الكربونية ليس أمرًا يمكن تحقيقه على الفور، ولكن كلما استكشفنا المزيد من البدائل، تعرفنا على خيارات أكثر فعالية وواقفية.

العمل الجماعي

لم تكن عملية التدقيق ممكنة دون الخبرات للشركة للعديد من المتخصصين. كشف التواصل بين إدارات المتاحف كيف يمكن إجراء التغييرات آثار غير مباشرة، مثل إنشاء مجموعة عمل للتأثير البيئي لمساعد الفرق في البحث عن المفاهيم المفيدة في التعاون بين فرق وضمان أن تصبح المسؤولية البيئية جزءًا لا يتجزأ من نماذجهم.
Count digital carbon
All those emails add up. The audit's carbon tracker exposed the surprisingly high emissions created by digital communications. Working smarter and more efficiently (do you really need all those attachments?) can make a real difference here.

Minimise air travel
The Design Museum developed Waste Age during the worst of the Covid-19 pandemic, so travel was inevitably reduced. Though not perfect, they learned that remote solutions can help reduce the need for flights — video calls, for example, instead of flying in couriers to oversee installations.

Build a network for sharing resources
The Design Museum tried to recycle all of the exhibition materials, donating them to other companies and institutions. At a certain point they thought they'd achieved a zero-waste exhibition, but at the last minute one institution pulled out, meaning that a skip was hired to quickly dispose of tonnes of material before the next exhibition build arrived on site. These sharing systems are fragile, and the lesson learned is that all the parties need to understand what's involved in taking "free stuff".
Environmental Impact Guide

The exhibition design development process

How do we integrate a low-impact approach within the exhibition design process? And what is already happening in the MENAT region?

From initial concept to opening, making an exhibition follows a process which typically brings together stakeholders, curators, sponsors, designers and suppliers. How do we ensure that minimising our carbon footprint is a core part of the exhibition decision-making process? There are vital questions to be asked at every stage.

Image - Pacita Abad, 'I Thought the Streets Were Paved with Gold.' Courtesy of Art Jameel. Photo by Daniella Baptista

كيف ندمج نهجاً منخفض الأثر في عملية تصميم المعرض؟ وما الذي يحدث بالفعل في منطقة الشرق الأوسط وشمال أفريقيا وتركيا؟

من الفهم الأولي إلى الافتتاح، يتبع إنشاء معرض عملية تجمع عادة أصحاب المصلحة والفنانين والمصممين والموارنة. كيف نضمن أن تقليل بصمتنا الكربونية هو جزء أساسي من عملية صنع القرار في المعرض؟ هناك أسئلة حيوية يجب طرحها في كل مرحلة.

 rahatsız لا أثق! خذ إلى أن النوازير مجهدة الناهب. مع التحيات، نادية نادية
Environmental Impact Guide

Programme

The duration, content and model of an exhibition has consequences on its impact. Staging fewer exhibitions, which are longer in duration can be more efficient. Exhibitions which feature local artists’ and designers’ work are likely to have a lower impact than those requiring the shipping of objects from overseas.

? Ask: How does our approach to programming impact our sustainability goals? Should we have an annual carbon budget for exhibitions? Can the exhibition be conceived so that it does not require the presence of overseas curators or contributors on-site? Should each exhibition have a desired ratio of local vs imported content, or a target percentage of objects from the organisation’s permanent collection?

The values that inform the programme are paramount as shown by Sakiya — an international, interdisciplinary residency programme cultivating knowledge in contemporary arts, science and agriculture. Based in Ein Qiniya, Palestine the residency supports artists rooted in ecological practice exploring local agricultural traditions of self-sufficiency. Working in a glocal context, in dialogue with the local municipality, and international networks for sharing models, processes, tools, ideas, skills. Sakiya has established an environmental charter and key environmental strategies such as no plastic, no waste, and renewable energy with mobile solar units. The future goals of the programme include co-creating a replicable model for self-sufficiency, and a liberatory pedagogy platform that challenges Western colonial educational programmes.

البرنامج

القيم التي يسترشد بها البرنامج لها أهمية قصوى كما بوضوح برنامج الساقية - وهو برنامج إقامة دولي متعدد التخصصات يزرع المعرفة في الفنون العصرية والعلوم والزراعة. من مقرها في عين قنية، فلسطين، تقوم هذه الإقامة القانونية للتاجر في الممارسة البيئية لاستكشاف تقاليد الزراعة المحلية للكفء الذاتي، وسبل العمل في سياق محلي، في حوار مع البلدية المحلية، والشبكات الدولية لتبادل النماذج والعملات والأدوات والأفكار والمهارات. أنشأ برنامج الساقية ميثاقا بيئيا واستراتيجيات بيئية رئيسية مثل عدم وجود بلاستيك ولا نفايات وطاقية متجددة مع وحدات شمسية متاحة، تشمل الأهداف المستقبلية للبرنامج المشاركة في إنشاء نموذج قابل للتكاثر للأكفاء الذاتي، ومنصة تربوية تحررية تتحدى البرامج التعليمية الاستعمارية الغربية.
الشحن / النقل

Shipping/Transport

Cutting travel for staff and external curators can significantly reduce emissions. However, organisations in the MENAT region are often reliant on curatorial and academic support from institutions outside the region, while staff may need to travel in order to secure loans and conduct culture-related business.

The transportation of exhibition content can dramatically increase the exhibition’s carbon footprint. Shipping and transport arrangements can be complex, and onward transit from the nearest international cargo hub will usually require diesel-powered trucking, adding to overall impacts. In addition, many organisations rely on transporting objects for exhibitions from overseas collections, making alternative programming decisions a challenge.

? Ask: Is it worth the carbon? Curatorial decisions need to balance the value of including certain objects in exhibitions with the environmental cost of shipping them. Can objects and artworks be locally sourced or digitally represented instead? Can lower impact (and often slower) transportation be used for essential objects and time allowed for in the planning phases? What will the carbon footprint of touring the exhibition look like?

يمكن أن يؤدي خفض سفر الموظفين والقيمين الخارجيين إلى تقليل الانبعاثات بشكل كبير، ومع ذلك، غالباً ما تعتمد المنظمات في منطقة الشرق الأوسط وشمال أفريقيا على الدعم التنظيمي والأكاديمي من مؤسسات خارج النطاق، في حين قد يحتاج الوظائف إلى السفر من أجل تأمين الإعارات وإتمام الصفقات الثقافية.

قد يؤدي نقل محتوى المعرض إلى زيادة البصمة الكربونية للمعرض بشكل كبير. كما يمكن أن تكون ترتيبات الشحن والنقل معقدة. وعادة ما يتطلب النقل من أقرب مركز شحن دولي النقل الشحنات التي تعمل بالديزل، ما يزيد من الانبعاثات الإجمالية. بالإضافة إلى ذلك، تعتمد العديد من المنظمات على نقل الأشياء للمعارض من الجماعات الخارجية، ما يجعل قرارات البرمجة البديلة تحدياً حقيقياً.

سؤال الواجب طرجة: هل تسأل هذه الأعمال صممتها الكوبونية؟ تحتاج إلى التنقيم إلى مواجهة قيمة تضمين الأعمال المتاحة في المعرض وتأثيرها على окружаية البيئية لمنجيها. هل يمكننا الحصول على الأعمال الفنية من مصادر محلية أو تمثيلها رقمياً بدلاً من ذلك؟ هل يمكن استخدام وسائل النقل الآلية بدلاً من ذلك؟ هل يمكن استخدام وسائل النقل الآلية (وإذا غاليًا ما تكون أيضاً) للمقتنيات الأساسية مع احتمال الوقت السبوع في مراحل التخطيط كيف ستبدو البصمة الكوبونية للجول في العرض؟
An Object List Decision Tree created with the curatorial team, enables an environmental review of the object ‘wish list’ when it is at 80% complete, to help the curatorial team make decisions about what to include in the show. This decision tree works in tandem with the impact model to help the curatorial team review both financial costs and the potential travel and production emissions related to the inclusion of an object.

Salt’s Director of Research and Programs Fatma Çolakoğlu told us, “Salt’s focus on digital projects, archival collections, and working with local artists means we don’t necessarily ship works internationally which helps minimise transport-related emissions.”

أخبرتنا فاطمة تشولاكوغلو، مديرة الأبحاث والبرامج في سولت: “إن تركيز سولت على المشاريع الرقمية، المجموعات الأرشيفية، والعمل مع الفنانين المحليين يعني أننا لا نشحن الأعمال الفنية دولياً ما يساعد على تقليل الانبعاثات المرتبطة بالنقل.”
Development Process - إجراءات التطوير

1. Is it a "Star Object"? (How essential is the object to the narrative of the show?)
   - Yes
       1. Is the object available? No → Go to question 10.
           - Yes
               2. How essential is the object to the narrative of the show?*
                  3. Does the object need to travel? No → IN
                     Yes
                     4. Does the object exist anywhere else? (i.e. are there multiple versions / an alternative lender?)
                        No → OUT
                        Yes
                        A B Use Impact Model to calculate travel CO2e
                        5. What is the travel carbon footprint? A........... B...........
                              7. Is the carbon worth it?* Yes → IN
                                 No → OUT
                                 8. Is acquisition of the object in budget? Yes → IN
                                    No
                                    9. Can travel costs be shared with other objects? Yes → IN
                                       No
                                       10. Can the object be represented in another way or reproduced locally? No → OUT
                                           Yes
                                           11. What is the production carbon footprint?
                                           Use Impact Model to calculate production CO2e C...........
                                           12. Is the carbon worth it?* No → OUT
                                               Yes
                                               IN

2. Is the object available? No → Go to question 10.
   - Yes
       2. How essential is the object to the narrative of the show?*
          3. Does the object need to travel? No → IN
             Yes
             4. Does the object exist anywhere else? (i.e. are there multiple versions / an alternative lender?)
                No → OUT
                Yes
                A B Use Impact Model to calculate travel CO2e
                5. What is the travel carbon footprint? A........... B...........
                      7. Is the carbon worth it?* Yes → IN
                         No → OUT
                         8. Is acquisition of the object in budget? Yes → IN
                            No
                            9. Can travel costs be shared with other objects? Yes → IN
                               No
                               10. Can the object be represented in another way or reproduced locally? No → OUT
                                   Yes
                                   11. What is the production carbon footprint?
                                   Use Impact Model to calculate production CO2e C...........
                                   12. Is the carbon worth it?* No → OUT
                                       Yes
                                       IN

3. How essential is the object to the narrative of the show?*
   - 1. Is it a "Star Object"? (How essential is the object to the narrative of the show?)
     - Yes
     - No

4. Does the object need to travel? No → IN
   - Yes
     2. How essential is the object to the narrative of the show?*
        3. Does the object exist anywhere else? (i.e. are there multiple versions / an alternative lender?)
           No → OUT
           Yes
           A B Use Impact Model to calculate travel CO2e
           5. What is the travel carbon footprint? A........... B...........
                 7. Is the carbon worth it?* Yes → IN
                    No → OUT
                    8. Is acquisition of the object in budget? Yes → IN
                        No
                        9. Can travel costs be shared with other objects? Yes → IN
                           No
                           10. Can the object be represented in another way or reproduced locally? No → OUT
                               Yes
                               11. What is the production carbon footprint?
                               Use Impact Model to calculate production CO2e C...........
                               12. Is the carbon worth it?* No → OUT
                                   Yes
                                   IN

5. Does the object exist anywhere else? (i.e. are there multiple versions / an alternative lender?)
   - No → OUT
   - Yes
     1. Is it a "Star Object"? (How essential is the object to the narrative of the show?)
        2. How essential is the object to the narrative of the show?*
           3. Does the object need to travel? No → IN
              Yes
              4. Does the object exist anywhere else? (i.e. are there multiple versions / an alternative lender?)
                 No → OUT
                 Yes
                 A B Use Impact Model to calculate travel CO2e
                 5. What is the travel carbon footprint? A........... B...........
                       7. Is the carbon worth it?* Yes → IN
                          No → OUT
                          8. Is acquisition of the object in budget? Yes → IN
                             No
                             9. Can travel costs be shared with other objects? Yes → IN
                                No
                                10. Can the object be represented in another way or reproduced locally? No → OUT
                                    Yes
                                    11. What is the production carbon footprint?
                                    Use Impact Model to calculate production CO2e C...........
                                    12. Is the carbon worth it?* No → OUT
                                        Yes
                                        IN

6. Is acquisition of the object in budget? Yes → IN
   - No

7. Can travel costs be shared with other objects? Yes → IN
   - No

8. Can the object be represented in another way or reproduced locally? No → OUT
   - Yes


10. What is the cost of travel? A........... B...........

11. Is the carbon worth it?* Yes → IN
    - No → OUT

12. What is the production carbon footprint?
    Use Impact Model to calculate production CO2e C...........
    1. Is the carbon worth it?* No → OUT
       Yes
       IN

Graph courtesy of the Design Museum
Materials and Waste

As the Design Museum learnt from ‘Waste Age’ the choice of materials, as well as design decisions which allow for easy disassembly and the consideration of the end of life use of materials can have a major impact on the overall carbon footprint of an exhibition. “When planning an exhibition, it is as important to think as much of how it will be de-constructed as how it will be put up” (Bio27). Sets, walls and displays should be designed to be easily dismantled, re-used, re-purposed, or recycled. Using the right material for the right use is key.

When we consider that “The UAE’s per-capita waste generation is among the world’s highest, the majority of which ends up in landfills” (UAE.gov portal) then the waste generated by both the design and operation of exhibitions must be minimised, e.g. foster a closed-loop economy, design out waste. Aim to reduce, reuse and recycle more construction, renovation, and demolition waste and eliminate single-use plastics. Additionally, the manufacture of some materials may require a change of landuse or otherwise negatively impact biodiversity. Researching how materials are made and reducing demand for those which are harmful can help improve biodiversity at source.
When faced with the challenge of exhibition production waste, the design team from NYU Abu Dhabi (NYUAD) Art Gallery turned to sustainable design methods and created a modular wall system that can be stored and reused time and time again. Exhibition Design Technician Melroy D’Souza says “Our next challenge is reusing and or recycling the plastic waste from artwork packaging used for shipping and handling.”
In the MENAT region, consideration also has to be given to which materials are available locally, as the carbon cost of shipping materials that may appear to be less impactful may actually mean that they have a higher carbon footprint overall. In addition, where organisations are using local artisans to build exhibitions, there may be local methods of manufacture, or materials available, that offer lower-carbon choices, but those methods and materials may not conform to international standards or loan conditions.

**Ask:** Can we reuse existing display units? Are we designing the exhibition with reuse in mind? How are we assessing the impact of the materials we are going to use? What will happen to the materials or setworks after the exhibition finishes? Post exhibition, how will materials be disposed of/reused? Can a system for sharing, reusing materials with other local institutions be devised? Can we create a Red/Amber/Green or 'No' list of the organisation's exhibition design materials?

During the Culture & Climate Summit, Faisal Al Hassan, general manager at 421 in Abu Dhabi explained how they redesigned the gallery to use permanent modular display systems and how they constantly store and reuse exhibition structures and material, but would like to go further. 421 are investigating the opportunity to build a UAE cultural sharing network and database similar to BARDER - an experimental New York based system for sharing used assets such as plinths.

www.barder.art

During the Culture & Climate Summit, Faisal Al Hassan, general manager at 421 in Abu Dhabi explained how they redesigned the gallery to use permanent modular display systems and how they constantly store and reuse exhibition structures and material, but would like to go further. 421 are investigating the opportunity to build a UAE cultural sharing network and database similar to BARDER - an experimental New York based system for sharing used assets such as plinths.

www.barder.art
Environmental Impact Guide

المباني / الطاقة
Buildings/Energy

The most significant impacts in this category can be made at the institutional level e.g. using renewable energy or installing solar panels.

Alserkal Avenue, Dubai is home to over 6,500 square meters of solar panels.7 Installed across 39 of the warehouses, the solar panels generate 2.40 GW of clean energy annually, offsetting nearly 1,703 tonnes CO2e, contributing to the UAE’s green energy drive. The energy savings output is the equivalent of 379 gasoline-powered passenger vehicles driving for one year.

Additionally, as part of Alserkal Arts Foundation’s Spring 2023 residency programme, artist Masaru Iwai’s8 research questioned the relationship between energy generated from solar panels and the routine of cleaning. He examined the social symbolic meanings of cleaning and cleansing, as well as the refinement of crude oil that leads to the detergents we use every day.

Recently in an initiative to renew and improve spaces of congregation within the Avenue, The Yard and the lanes are now home to new botanical and architectural features. With landscaping design by Zain Masud, and the urbanscape by T SAKHI, the project rediscovers the indigenous or native plants of this region, and celebrates local crafts.

يمكن إحداث أهم الآثار في هذه الفئة على المستوى المؤسسي. على سبيل المثال استخدام الطاقة للتجديد أو تركيب الألواح الشمسية.

تعتبر منطقة السركال (دبى) موطنًا لأكثر من 6500 متر مربع من الألواح الشمسية.7 وتولد الألواح الشمسية، التي تشكل 49.3% من إجمالي الطاقة المتجددة، 2.40 غيغاواط من الطاقة النظيفة سنوياً، لتعوض ما يقرب من 1,703 طن متري من ثاني أكسيد الكربون، مما يساهم في حملة الطاقة البديلة في دولة الإمارات العربية المتحدة. الناتج عن توفير الطاقة يعادل البصمة الكربونية خالفة 379 سيارة تعمل بالبنزين سنوياً واحد.

بالإضافة إلى ذلك، وجزء من برنامج الإقامة لربيع 2023 التابع لمؤسسة السركال للفنون، طرح بحث الفنان ماسارو إيواي8 تساؤلات عن العلاقة بين الطاقة المولدة من الألواح الشمسية وروتين التنظيف، حيث درس معاني الرمزية الاجتماعية للتنظيف والتطهير، وكذلك عمليات تكرير النفط وتصفح المنتج النهائي.

مؤخراً وفي مبادرة لتجديد وتحسين مساحات التجمع داخل منطقة السركال، تزدان الساحة الرئيسية والممرات المحيطة بها بالمخلوف البلاطات وال تصاميم المعمارية الجديدة من إبداعات معزوضة لتصميم البروز T SAKHI وتصميم المركز. يهدف المشروع إكتشاف النباتات المحلية والانتقائية في المنطقة، ويعتبر بالإنجاز الحلي.
However, switching to a renewable energy supplier may not be an immediately accessible option in the MENAT region due to a combination of energy policy, market conditions, governance, and a lack of uniform regulation. The installation of solar panels to historically significant buildings may have heritage implications, and it can be hard to justify the cost of installing solar panels when cheaper, often government-subsidised, fossil-fuel generated power is available. In order to satisfy loan and insurance requirements and keep artworks at the right temperature and humidity levels, power supplies must be reliable: often this requires the use of back-up generators.

Either way, the operational energy required by the exhibition should be minimised and measured by comparing energy demand versus previous exhibitions.

Ask: What aspects of the exhibition drive energy demand (e.g. screens, projectors and other AV hardware) and can lower-use alternatives be found?

ومع ذلك، قد لا يكون التحول إلى مورد للطاقة المتجددة خياراً متاحاً على الفور في منطقة الشرق الأوسط وشمال أفريقيا وأفريقيا بأكملها بسبب مزيج من سياسة الطاقة، وظروف السوق، والخواز، وغياب التنظيم اللwagon. قد يكون تركيب الألواح الشمسية في المباني ذات الأهمية التاريخية أثاراً ذات دلالات إعلامية، وقد يكون من الصعب تبرير تركيب الألواح الشمسية عند توفير طاقة أرخص، للدعم الحكومياً أحياناً، من الوقود الأحفوري. من أجل تلبية متطلبات العقارات والتامين واحترام الحقائق في مستويات درجة الحرارة والرطوبة المناسبة، يجب أن تكون إمدادات الطاقة متوفرة: غالبًا ما يطلب ذلك استخدام مولدات احتياطية.

في كلتا الحالتين، يجب تقدير الطاقة التشغيلية التي تطلبها المعرض وقياسها من خلال مقارنة الطلب على الطاقة مقابل المعارض السابقة.

سؤال: ما هي جوانب المعرض التي تثير طاقة (مثل الشاشات وأجهزة العرض وغيرها من الأجهزة السمعية والبصرية) وهل يمكن العثور على بدائل أقل استخداماً؟
Darat al Funun, meaning “a home for the arts” in Arabic, is a pioneering 35-year-old artist-led and community-driven art foundation based in Amman, Jordan. It aims at providing a platform for exchange and supporting contemporary Arab artists in Jordan and the Arab world. It is housed in six renovated historical buildings that date back to the 1920s and 1930s and a restored archaeological site of a sixth-century Byzantine church built over a Roman temple. The site and the buildings are a living memory of the history of Jordan and the shared common history of the Levant area.

Since its inception, Darat al Funun has been environmentally conscious, beginning with the approach of preservation and renovation of the site, its buildings, and its gardens.
The nature of the buildings poses its own challenges when it comes to energy use. Although the use of solar panels is becoming more common in Jordan, not least as the country has over 300 days of sunshine a year; costs remain high and regulations complex. Darat al Funun’s historic buildings, furthermore, may not be appropriate for solar panel installation, given its need for suitable space and weight-bearing capability.

However, the foundation has taken strides to minimize its carbon footprint. Darat al Funun’s Director, Luma Hamdan, told us, the foundation has been reducing its emissions by switching its heating and cooling system, which like many museums in the region must run 24 hours a day, to a low-power electric system. They have also switched lighting to low voltage LEDs.

Darat al Funun aims for zero waste for all its exhibitions, reusing materials, such as wood, metal, glass and frames. Any art commissions are either returned to the artist, acquired into the collection or installed permanently on site. Works are produced as a result of an artist-in-residency program, minimising the need for international shipping, and encouraging artists to work with local materials and production methods. Additionally, exhibition furniture is stored to be re-used and re-purposed for future exhibitions, contributing to the foundation’s commitment to sustainability. It has also phased out the use of plastic utensils and now uses plain, biodegradable paper cups, plates and straws. However, the extent of recycling is limited by the lack of local provision - there is no public infrastructure for recycling glass in Amman, for example.
Luma highlights a growing public awareness and concern about climate change. Visitors appreciate observing tangible evidence of sustainable practices within the foundation and value initiatives like ‘Re-rooting’, a Darat al Funun exhibition and program investigating pressing concerns such as food security, water scarcity and ecological and climate issues in Jordan. Luma emphasizes, “We strive to showcase our commitment to environmental stewardship, as it resonates with an environmentally conscious audience.”

“As a museum, we are engaging the community in the conversation. I think this is the new role of museums to be an eye-opener for issues that are becoming more relevant to what the community at large is facing.”

‘Re-rooting’ explores pressing concerns such as food security, water scarcity and ecological and climate issues in Jordan.

الصورة - "موقع أثري", محاضرة الشيخة مي آل خليفة، مؤسس ورئيس مجلس إدارته مركز الشيخ إبراهيم آل خليفة للثقافة والبحوث في البحرين، مايو 2023. مع ترخيص دارت الفنون، عمان.
Computer usage for digital communication, including email, video calls, etc. contribute to the overall carbon footprint of an exhibition. Organisation-wide policies regarding their use should be in place and exhibition development communications should be measured from the initiation of each exhibition using the Impact Model. Impact can be reduced by use of alternative channels e.g. Slack, cutting use of attachments, using plain text, etc. (see Bio27 guide). Also, data should be stored in the cloud using services which utilise renewable energy, and switch to a more sustainable search engine.

Considerations also extend to printed materials and other consumables used in the planning and production of the exhibition. Materials sourced from sustainable suppliers can be measured and a target set. Similarly, policies should be in place at an institutional level regarding efficient use of paper, ink, etc.
Environmental Impact Guide

Development Process - إجراءات التطوير 2024

Community building, Outreach and education

From Bio27: “Through public programmes you can begin to inspire and support your visitors to make choices to increase their positive impact on the environment. Connect educational activities with sustainable practices – growing a museum garden can be a children’s workshop.”

? Ask: How can sustainability be embedded in the outreach and education programmes? How are we measuring the diversity of groups we engage with?

Climate and environmental action can not be uncoupled from politics as seen in Lebanon. In light of the political instability in Beirut, residents are restricted to less than 4 irregular hours of state electricity per day. As a consequence the widespread use of private diesel generators (that are often over 30 years old) has created high levels of air pollution that exceed the WHO standard for acceptable levels of particulate matter. This is the subject of Greenpeace MENA’s “Toxic Air: The Price for Fossil Fuels” 2020 global report.

When operating in this context of societal collapse The Beirut Art Center has responded with a ‘Slow Violence’ programme to build relationships with the community by providing a non-censored safe space for exchange and dialogue.

9. www.aub.edu.lb/shi/Pages/AirPollution.aspx
In parallel, Adib Dada, founder and lead architect of theOtherDada has created theOtherForest project planting dense urban forests in Beirut and other cities of the MENA region. This regenerative solution empowers communities to reclaim public spaces and catalyse ecological and psychological healing.
Measuring impact

The MENAT Impact Model and how to use it.

The Impact Model is currently an Excel-based tool (in beta version) to help calculate the estimated carbon footprint for an exhibition. It is intended for use by exhibition, curatorial and project management teams to help make decisions during the exhibition development and production process. It is based on a tool developed with the Design Museum in 2021.

صورة - ‘Phantom Limb.’ Courtesy of Art Jameel

قِياس الأثر

نموذج تأثير منطقة الشرق الأوسط وشمال أفريقيا وتركيا وكيفية استخدامه.

تستخدم نموذج تأثير حالياً أداة مستندة إلى برنامج أكسل (إصدار تجريبي) للماعدة في حساب البصمة الكربونية القدرة للمعرض. الغرض من النموذج هو لمساعدة فرق العرض والتنظيم وإدارة المشاريع على اتخاذ القرارات أثناء تطوير العرض وعملية الإنتاج. يستند هذا النموذج على أداة طورت واستخدمت مع متحف التصميم عام 2021.
The Impact Model is where the cultural organisation should capture (directly, or linked) all impact related data and information. The model enables the measurement of an exhibition’s carbon footprint across the following stages:

- Project Development
- Object Transport
- Build/Setworks
- Reused Resources
- Building Operations
- Waste
- Touring

Collating all inputs would typically fall under the responsibility of the Exhibition Project Team, led by the Exhibition Project Manager with support from the Exhibition Coordinator and Exhibition Curator, Assistant Curator and Facilities colleagues, who are all encouraged to treat the tool as a dynamic resource throughout the exhibition lifecycle.

Measuring impact - قياس الأثر

نموذج الأثر هو المكان الواجب أن تجمع فيه المنظمة الثقافية (بشكل مباشر أو مرتبط) جميع البيانات والمعلومات المتعلقة بالأثر. يتيح النموذج قياس البصمة الكربونية للمعرض عبر الراحل التالية:

- تطوير المشاريع
- نقل الفضائات
- التشكيل / التركيب
- المواد للاستخدام
- عمليات البناء
- النفايات
- الجولات

عادة ما يقع تجميع جميع الدخلات ضمن مسؤولية فريق مشروع العرض، بقيادة مدير مشروع العرض بدعم من منسق العرض وأمين العرض ومساعد القيم وفريق عمل الراقي، حيث يمكّنهم جميعاً التعامل مع الأداة كمورد ديناميكي طوال دورة حياة العرض.
The inputs would start with a record of all anticipated elements and their estimated quantities (i.e. kilograms or tonnes of timber) across the above stages. Once the procurement has been completed, this information should be updated along with defining their qualities (i.e. virgin, recycled, reused, etc).

In particular the Touring stage should be treated as an ongoing task to measure an exhibition’s total carbon footprint beyond its residency at the museum. While developing a tour, the organisation’s team would consider how necessary couriers are to oversee installation, modes of transport for objects and people and how existing build elements can be substituted for locally available alternatives to avoid shipping.

A user guide is included in the tool. On the summary page, the tool visualises an evaluation of how complete the carbon assessment is in the context of all resource requirements for an exhibition. This is expressed as a percentage in terms of a minimum benchmark as well as a stretch target, which would reflect best-in-class reporting quality.

The model’s design is deliberate so that it can, and should, be used by other museums, galleries, events and exhibition spaces. It is open-source and capable of being continuously refined and expanded.
To design exhibitions with as little environmental impact as possible, cultural organisations need to work with designers (whether internal or external), contractors and suppliers to communicate and deliver on any ambition to reduce their carbon footprint, develop effective ways of working and ensure the capture of data needed in order to measure carbon impact.
If an external design studio is to be commissioned, you might ask:

- Have they demonstrated the ambition and ability to minimise the carbon footprint of their work?
- Can they provide information on the carbon footprint and impact of their previous work?
- Have they signed up to a Climate Declaration Movement such as Design Declares?
- What materials are they using/will they use?
- Do they have a plan in place to reuse/donate the materials at the end of the exhibition cycle?*

If the exhibition is to be designed by an internal team, consider:

- Are internal teams given the time and budget to explore the use of alternative materials?
- Is training available to upskill internal design teams?
- Do they have the support of senior management?
- Are they incentivised to reduce emissions i.e. is this part of their job description or KPIs?

When considering which contractors to commission, you might ask:

- Do they use renewable energy in their own operations?
- Is their vehicle fleet electric?
- Have they conducted an environmental audit and/or measured their carbon footprint? Will they share that data?
- Do they have a plan to reduce their carbon footprint?
- Do they have ISO accreditation?
- Are they a B-corp?
- What environmental policies do they have in place? Do their policies align with government policy?
- What evidence can they show us to demonstrate that they are working with their own suppliers to minimise impact?

*NB this could be end-of-exhibition or end of a tour to different venues
Environmental impact considerations can be embedded in the briefing process. External designers can be asked to explain how their proposed design will meet an organisation’s ambition for minimum waste and maximum reuse, how it aligns with any desire to use low-impact materials and find solutions to minimise the carbon footprint. Designers should also be asked how they will provide the data needed for the Impact Model, if one is being used.

Similarly with contractors and suppliers, identify companies who have expressed a desire to minimise their carbon footprint, have adopted industry best practice for low impact and can demonstrate the ability to provide relevant carbon data.

Material Decision Tree

A Material Decision Tree with corresponding Exhibition Design Material Red/ Amber/Green (RAGs) have been created to support cultural organisations, designers and contractors to make better choices around materials. A specific RAG can be chosen by the exhibition production team and supplied to designers and contractors to improve material selection.
Is the exhibition temporary or permanent?

Permanent

Temporary

Will it go on tour?

No

Yes

Do you have existing structures to reuse?

No

Yes

Build it as much as possible into the design.

Are you confident that reused and specified materials will be responsible processed at the end of their use cycle?

No

Yes

Focus exhibition layouts and design briefs on enabling future reuse of components and individual materials.

Specify additional materials that can be easily processed to be returned back into the environment.

Plan to maximise reuse of existing structure components and individual materials.

Provide modular structural design options that are lightweight and can be efficiently packed for transport and storage.

RAG 1

Design for durability and adaptability
(Multiple use cycles reduce long-term carbon footprint)

RAG 2

Bio-based material design
(Material recovery/reuse strategy dominant)

RAG 3

Recycled material design
(Structure recovery/reuse strategy dominant)

RAG 4

Design for rugged reuse that is lightweight
(Minimising weight and volume is crucial for transport carbon impact)

Create an end of life plan for all materials.

Graph courtesy of the Design Museum
**RAG 1: Design for durability and flexibility (multi-use reduces initial CO2 footprint)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Red (Should not be considered)</th>
<th>Amber (Will need to get agreement to use it from the museum)</th>
<th>Green (Is acceptable to be used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Steel (single-use)</td>
<td>Steel (welded or complex to disassemble and reuse)</td>
<td>Steel (built for reuse with high recycled content)</td>
</tr>
<tr>
<td></td>
<td>MDF (not formaldehyde free)</td>
<td>MDF (formaldehyde free), structural plywood (FSC)</td>
<td>Structural ply (FSC)</td>
</tr>
<tr>
<td></td>
<td>Aluminum (single-use)</td>
<td>Chipboard</td>
<td>Aluminum (built for reuse)</td>
</tr>
<tr>
<td>Timber (non-FSC certified)</td>
<td>including Oak or any hardwood (single-use)</td>
<td>Timber (FSC certified or reused)</td>
<td></td>
</tr>
<tr>
<td>Softwood (non-FSC)</td>
<td></td>
<td>OSB (oriented strand board) plates</td>
<td></td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Paint (mineral based VOC)</td>
<td>Paint (low VOC or water-based)</td>
</tr>
</tbody>
</table>

**RAG 2: Recycled material design (Structure recovery/reuse strategy dominant)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Red (Should not be considered)</th>
<th>Amber (Will need to get agreement to use it from the museum)</th>
<th>Green (Is acceptable to be used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Timber (non-FSC)</td>
<td>Timber (FSC)</td>
<td>Timber (reused), MDF (reused), Ply (reused)</td>
</tr>
<tr>
<td></td>
<td>Steel, Aluminum (single-use, welded)</td>
<td>Steel (reused, recycled), Aluminum (reused)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adhesive (permanent bonding)</td>
<td>Screws (single-use temporary bonding)</td>
<td>Bolts, screws (reposable), reusable fixing systems</td>
</tr>
<tr>
<td></td>
<td>Fried bricks (with mortar)</td>
<td>Fried bricks (no mortar), Calcium Silicate Blocks (no mortar)</td>
<td></td>
</tr>
<tr>
<td>Non-structural</td>
<td>Perspex/Acrylic with no recycled content</td>
<td>Recycled Perspex like Greencoat</td>
<td>Glass, Rescued and reused Perspex/Acrylic</td>
</tr>
<tr>
<td></td>
<td>Acoustic panels (non-FSC and single-use)</td>
<td>Acoustic panels like Rockfon Koral (for re-use)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PVC (vinyl)</td>
<td>PVC Free Matt Vinyl</td>
<td></td>
</tr>
<tr>
<td>Finishes</td>
<td></td>
<td>Paint (mineral based VOC)</td>
<td>Paint (low VOC or water-based)</td>
</tr>
</tbody>
</table>

Identified reused materials or objects (structural or non-structural) from the museum are acceptable. See procurement list of available elements and preferred recycled materials suppliers. Reusable materials and objects from other sources must be approved by the museum. All materials must have an end of life plan approved by the museum.
## Commission Design - Material Recovery/Reuse Strategy

### Materials

<table>
<thead>
<tr>
<th>Category</th>
<th>Red (Should not be considered)</th>
<th>Amber (Will need to get agreement to use from the museum)</th>
<th>Green (Is acceptable to be used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Steel (single-use)</td>
<td>JJI Joists</td>
<td>Aluminium (reusable)</td>
</tr>
<tr>
<td></td>
<td>Clay (unfried)</td>
<td>Steel (reused, recycled), Aluminium (reused)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bricks, Adobe, MDF, FSC</td>
<td>Cardboard (Post Consumer recycled and FSC)</td>
<td>Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Plastic board</td>
<td>Plywood (FSC)</td>
<td>Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Adhesive (permanent bonding)</td>
<td>Screws (single-use temporary bonding)</td>
<td>Bolts, screws (recoverable), reusable fixing systems</td>
</tr>
<tr>
<td>Non-structural</td>
<td>Acoustic Panels</td>
<td>Wood wool</td>
<td>Chalk Hemp</td>
</tr>
<tr>
<td></td>
<td>Textile (multi-material, non-recycled)</td>
<td>Textile (recycled)</td>
<td>Textile (organic minimum dye)</td>
</tr>
<tr>
<td></td>
<td>Perspex/acrylic</td>
<td>Perspex/acrylic (reused)</td>
<td>Glass (clear or green recycled)</td>
</tr>
<tr>
<td></td>
<td>PVC (Vinyl)</td>
<td>Wallpaper, print (direct to media)</td>
<td>Single colour print, Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Finishes</td>
<td>Paint (mineral based VOC)</td>
<td>Paint (vegetable based non VOC)</td>
</tr>
</tbody>
</table>

**RAG 4: Design for rugged reuse and transportation (weight dominant)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Red (Should not be considered)</th>
<th>Amber (Will need to get agreement to use from the museum)</th>
<th>Green (Is acceptable to be used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Steel (single-use)</td>
<td>JJI Joists</td>
<td>Aluminium (reusable)</td>
</tr>
<tr>
<td></td>
<td>Clay (unfried)</td>
<td>Steel (reused, recycled), Aluminium (reused)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bricks, Adobe, MDF, FSC</td>
<td>Cardboard (Post Consumer recycled and FSC)</td>
<td>Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Plastic board</td>
<td>Plywood (FSC)</td>
<td>Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Adhesive (permanent bonding)</td>
<td>Screws (single-use temporary bonding)</td>
<td>Bolts, screws (recoverable), reusable fixing systems</td>
</tr>
<tr>
<td>Non-structural</td>
<td>Acoustic Panels</td>
<td>Wood wool</td>
<td>Chalk Hemp</td>
</tr>
<tr>
<td></td>
<td>Textile (multi-material, non-recycled)</td>
<td>Textile (recycled)</td>
<td>Textile (organic minimum dye)</td>
</tr>
<tr>
<td></td>
<td>Perspex/acrylic</td>
<td>Perspex/acrylic (reused)</td>
<td>Glass (clear or green recycled)</td>
</tr>
<tr>
<td></td>
<td>PVC (Vinyl)</td>
<td>Wallpaper, print (direct to media)</td>
<td>Single colour print, Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Finishes</td>
<td>Paint (mineral based VOC)</td>
<td>Paint (vegetable based non VOC)</td>
</tr>
</tbody>
</table>

**RAG 3: Biobased material design**

<table>
<thead>
<tr>
<th>Category</th>
<th>Red (Should not be considered)</th>
<th>Amber (Will need to get agreement to use from the museum)</th>
<th>Green (Is acceptable to be used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Steel (single-use)</td>
<td>JJI Joists</td>
<td>Aluminium (reusable)</td>
</tr>
<tr>
<td></td>
<td>Steel (single-use)</td>
<td>Timber (FSC)</td>
<td>Timber (reused)</td>
</tr>
<tr>
<td></td>
<td>Plastic board</td>
<td>OSB board, Plywood (reused)</td>
<td>Clay (unfried)</td>
</tr>
<tr>
<td></td>
<td>Adhesive (permanent bonding)</td>
<td>Screws (single-use temporary bonding)</td>
<td>Bolts, screws (recoverable), reusable fixing systems</td>
</tr>
<tr>
<td>Non-structural</td>
<td>Acoustic Panels</td>
<td>Wood wool</td>
<td>Chalk Hemp</td>
</tr>
<tr>
<td></td>
<td>Textile (multi-material, non-recycled)</td>
<td>Textile (recycled)</td>
<td>Textile (organic minimum dye)</td>
</tr>
<tr>
<td></td>
<td>Perspex/acrylic</td>
<td>Perspex/acrylic (reused)</td>
<td>Glass (clear or green recycled)</td>
</tr>
<tr>
<td></td>
<td>PVC (Vinyl)</td>
<td>Wallpaper, print (direct to media)</td>
<td>Single colour print, Paper and Card (Post Consumer recycled and FSC)</td>
</tr>
<tr>
<td></td>
<td>Finishes</td>
<td>Paint (mineral based VOC)</td>
<td>Paint (vegetable based non VOC)</td>
</tr>
</tbody>
</table>

**Environmental Impact Guide**

- Non-structural Acoustic Panels: Wood wool, Chalk, Hemp
- All materials must have an end of life plan approved by the museum.
- Defined reused materials or objects (structural or non-structural) from the museum are acceptable.
- Materials and objects from other sources must be approved by the museum.
- durations. All materials must have an end of life plan approved by the museum.
- Defined reused materials or objects (structural or non-structural) from the museum are acceptable.
- Materials and objects from other sources must be approved by the museum.
To include in the 2D design brief:

- Define the organisation’s sustainability ambition e.g. Art Jameel’s Sustainability Charter
- Be specific about wanting designers to use sustainable and regenerative design and production methods
- Request design solutions that avoid unnecessary waste or toxic materials
- Specify re-use or touring so that 2D modules can be designed that are easy to dismantle/re-use/transport
- Specify the need to capture carbon data for the Impact Model during the design process
- Set design guidelines and parameters that will minimise impact e.g. use only 1 colour/use a print-gun

نقاط يجب تضمينها في موجز التصميم ثنائي الأبعاد:

- تحديد طموح الاستدامة للمؤسسة، على سبيل المثال، ميثاق الاستدامة الخاص بفن جميل
- توضيح رغبة المصممين في استخدام أساليب التصميم والإنتاج المستدامة والمتجددة
- طلب حلول التصميم التي تتجنب اللفيات غير الضرورية أو المواد السامة
- تحديد إعادة الاستخدام أو التحالل ليكون تصميم وحدات ثنائية الأبعاد يسهل تفكيكها / إعادة استخدامها / نقلها
- تحديد الحاجة إلى إحصاء بيانات الكربون لنموذج الأثر أثناء عملية التصميم
- تعيين إرشادات التصميم والتعليمات التي من شأنها تقليل الأثر على سبيل النال استخدام
- دون واحد فقط / استخدام مسدس الطباعة للحمول
To include in the 3D design brief:

- Define the organisation’s sustainability ambition
- Be specific about wanting designers to use low impact design and production methods
- Be explicit about low carbon materials and using materials as local as possible to the site
- Provide guidance on which materials to use e.g. try and use closed loop materials, materials with the highest recycled content or raw materials that sequester carbon during their production
- Provide an updated inventory of structures that are available for reuse
- Specify reuse for touring so that 3D modules can be designed that are easy to dismantle/re-use/transport
- Be specific about embodied carbon and encourage designers to source a Environmental Product Declaration for selected materials
- Carbon parameters for transport/after-life and cite a data set if carbon targets need to be achieved (nb a numerical carbon target might be tricky)
- Encourage decision-making based on low carbon materials/end of life strategy etc.
- Encourage designers to work with artisans/crafts people

Where all exhibition design is carried out by an internal team, the above can be incorporated into a design team mission statement which details ways of working that the team has committed to and is agreed by management.

نقاط يجب تضمينها في موجز التصميم ثري الأبعاد:

- تحديد طموح الاستدامة للمؤسسة
- توضح رغبة المصممين في استخدام أساليب التصميم والابتعاد منخفضة الأثر
- توضح حرية تكنولوجيا المواد منخفضة الأثر واستخدام مواد محليّة لقدر الإمكان للموقع
- تقديم إرشادات حول المواد الواجب استخدامها، على سبيل المثال: حاول استخدام مواد الخلاصة الثقافة، أو المواد ذات الخروج الأعلى للمواد تدمر أو المواد أخأم التي تعزل الكربون أثناء إنتاجها
- توفير جيد محدد للاشكال الناحية لإعادة الاستخدام
- تحديد إعادة الاستخدام للتحول حيث يمكن تصميم وحدات ثلاثية الأبعاد يسهل تفكيكها / إعادة استخدامها / نقلها
- الوضوح بشأن الكربون المستضد وتضمين المصممين على الحصول على تصريح منتج بيئي للمواد الاختيار
- تحديد مقاييس الكربون للنقل / ما بعد العمر الافتراضي والاستشهاد بمجموعة بيانات
- إذا كانت هناك حاجة إلى تحقيق أهداف الكربون (ملوحة): قد يصعب تحديد قيمة عدبة هذى الكربون
- تشجيع إعادة القرار على أساس المواد منخفضة الكربون / استراتيجية نهاية العمر الافتراضي وما إلى ذلك
- تشجيع المصممين على العمل مع الحرفيين / الفنيين

في حال تكبد فريق داخلي جميع تصميمات العرض، يمكن دمج ما سبق في بيان مهمة فريق التصميم والذي يوضح بالتفصيل طرق العمل التي يقوم بها الفريق ووافقت عليها الإدارة.
Involving a consultant to assess design proposals for impact

One option would be to engage an independent setworks/build/signage consultant with experience in exhibition building and low impact material selection to review submitted design proposals at concept stage and again at the developed design stage. The intention is to identify and resolve issues at an early stage. The consultant would assess the feasibility of proposed designs, and the appropriateness of materials and build techniques. They would be asked to challenge assumptions and to suggest lower-impact alternatives where needed.

Tendering and interviews for contractors

Consider developing a questionnaire to be included in the tender pack to assess the contractor’s credentials related to environmental impact and labour rights. Based on a proposed contractor’s answers in the tender document, an interview stage could be used to further assess commitment to reducing the impact of the exhibition and the consultant’s attitude to, and knowledge of, sustainability, low-impact methods and materials and social justice. Look for evidence of their commitment and willingness to collaborate to minimise impact and highlight the need for them to gather data for the Impact Model during the build process. Ask contractors to provide comparative costs for using ‘normal’ and ‘low-impact’ materials. This will aid decision-making but also build internal knowledge to help guide future projects.
Environmental Impact Guide

Final Thoughts

In the grand scheme of things, the culture sector is not one of the planet’s great polluters, and we all agree that cultural organisations are a force for good. However, we know that exhibitions can be very wasteful and every sector needs to think about how it can reduce its environmental impact.
As shown through the environmental audit of ‘Waste Age’, switching to renewable energy supplies can be the single biggest contributor to reducing emissions for a cultural organisation. However, as revealed through our interviews, the MENAT region has a very different energy market and often a state-run renewable alternative is not available.

Many cultural organisations work with local artisans and small businesses when building exhibitions. Such contractors may not be able to absorb any additional costs involved in tracking their carbon use or supply chains, investing in certification schemes or upskilling workforces to use different materials.

We are also only too aware that organisational teams are often stretched and already working under various pressures. The difficult work of trying to build a more sustainable operation can feel like yet more pressure. And it is important that this culture shift within organisations is acknowledged and supported by the executive team. The director’s buy-in is crucial, and some investment to bolster teams or acknowledge extra responsibility may be required. We hope this guide offers some useful guidance for your institution. It’s only a starting point - please build on it and adapt it to your own needs.

As shown through the environmental audit of ‘Waste Age’, switching to renewable energy supplies can be the single biggest contributor to reducing emissions for a cultural organisation. However, as revealed through our interviews, the MENAT region has a very different energy market and often a state-run renewable alternative is not available.

Many cultural organisations work with local artisans and small businesses when building exhibitions. Such contractors may not be able to absorb any additional costs involved in tracking their carbon use or supply chains, investing in certification schemes or upskilling workforces to use different materials.

We are also only too aware that organisational teams are often stretched and already working under various pressures. The difficult work of trying to build a more sustainable operation can feel like yet more pressure. And it is important that this culture shift within organisations is acknowledged and supported by the executive team. The director’s buy-in is crucial, and some investment to bolster teams or acknowledge extra responsibility may be required. We hope this guide offers some useful guidance for your institution. It’s only a starting point - please build on it and adapt it to your own needs.
Ntqmd bllal skhr jzl jll mn

With Thanks To

- The first edition of this toolkit was published by the Design Museum in 2023, with the support of Future Observatory, a partnership between the Design Museum and the Arts and Humanities Research Council (AHRC), part of UK Research and Innovation (UKRI). The original guide is available at designmuseum.org.
- The Design Museum: Justin McGuirk, Elise Foster Vander Elst and Gabria Lupone
- Research and authorship conducted by URGE Collective’s team: Alexie Sommer, Patrick Burgoyne, Ralf Waterfield
- The authors would like to acknowledge the inspiring work of Julie’s Bicycle in mobilising the arts and culture sector to take action on the climate crisis, see juliesbicycle.com
- Images: thanks to all the lenders featured in the exhibition photography
- ‘Waste Age’ Exhibition design development process’ courtesy of the Design Museum, photography Felix Speller
- All other images from the Design Museum are courtesy of Material Cultures and SPIN Studio

To update this guide for the MENAT region, URGE has condensed facilitated learnings from the British Council-supported ‘Culture & Climate Summit’ organised in March 2023 by Art Jameel at Jameel Arts Centre, Dubai and interviewed representatives from cultural organisations in the United Arab Emirates, Jordan, and Turkey in the hope to capture nuances across the MENAT region.

نتقدم بالشكر الجزيئ لكل من

With Thanks To

- ظهرت النسخة الأولى من مجموعة الأدوات هذه بدعم من مرصد المستقبل، وهو شراكة بين متحف التصميم ومجلس أبحاث الفنون والعلوم الإنسانية (AHRC)، وهو جزء من البحث والإبداع في المملكة المتحدة (UKRI). يمكن الاطلاع على الدليل الأصلي على الموقع الإلكتروني designmuseum.org.
- متحف التصميم: جاستن ماكغيرك، إليز فوستر فاندر وغابريا لوبو
- البحث والتأليف الذي أجريه فريق مجموعة “URGE”: أليكسي سومر، وباتريك بورغوين، ولرف ووترفيلد
- يؤدّي العمل العالمي لدعم اللهم لمساعدة راحة جول حالي في تحقيق قطاع الفنون والثقافة لاتخاذ إجراءات تشجع أمة النجاح، يُمكنكم زيارة لجدة juliesbicycle.com لشرح الأساليب
- الصور: شكراً لجميع المقرضين الذين ظهروا أو ظهرت أعمالهم في صور المعرض.
- عملية تطوير تصميم معرض ‘عصر التغير’؛ إذن من متحف التصميم، التصوير الفوتوغرافي فيليكس سميل
- جميع الصور الأخرى مقدمة من ماتريال كولتورز وأستوديو سبين

لتحديث هذا الدليل لمنطقة الشرق الأوسط وشمال أفريقيا وتركيا، كُتبت مجموعة “URGE” بدعم من المجلس الثقافي البريطاني في إطار ‘قمة الثقافة والمناخ’ التي نظمها مؤسسة فن جميل في مارس 2023 في مركز جميل للفنون في دبي، وأجريت مقابلات مع ممثلي المنظمات الثقافية في الإمارات العربية المتحدة والدول العربية، وركزنا على أمل التعرف على الفروق الدقيقة في جميع أنحاء منطقة الشرق الأوسط وشمال أفريقيا وتركيا.
Art Jameel Would Like to Thank

- The British Council for their support in convening the Culture & Climate Summit and the adaptation of the guide and toolkit to the MENAT region and translation to Arabic.
- URGE Collective for facilitating the Culture & Climate Summit and adapting the Environmental Impact guide and toolkit for the MENAT region - in particular: Alexie Sommer, Patrick Burgoyne and Ralf Waterfield.
- Partners interviewed for the MENAT update: Rawad Massoud, V4 Advisors, Dubai, UAE; Luma Hamdan, Darat al Funun, Amman, Jordan; Melroy D’Souza, NYUAD Art Gallery, Abu Dhabi, UAE; Fatma Colakoglu, Salt, Istanbul, Turkey.
Environmental Impact Guide

الحقوق محفوظة لكل من فن جميل، المجلس البريطاني، مجموعة URGE، متحف التصميم، 2024.

هذا الدليل متاح للإستخدام غير التجاري فقط.

Copyright Art Jameel, British Council, URGE, the Design Museum, 2024. This guide is freely accessible for non-commercial use only.

احترامًا مع التقدير لإستعمال فن جميل