

**the Design Museum case study:
Towards a new model
of exhibition making
ICOM Netherlands, July 2024**

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Head of Exhibitions (since 2019) &
Environmental Impact Lead (since 2023)



Overview

Vocabulary check in

Why is this important?

The Catalyst

What we learnt & sharing learnings

But, how?

What next?

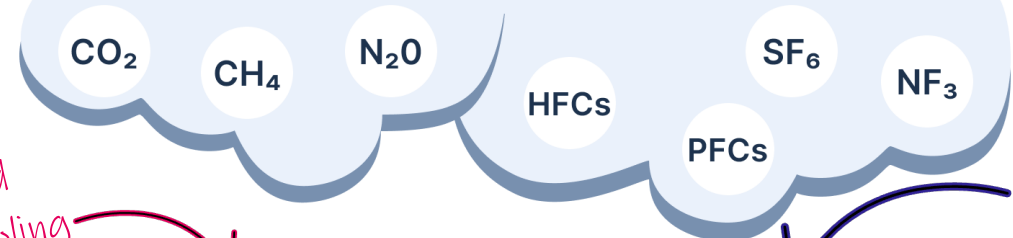
Vocabulary check in



What is a 'scope'?

indirect emissions from generation of purchased electricity, heating and cooling

direct emissions from owned or controlled sources

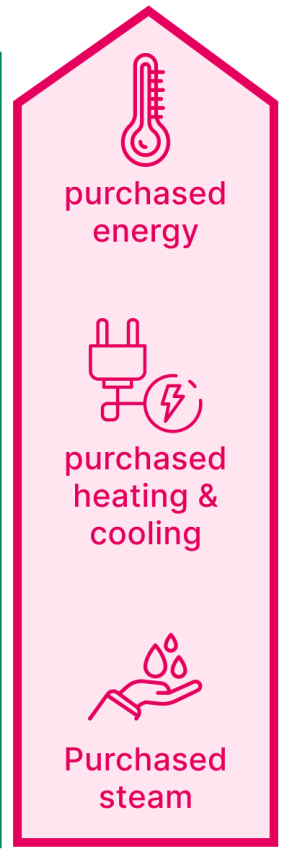
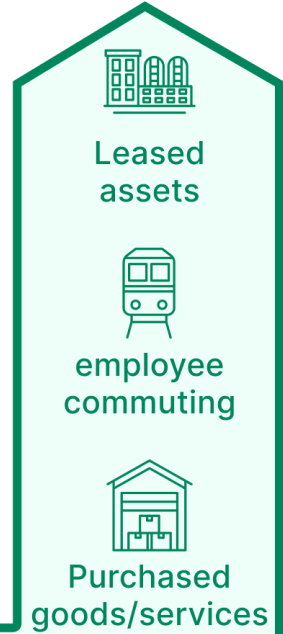


Scope 3

Scope 2

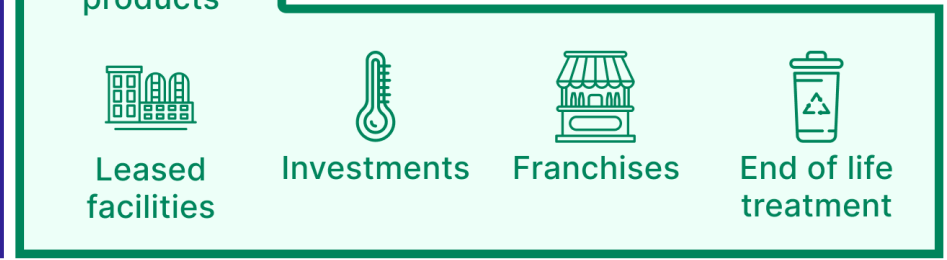
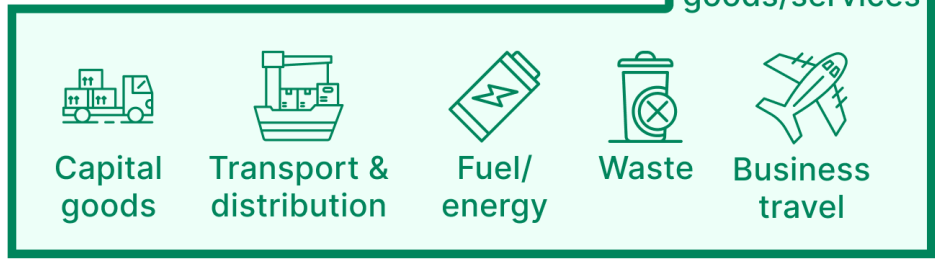
Scope 1

Scope 3



all other emissions that occur in an organisation's value chain, occur from sources the organisation does not own or control

Image source: ghgprotocol.org



UPSTREAM ACTIVITIES

REPORTING COMPANY

DOWNSTREAM ACTIVITIES

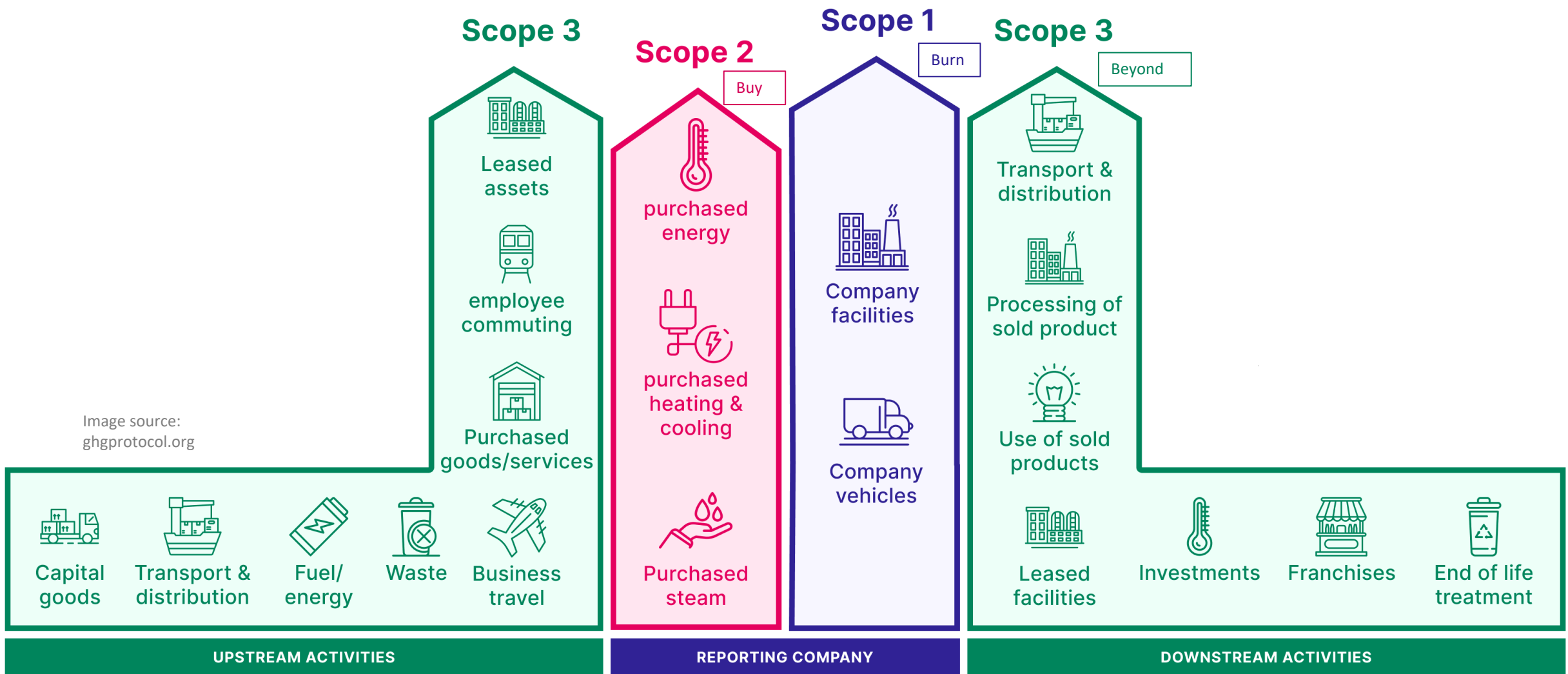
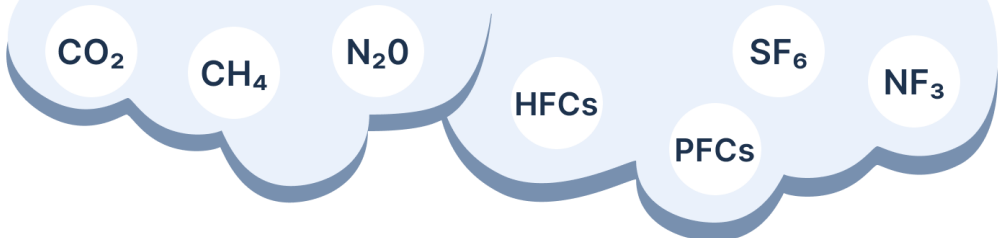
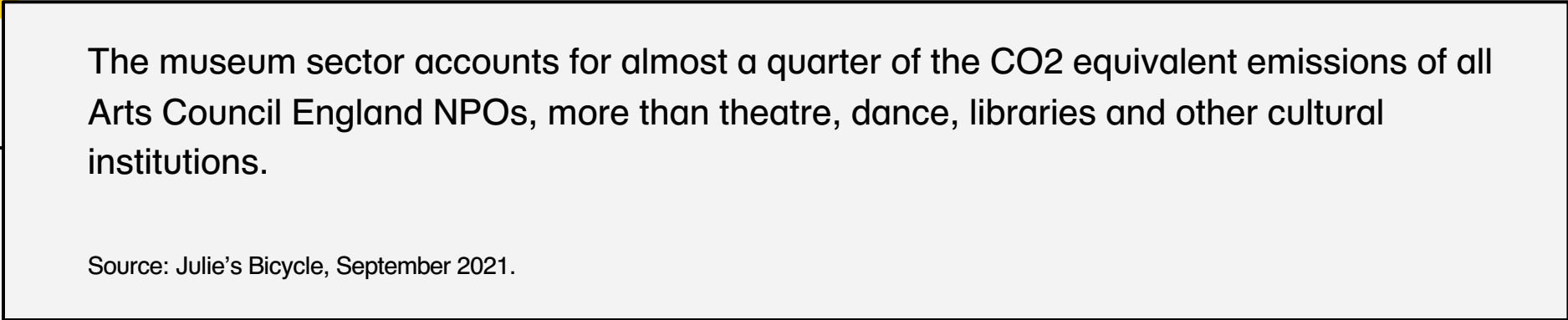


Image source: ghgprotocol.org

Why is this important?



The museum sector accounts for almost a quarter of the CO2 equivalent emissions of all Arts Council England NPOs, more than theatre, dance, libraries and other cultural institutions.

Source: Julie's Bicycle, September 2021.

Act Green 2023: Key stats

Survey overview

86 Participating organisations

17,479 Audience responses

Cultural audiences and the climate crisis

87% of cultural audiences are worried about climate crisis

93% have made changes to their lifestyle

The role of cultural organisations

77% think cultural organisations have a responsibility to influence society about the climate emergency

17% think cultural organisations place great importance on the role they play in the climate emergency

Organisations and sustainability initiatives

93% expect organisations to ensure their buildings are as energy efficient as possible

91% expect organisations to ensure materials are reused after an event or exhibition

94% expect organisations to be reducing and recycling waste

90% expect organisations to avoid disposable packaging and single-use plastic

Getting audiences involved

51% want to actively play their part in supporting a cultural organisation's sustainability efforts

92% would reduce their use of disposable packing and single use plastic at venues

66% want more information about how to travel sustainably

67% Would choose more sustainable food options at cultural venues if given the choice

The Catalyst

Waste Age:
What Can Design Do?
October 2021 to February 2022



World population: 1.6 billion

1900

1911
Bakelite, the first plastic produced in a laboratory, is introduced and used in the production of weapons, radios, cups, buttons, false teeth and other everyday objects.

1914/1918
The material demands of the First World War give rise to a series of government campaigns in Europe and the USA to reduce waste.

1920s
Covered refuse collection trucks become commonplace.

1926
The first commercial plastic injection moulding machine is patented by Eckert and Ziegler.

Harrods in London shows the first display of coloured thermosetting plastic tableware produced by Brookes and Adams, The Streetly Manufacturing Company and Thomas De La Rue and Co.

1928
The City Council of Sheffield test a 'state-of-the-art' waste collection system.

1937
The first modern landfill in the USA opens in 1937 in Fresno, California. The landfill covered 145 acres, about the size of 70 football pitches by the time it closed in 1987.

...YLENE BAG BEGINS
... OBTAIN A US PATENT FOR 'THE
... SHIRT PLASTIC BAG', WHICH WOULD
... BECOME THE STANDARD FOR PLASTIC
... SHOPPING BAGS.

1938
The first toothbrush with nylon tufts is manufactured.

1939-1945
The Second World War sees renewed campaigns against waste.



Poster for the 'Bones' campaign, designed by Milton Glaser, 1945.



1960

1957
The Soviet Union successfully launches its Sputnik spacecraft, marking the start of the Space Age and the emergence of 'space junk'.

1960
Vance Packard releases 'The Waste Makers', a best-seller that argues the U.S. is being harmed by its over-consumption of material goods.

1962
Rachel Carson's Silent Spring is released and makes a case against the pesticides introduced to the environment to facilitate human over-consumption.

Silicone gel breast implants are first introduced.

1965
Celloplast obtains a patent for the 'T-shirt plastic bag,' which would become the standard for plastic shopping bags.



1970



1970
The Aspen Design Conference, 'Environment by Design', establishment figures clash with students who insist that design's relationship to the consumer society is unsustainable.

The first Earth Day in the US, on the 22 April, becomes an annual day to show support for the environment.

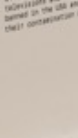
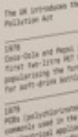
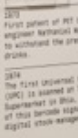
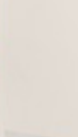
Gary Anderson designs the recycling logo, a variation on the Mobius loop.

Osaka-Osaka and Pepsi introduce the 'cup' for 1 litre PET bottles, pioneering the 'top on the standard' for soft-drink bottles.

PSB (polybiphenyl ether) based polymers used in the production of televisions and refrigerators, are banned in the US and UK because of their contribution to water and air

Poster for 'Give Earth a Chance', designed by Milton Glaser, 1970.

PERSONAL COMPUTERS ARE INTRODUCED IN THE USA, INCREASING THE PRODUCTION OF ELECTRONIC COMPONENTS AND ELECTRONIC WASTE (E-WASTE).



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Fadama 40
Ibrahim Mahama

e-waste installation
with salvaged
materials
from Agbogbloshie,
Ghana



“The objects flying through the air in this picture would take 40 hours to clean - except that no housewife need bother. They are all meant to be thrown away after use.”



Throwaway Living
Life Magazine, 1955

**Stella
McCartney**

**ECONYL®
Jacket and
Trousers, 2019;
Zero Waste
Dress, 2021;
KOBA® Fur-
free fur coat,
2021**



WASTE HIERARCHY



- Embed wastelessness into the Design Brief
- Reuse wherever possible
- Rethink the material palette
- Design for deconstruction and reuse

Source: The EU Waste Framework Directive, 2023

Reuse wherever possible

WHY DO WE LOVE PLASTIC?

A synthetic polymer, plastic is an extraordinary material. Lightweight, malleable, waterproof and durable. It can be solid and made bright with colour or produced as a delicate, transparent film. Easy to mass manufacture, plastic makes many everyday essentials inexpensive. Whether preserving our food or reducing cross-contamination in medicine, use of plastic - from syringes, crash helmets, drink bottles or credit cards to cars, office chairs, waterproof jackets and mobile phones - has transformed our lives.

Plastic is a high-grade material made from 'right crude oil', and it lasts for 400 years to forever. Originally intended to replace ivory and tortoiseshell, today its widest use is in packaging, of the 300 million tonnes of plastic produced globally each year, 40% is used just once. Much gets washed into our oceans, where it is eaten by fish and seabirds, finding its way into the human food chain. Microplastics have even been found in the placentas of unborn babies. We need to rethink how and when we use plastic.



Rethink the material palette

- Untreated plywood
- Woodwool panels (timber offcuts and waste)
- Adobe bricks (unfired clay, sand and straw)
- Felt (undyed sheep's wool)
- Clay renders (waste materials from the UK brick industry)



Material Palette and cassette mock-up
Material Cultures



Build for
disassembly



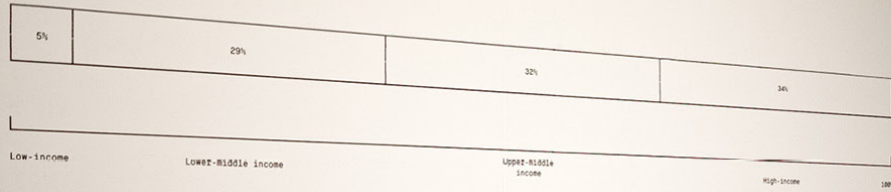
Reducing waste
through 2D design
elements



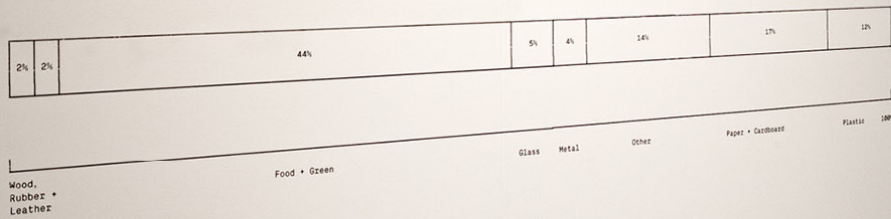
Inkjet printing



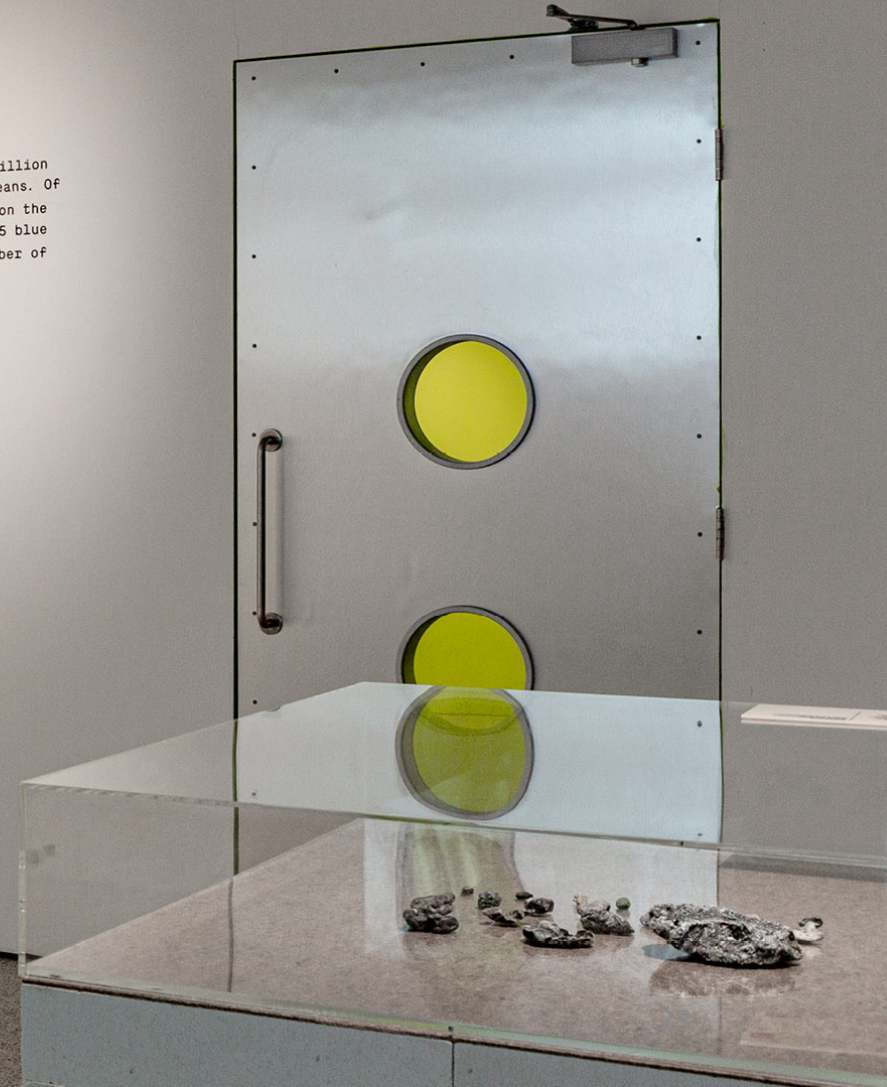
WASTE GENERATION BY INCOME LEVEL



GLOBAL WASTE COMPOSITION

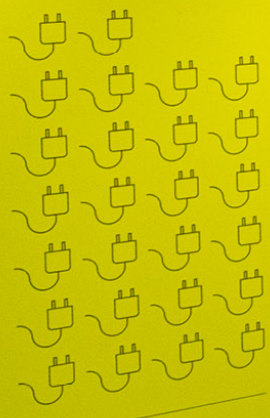


25 Trillion macro- and 51 trillion microplastics litter the oceans. Of these, 269,000 tonnes float on the surface. This equates to 1345 blue whales and 500 times the number of stars in the Milky Way.





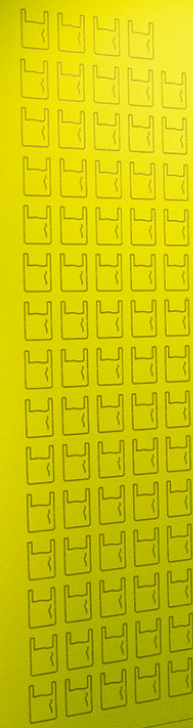
Electrical
13 million tonnes



Transportation
17 million tonnes



Consumer - Institutional Products
37 million tonnes



Other Plastics
30 million tonnes



Metals
40 million tonnes



Other Textiles
20 million tonnes



TEXTILE WASTE

Consumers are responsible for 90% of textile waste, almost 11 billion of them, 90% of clothing ends up in landfill or incineration.



1.3 billion tonnes estimated of food wasted globally each year: 1/3 or 1/2 of all food produced for human consumption is wasted.



SHARE OF WASTE IN

Households



8.5%

Manufacturing



10.3%

Recycled and recyclable captions



Photo: © SPIN



A reduced waste catalogue

Printed on the world's first CarbonNeutral® printer.

Vegetable-based inks, uncoated and recycled paper stock for the cover and sustainable paper sources for the pages.

Printed in the UK.

Sold without plastic shrink wrap packaging.



Life Cycle Assessment (LCA) which focused on resource use, carbon emissions and waste generation, pre, during and post exhibition.



Office 365 Cascade Exh overview 17 p... Exhibitions Inducti... mananement and... tDM - Carbon Tool... DCMS - Tools Rev... Friday update.docx

Search the menus (Option+)

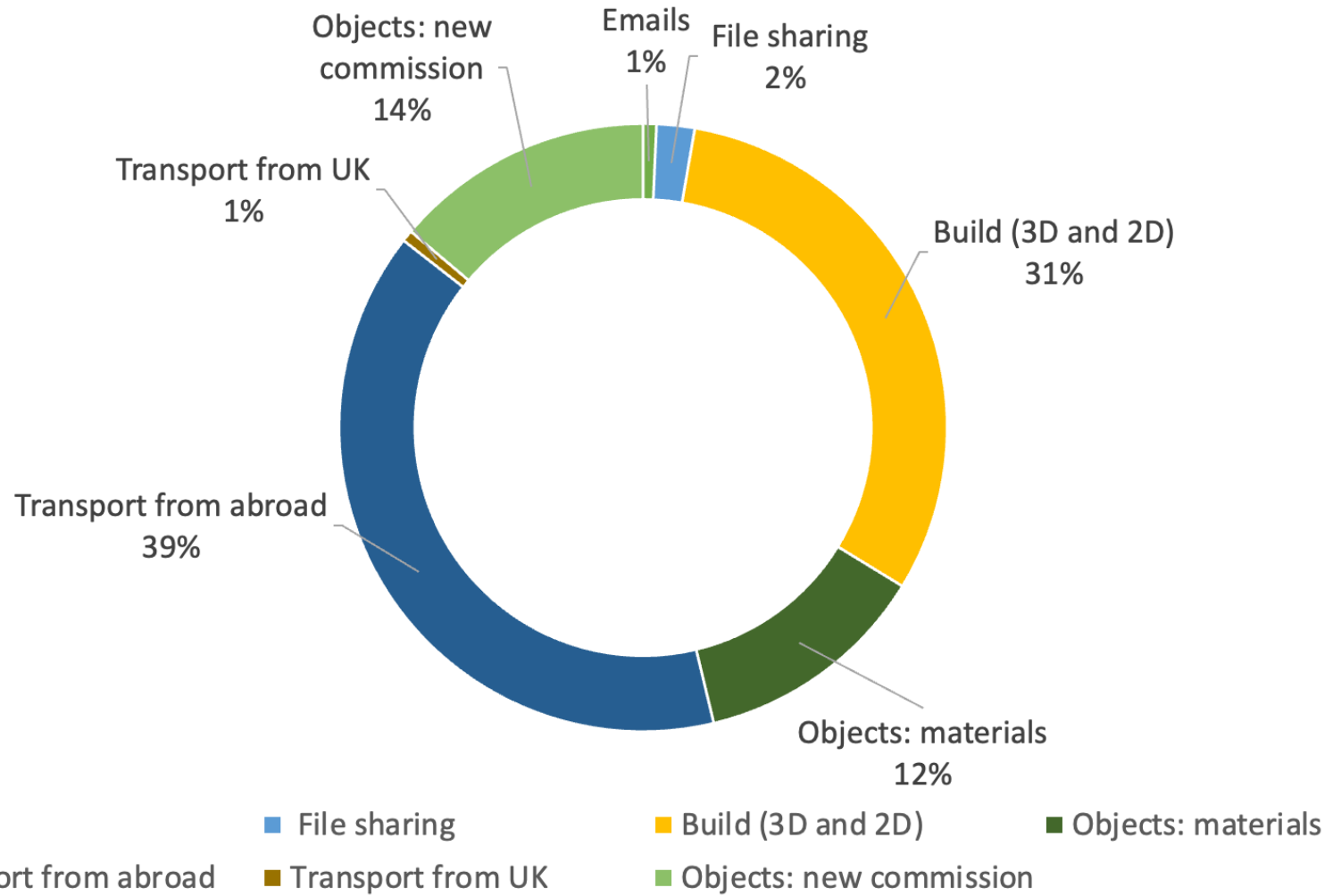
A1 BUILD

	A	B	C	D	E	
1	Office 365 https://www.office.com/?auth=2					
2	(Main Materials)	(Quality)	(Quality Description)	Quantity [kg]	Place of origin [city or postcode]	Transport mode
3	Tiles - Ceramics	Virgin	The materials are made from virgin stock.	100000	SW1 1AA	Vans (up to 3.5 tonnes)
4	Bricks	Re-used	The materials are re-used instead of disposed of by recycling or landfill.	50	SW1A 1AA	Vans (up to 3.5 tonnes)
5	Metals - Steel	Virgin	The materials are made from virgin stock.	1	bt18 oeu	
6	Plasterboard	Re-used	The materials are re-used instead of disposed of by recycling or landfill.	16.7		
7	Textiles - average	Open-Loop Recycling	The materials are made from recycled content where the previous product was different to the current product.	1		
8	Timber - MDF	Virgin	The materials are made from virgin stock.	50.4		
9	Timber - Softwood	Re-used	The materials are re-used instead of disposed of by recycling or landfill.	2		
10	Plasterboard	Virgin	The materials are made from virgin stock.	50		
11	Wallpaper	Virgin	The materials are made from virgin stock.	1		
12	Plastics: Polypropylene (PP; incl. forming)	Virgin	The materials are made from virgin stock.	1		
13	Plastics: Polyvinylchloride (PVC; incl. form)	Virgin	The materials are made from virgin stock.	1		
14	Plastics: Polycarbonate (PC; incl. forming)	Virgin	The materials are made from virgin stock.	1		
15	Paper and board: paper	Virgin	The materials are made from virgin stock.	1		
16	Timber - OSB	Virgin	The materials are made from virgin stock.	33.2		
17	Timber - Plywood	Virgin	The materials are made from virgin stock.	28.5		
18	Aggregates					
19	Aggregates	Re-used	The materials are re-used instead of disposed of by recycling or landfill.	1		
20						
21	Metals - Steel	Virgin	The materials are made from virgin stock.	5		

+ ☰ binary ▾ Crates / Objects ▾ Touring ▾ Development ▾ Reused Resources ▾ Museum Operations ▾ Build ▾ Waste ▾

What we learnt - Key findings

Total impact of the exhibition: 28 tonnes CO2e



Sharing our learnings

Toolkit development

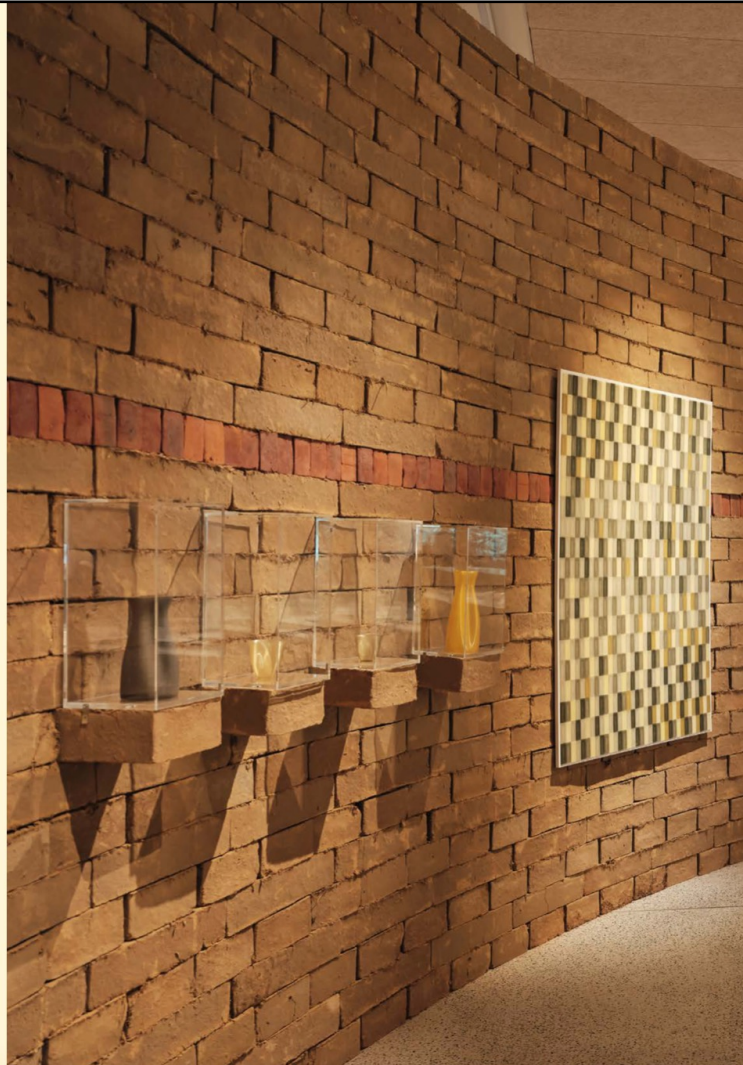
exhibition design for our time

A guide to reducing the
environmental impact of exhibitions

Draft for consultation – March 2023

the
DESIGN
MUSEUM

URGE

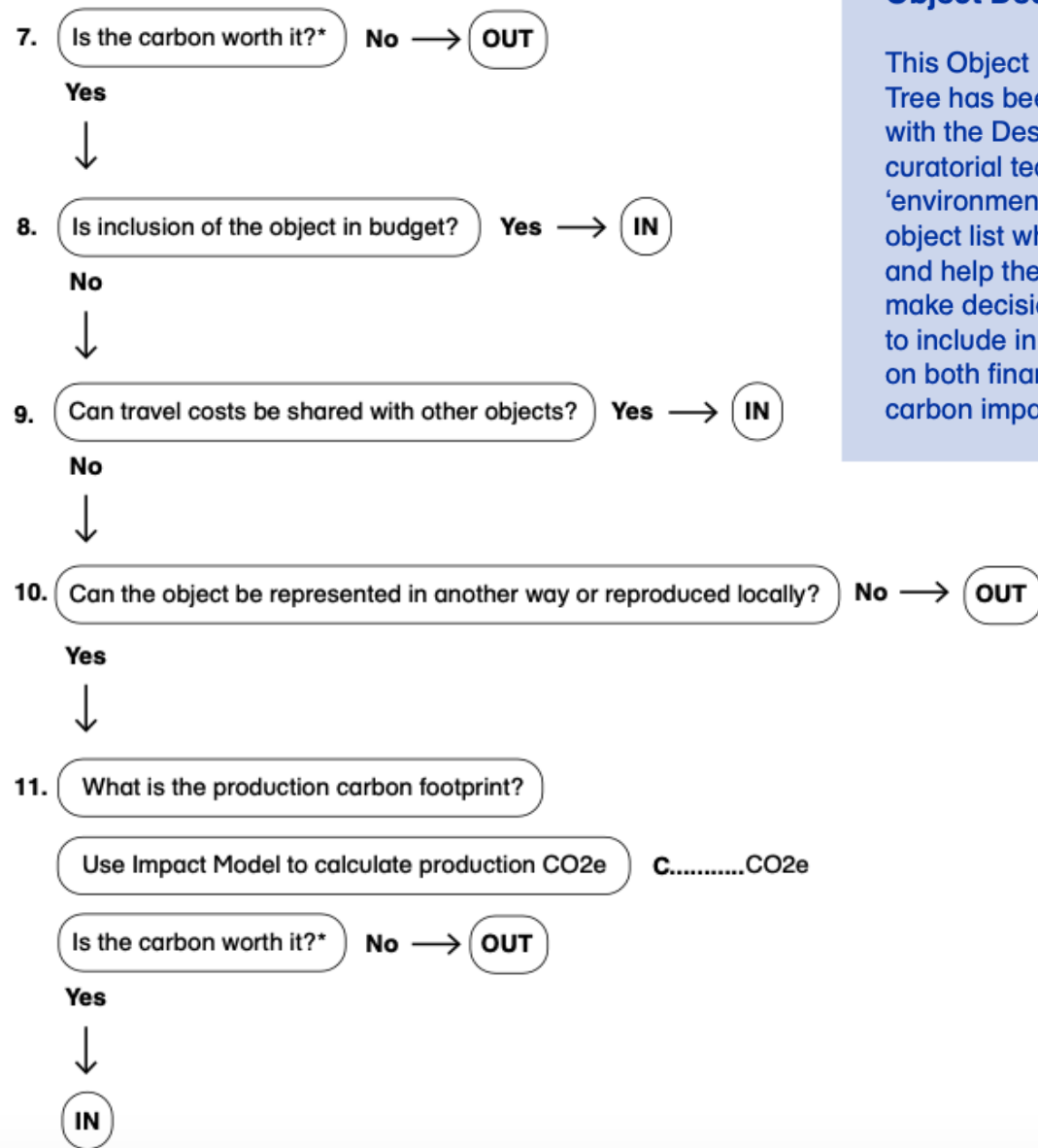
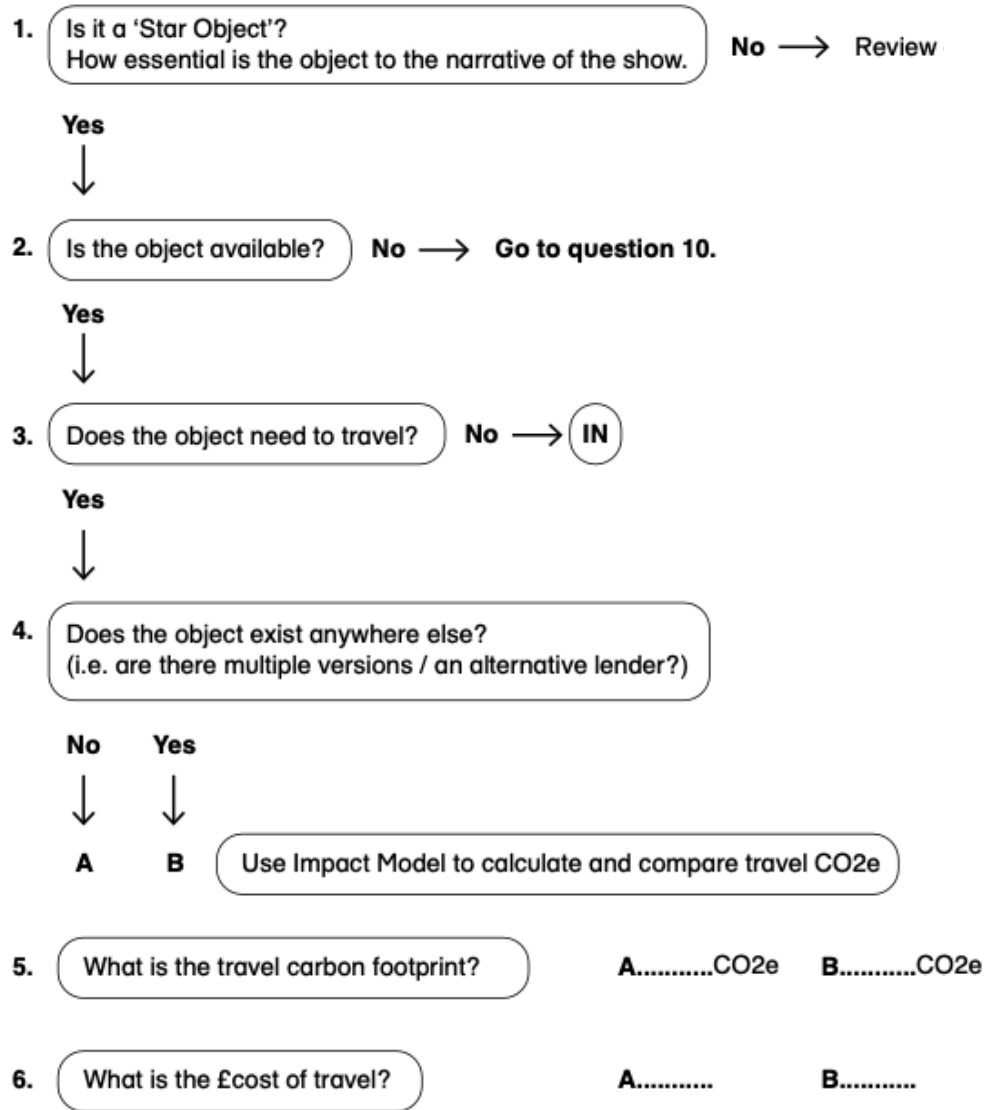


available in all 6 UN official languages at designmuseum.org/working-to-make-change



6 UN Languages

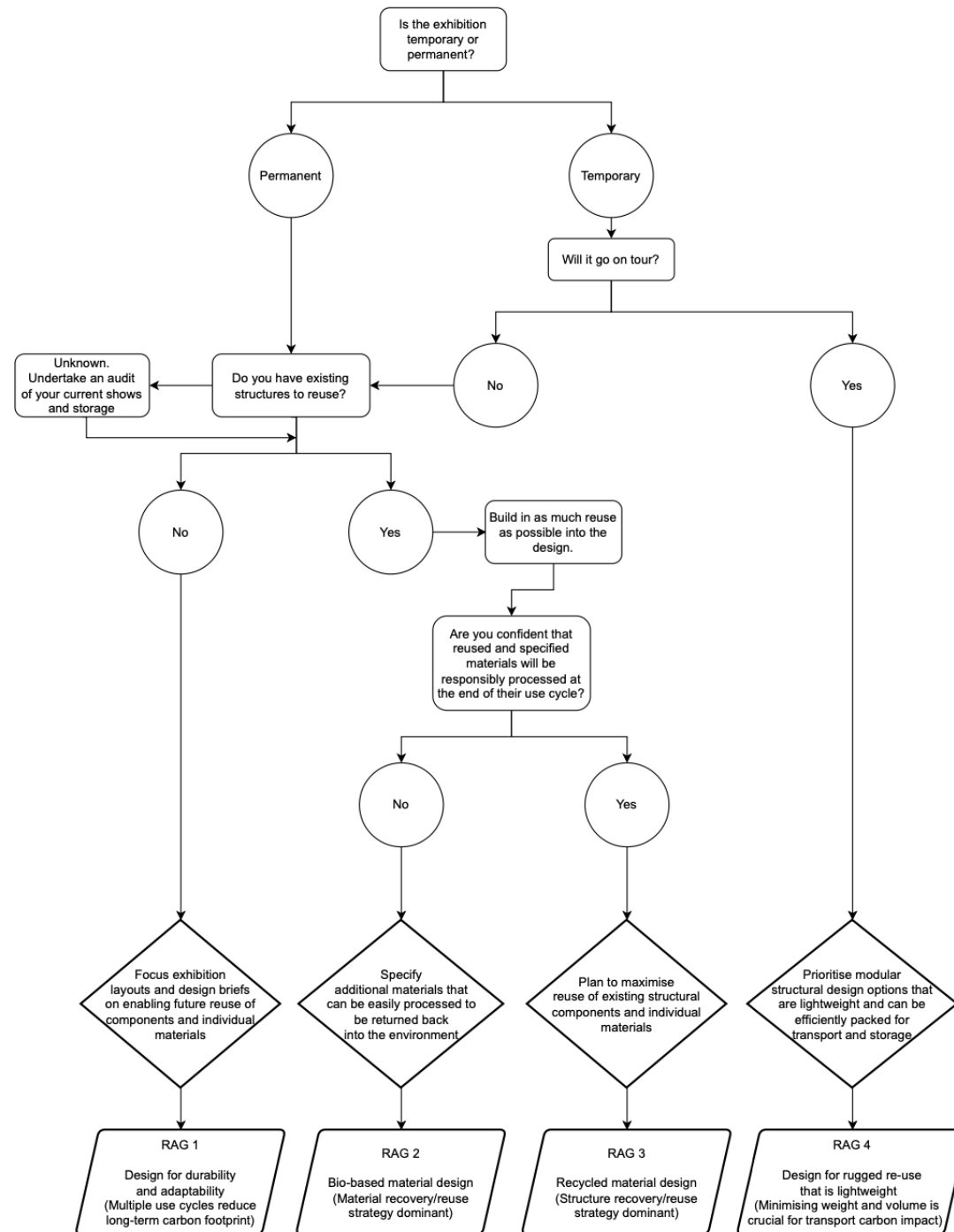
Arabic (+ new case studies)
Chinese
English
French
Russian
Spanish



Object Decision Tree

This Object List Decision Tree has been created with the Design Museum's curatorial team to support an 'environmental review' of the object list when it is at 80% and help the curatorial team make decisions about what to include in the show based on both financial costs and carbon impact.

Material decision tree



RAG 1: Design for durability and flexibility (Multi use reduces initial CO2 footprint)

Category	Red (Should not be considered)	Amber (Will need to get agreement to use it from the museum)	Green (Is acceptable to be used)
Structural	Steel (Single-use)	Steel (Welded or complex to disassemble and reuse)	Steel (Built for reuse with high recycled content)
	MDF (Not formaldehyde free)	MDF (Formaldehyde free), structural plyboard (FSC)	Structural ply (FSC)
	Aluminium (Single-use)	Chipboard	Aluminium (Built for reuse)
	Timber (Non FSC certified) including Oak or any hardwood (Single-use)		Timber (FSC certified or reused)
	Softwood (Non-FSC)	Plasterboard	OSB (Oriented strand board) plates
Non-structural	Fired bricks with mortar		Fired bricks (No mortar), Calcium Silicate Blocks (No mortar)
	Adhesive (Permanent bonding)	Screws (Single-use temporary bonding)	Bolts, screws (Recoverable), reusable fixing systems
	Perspex/Acrylic with no recycled content	Recycled Perspex like Greencast	Glass, Rescued and reused Perspex/Acrylic
	Acoustic panels (Non FSC and single-use)		Acoustic panels like Rockfon Korral (For re-use)
	PVC (Vinyl)	PVC Free Matt Vinyl	
Finishes	Paint (Mineral based VOC)		Paint (Low VOC or water-based)

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.

RAG 2: Biobased material design (Material recovery/reuse strategy dominant)

Category	Red (Should not be considered)	Amber (Will need to get agreement to use it from the museum)	Green (Is acceptable to be used)
Structural	Fired bricks (Single-use with mortar)	Fired bricks (Reuse without mortar), Calcium silicate blocks	Adobe Sticks
	Steel (Single-use)	Timber (FSC)	JJI Joists
	Aluminium (Single-use)	Aluminium (Reused)	Timber (Reused)
	Plasterboard	OSB board, Plywood (Reused)	Clay (Unfired)
Non-structural	Adhesive (Permanent bonding)	Screws (Single-use temporary bonding)	Bolts, screws (Recoverable), reusable fixing systems
	Acoustic Panels	Wood wool	Chalk Hemp
	Textile (Multi-material, non recycled)	Textile (Recycled)	Textile (Organic minimum dye)
	Perspex/acrylic	perspex/acrylic (Reused)	glass (Clear or green recycled)
	PVC (Vinyl)	Wallpaper, print (Direct to media)	Single colour print, Paper and Card (Post Consumer recycled and FSC)
Finishes	Paint (Mineral based VOC)	Paint (Vegetable based non VOC)	Paint (Water-based or clay based)

Identified reused materials or objects (Structural or non-structural) from the museum are acceptable. 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.

RAG 3: Recycled material design (Structure recovery/reuse strategy dominant)

Category	Red (Should not be considered)	Amber (Will need to get agreement to use it from the museum)	Green (Is acceptable to be used)
Structural	Timber (Non FSC)	Timber (FSC)	Timber (Reused), MDF (Reused), Ply (Reused)
	Steel, Aluminium (Single-use, welded)		Steel (Reused, recycled), Aluminium (Reused)
	Adhesive (Permanent bonding)	Screws (Single-use temporary bonding)	Bolts, screws (Recoverable), reusable fixing systems
	Fired bricks (With mortar)		Fired bricks (No mortar), Calcium Silicate blocks
Non-Structural	PVC (Vinyl)	Wallpaper	Cardboard, paint and print direct to wall
	Textiles (Mixed fibre, virgin)	Textiles (Reuse and recyclable)	Textiles (Recycled)
	Composite layered virgin materials, Dibond	Plywood (FSC)	Recovered or recycled Plywood (FSC)
	Perspex/Acrylic (Virgin)	Perspex/Acrylic (Recycled)	Perspex/Acrylic (Reused)
	Paper and Card (Non FSC)	Paper and Card (Virgin but FSC)	Paper and Card (Post Consumer and FSC)
Finishes	Mineral based inks, Spray paint (VOC)	Spray paint (VOC free)	Vegetable-based ink, Water-based inks

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

Category	Red (Should not be considered)	Amber (Will need to get agreement to use it from the museum)	Green (Is acceptable to be used)
Structural	Steel (Single-use)	JJI Joists	Aluminium (Reusable)
	Clay (Unfired)		
	Bricks, Adobe sticks	MDF (Formaldehyde free),	Structural plyboard (FSC)
	Plasterboard	Plywood (FSC)	Cardboard (Post Consumer recycled and FSC)
Non-structural	Adhesive (Permanent bonding)	Screws (Single-use temporary bonding)	Bolts, screws (Recoverable), reusable fixing systems
	PVC (Vinyl)	PVC Free Matt Vinyl	Paper and Card (Post Consumer recycled and FSC), Print gun (Printing direct-to-wall)
	PVC material (Vinyl)	Textiles (Re-use and recyclable)	Textiles (Recycled)
	Paper and Card (Non FSC)	Paper and Card (Virgin but FSC)	Paper and Card (Post Consumer recycled and FSC) updatable sections
	Finishes	Mineral based inks	Spray paint (VOC free)

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ACKNOWLEDGMENTS

GUEST CURATOR
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EXHIBITION GRAPHICS
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Blue Elephant

LIGHTING DESIGN
Beam Lighting Design

GRAPHICS PRODUCTION
Displayways

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K&L Gates

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REBEL: 30 Years of London FASHION

Sponsored by Alexander McQUEEN

30NEWGEN
BRITISH FASHION COUNCIL FOUNDATION

The Design Museum is committed to reducing the environmental impact of exhibitions and displays. For this project, we have reduced the transport distance of objects on view and worked closely with contractors to find the most sustainable materials and production processes possible.



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For more information on the Design Museum's approach, and to download a guide to reducing the environmental impact of exhibitions, follow the QR code.



Recap: Top Tips

- **Reuse** as many walls and furniture from previous exhibitions as possible.
- **Borrow** from circular economy hubs/local institutions.
- Use a tools - **carbon calculator** and **decision trees** to help you choose low impact construction materials and methods.
- Prioritise **modular design** and avoid unnecessary joining methods (e.g., glue or screws) to make it easier to reuse materials at the end of the exhibition.
- Ask contractors to **avoid using unnecessary packing materials** during transport.

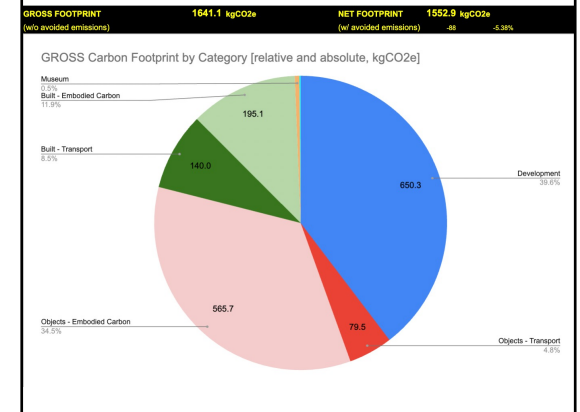
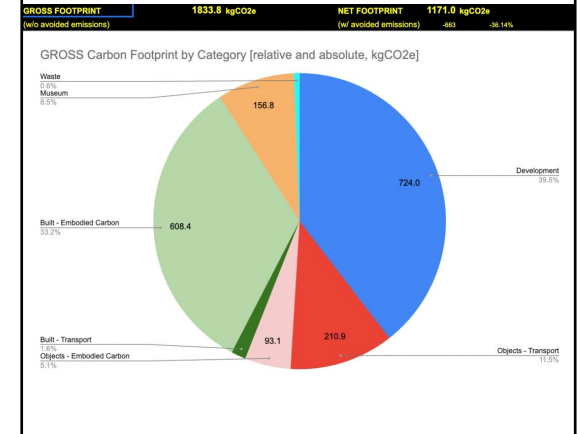
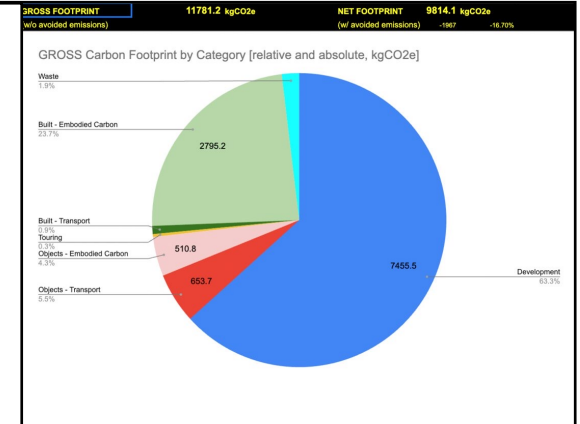
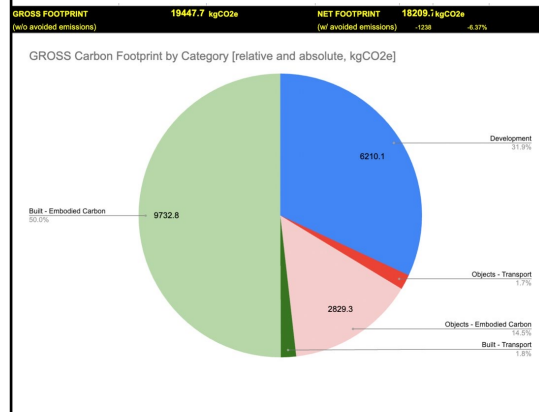
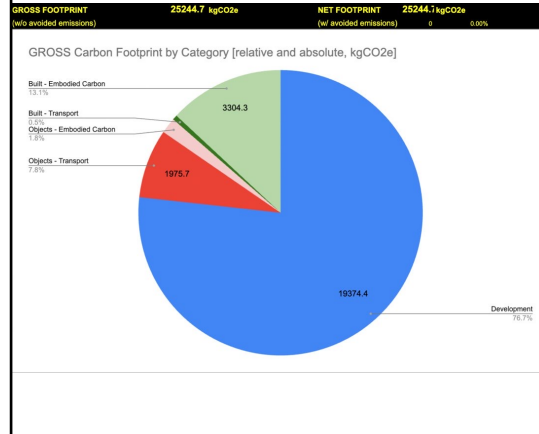
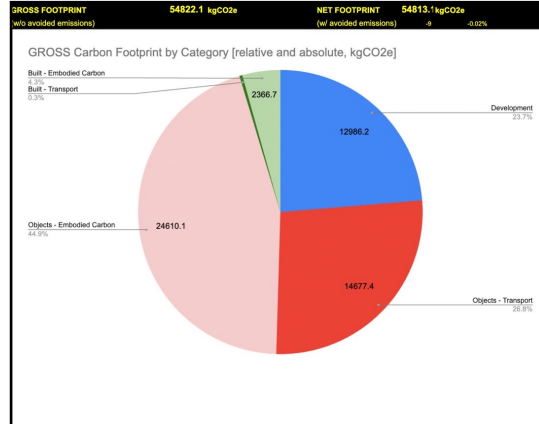
But, how?



2023 CO2e Overview


Temporary exhibitions and displays

Location/Note on data	Status	CO2e tonnes
Gallery 1 – total	Closed	54.8
Gallery 2 – to opening	On view	25.2
Gallery 1 – to opening	Closed	18.2
Gallery 2 – total	Closed	9.8
Mezzanine display – total	Closed	1.5
Balcony display – to opening	On view	1.1
		110.6



The rule of 25%

A shift in thinking



Can the planet and future generations become stakeholders?

Can the planet and future generations become stakeholders?

If you don't have a seat at the table, you're on the menu.

Remember

‘It is better to start the journey and be accused of being hypocritical and imperfect rather than doing nothing and waiting to be perfect.’

Museums and the Climate Crisis, Nick Merriman et al.

We've only just begun

**Environmental
Responsibility
consultancy**

Supporting museums to reflect on their current environmental approach and update sustainability strategies

**Museums
2030**
A UK community for greener exhibitions

Resources
Touring tools with TEG and Art Fund

**South Ken
ZEN+ network**
driving change locally

Template
Environmental Principles to serve as contract appendix

New calculator
GCC to launch in autumn '24



South Kensington Zero Emissions Nature Positive Group.

The 22 members of the group (including **Natural History Museum, Science Museum, V&A, Imperial College, Royal Albert Hall and two local councils**) have joined forces to deploy their world-leading creativity and expertise in science and the arts, to develop collective approaches to tackle the greatest challenge of our age.

www.southkenzen.org

We aim to show leadership and accelerate action in the face of the current crisis through

- Collective Understanding
- Collective Action
- Collective Voice

Areas of focus include

- Emissions reporting framework: standardise our reporting to benchmark and reduce together
- Sustainable supply chain charter
- Knowledge network
- Planning for a greener neighbourhood

Ready to be in the 25%
What next?

Make it a priority

Design Museum

- Toolkit: designmuseum.org/working-to-make-change
- Collective Action: southkenzen.org

Future Observatory at the Design Museum

- Report supported by UK Dept Culture Media & Sport: futureobservatory.org/research/library
- ukri.org/blog/the-museum-as-a-catalyst

Act Green 2023 benchmark report

- s3-eu-west-1.amazonaws.com/supercool-indigo/Act-Green-2023-Benchmark-report-c-Indigo-Ltd.pdf

Julie's Bicycle


- Resource Hub: juliesbicycle.com/resources

Gallery Climate Coalition (GCC)

- Decarbonisation Action Plan: <https://galleryclimatecoalition.org/usr/library/documents/main/gcc-non-profit-and-institution-dap-2023-final.pdf>
- Become a GCC Active Member

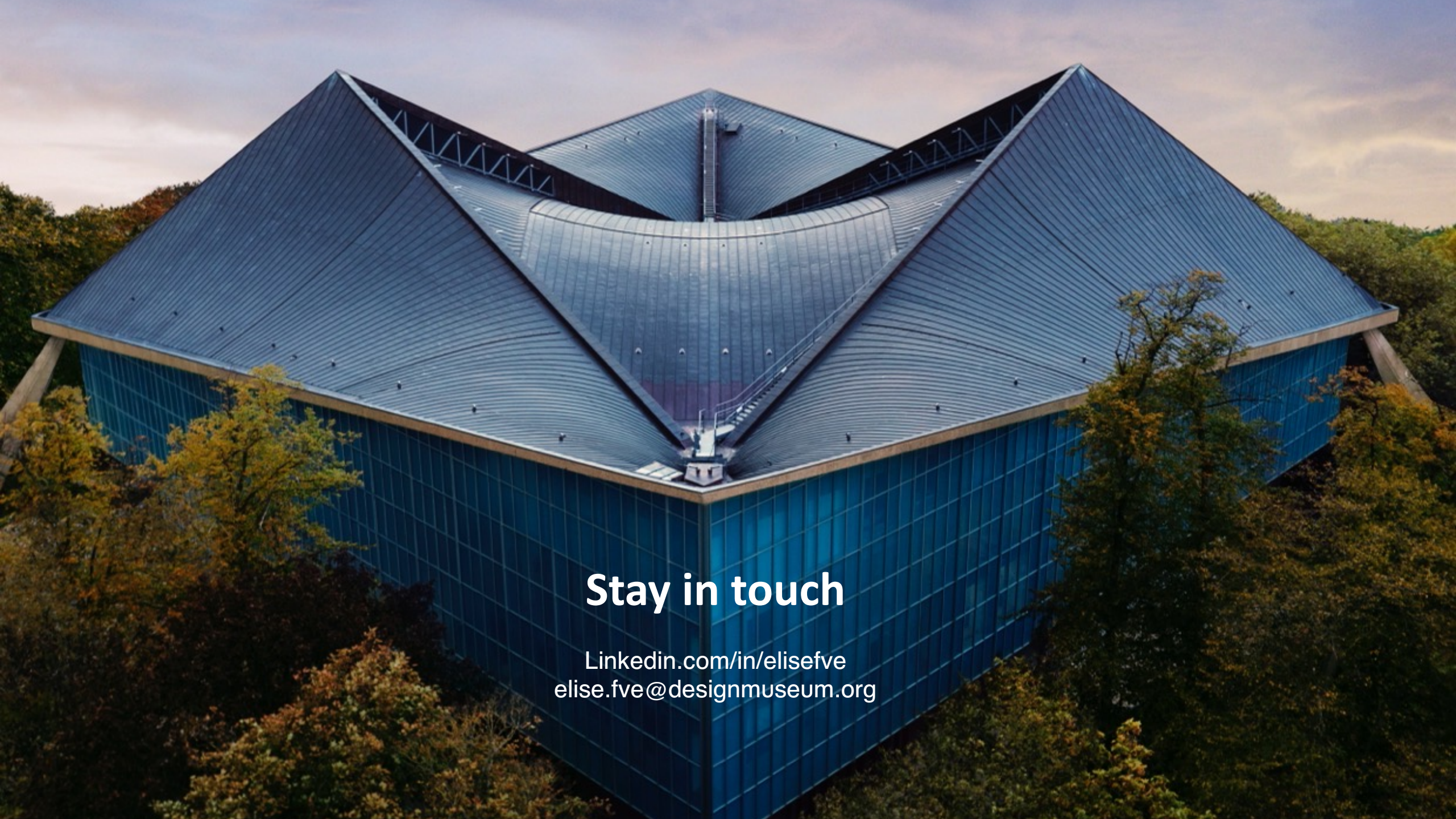
Other

- BBC Rethink Climate podcast
- Take the Jump: takethejump.org
- Headspace: youtube.com/watch?v=XTqforiHL7Q



The greatest threat
to our planet is the belief
that someone else
will save it.

- Robert Swan



Stay in touch

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