THE ART OF ZERO

An indicative carbon footprint of global visual arts and the transition to net zero







FOREWORD

Originally scheduled to launch before the 2020 COP 26 climate talks, this report was intended to prompt a conversation about climate change and visual arts. So much of the world was put on hold during 2020-21: unfortunately climate change was not. Happily though, neither was debate about climate change and the need to achieve net zero greenhouse gas emissions. Every day brings new net zero commitments from companies and countries throughout the world.

We are issuing this report now with an eye to the delayed COP26 talks, but also with the aim of precipitating immediate action in the arts sector. Time is of the essence.

Alison Tickell Director, Julie's Bicycle

OUR THANKS

Julie's Bicycle would like to thank, above all, Diana Fox Carney, who has championed this project from start to finish with unshakeable faith in the power of the visual arts to mobilise change.

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ACKNOWLED GEMENTS

Report authors: Catherine Bottrill, Alison Tickell Other contributors: Claire Buckley, Graciela Melitsko Thornton, Chiara Badiali Design: Michelle Murvai



EXECUTIVE SUMMARY

Art matters. It speaks to foundational values and beliefs. It animates our lives with emotions, sensuousness, and connections. Making art is an enduring and irrepressible response to the world around us. It is of incalculable cultural value.

It matters economically too; global sales of art and antiques reached an estimated \$50.1 billion in 2020, as compared to \$64 billion in 2019 (Art Market Report 2020).

For all its cultural and economic value, the global art market has barely begun to engage with the most pressing issue of our time: the environmental crisis. This decade ahead of us, to 2030, will be critical in determining whether humanity will succeed in averting catastrophic and irreversible climate change.

The purpose of this scoping study was to model indicative greenhouse gas emissions of the global visual arts sector by activity areas, identify opportunities for reduction and share examples of climate action from the sector. The study relied on publicly available data and data Julie's Bicycle has collected, so the results are extrapolated and modelled primarily from UK data sources.

Impact areas not included due to lack of data available: art making and exhibition materials, digital, procurement, food, water and waste.

WHERE ARE WE NOW?

The visual arts' greenhouse gas emissions are produced primarily from:

- 1. building energy use
- 2. transporting artwork and people
- 3. procuring and selling goods and services

An indicative estimate of the art world's global carbon footprint is in the order of **70 million tonnes CO_2e per annum**. An estimated 26% (18 million t CO_2e) is due to building, art shipment and business travel. The majority (74%) of the sector's footprint is due to visitor travel emissions (~52 million t CO_2e). Digital impacts, whilst still a small proportion of the footprint, are growing.

This annual footprint is the equivalent of the electricity generated by 8,69210 MW wind turbines.



WHAT NEXT?

1 DEVELOP A NET ZERO ROADMAP

The visual arts sector needs a roadmap to net carbon zero informed by science based targets, with a common understanding of its environmental impacts. To track progress to net zero, the sector needs to collect environmental and business data.

2 AVOID AND REDUCE EMISSIONS

The visual arts sector needs to avoid and reduce emissions in buildings and transport.

Buildings: energy efficiencies, low carbon technologies, electrification of buildings and renewable energy supply.

Transport: planning and logistics, sustainable transport operators and low carbon transport modes. Air freighting and travel should be avoided.

In addition, digital technologies and experiences offer many new opportunities for emissions reductions.

Once all else has been done to reduce emissions as much as possible, as fast as possible, the visual arts can compensate for remaining greenhouse gas emissions by carbon offsetting. Projects should only be selected that follow good practice standards and are certified.

3 WORK TOGETHER

Visual arts can work cross-industry and in partnership to address the climate crisis, but leadership is needed. Generating consensus, strengthening existing leadership and energising new leadership with partnerships in and beyond the sector will save precious time.





1.0 INTRODUCTION

Art matters. It speaks to foundational values and beliefs. It animates our lives with emotions, sensuousness, and connections. Making art is an enduring and irrepressible response to the world around us. It is of incalculable cultural value.

The calculations in this report are based on data for the sector in 2019.

Figures from the Art Market Report for 2020 still show a strong sector in spite of the pandemic. Art Market Report for 2020:

- The Art Market coalesces around three major global art sales hubs: US, UK and China.
- Due to COVID pandemic global sales were down 22% on 2019 and as result are estimated to be \$50.1 billion in 2020 compared to \$64 billion in 2019.
- It is estimated almost 305,250 businesses and 2.9 million people are employed directly compared to 310,810 businesses employing 3+ million people in 2019.
- Of the 365 global art fairs planned in 2020, 61% were cancelled. A survey of 138 art fairs revealed that the majority (62%) offered an online viewing room (OVR) or digital version of their fair in 2020.
- In 2019 High Net Worth collectors attended at least 39 international events (Art Market Report for 2019). Almost no international business travel will have occurred in 2020 due to Covid restrictions.

2019 ART MARKET REPORT

In 2019, the top three gallery challenges in the next five years were considered to be:

- 1. Finding new clients
- 2. The macro economy and demand for art and antiques
- 3. Participation in fairs

Environmental sustainability was ranked 14 out of 16 whilst the impact of new technologies ranked as the least important challenge (Art Market 2020).

For all its cultural and economic value, the global art market has barely begun to engage with the most pressing issue of our time: the reduction – to net zero – of global greenhouse gas emissions. The last extraordinary year has catalysed new interest and initiatives that are already beginning to offer hope and direction. The choices we make between now and 2030 will be critical in determining whether humanity will succeed in averting catastrophic and irreversible climate change. Global economics has a great deal of heavy lifting to do to make this possible (such as accounting for the importance of natural capital and the economic and social benefits we get from, for example, fresh air and pollinating insects). But we cannot wait for forces beyond our immediate control to embrace transformation. All sectors must interrogate their contributions to the climate crisis, find the solutions that will eliminate their emissions and give generously to the collective global effort. Understanding the planetary impact of all the activities clustered under the visual arts umbrella and reconciling the arts economy with the climate and broader ecological crisis has never been more urgent.

TIME IS OF THE ESSENCE

The longer we delay reducing emissions, the faster and harder we will need to cut them to remain within our 1.5C carbon budget. Reducing earlier, and with more ambition, buys more time.

1% OF THE GLOBAL POPULATION EMITS 50% OF TOTAL GHG EMISSIONS

MOVEMENT OF PEOPLE

The visual arts are part of the 1% of the global population, as illustrated in Art Market's 2020 report, which found that work-related flights taken by art dealers averaged 12 flights per year. To put this into context, only one in ten of the world's population took a flight at all in 2018.

FREIGHTING

MOVEMENT OF ARTWORK

Art is transported globally via road, air and sea. GHG emissions vary significantly between transport modes. Transporting half a tonne of art freight from London to New York is ~55 kg CO_2e by ship versus ~3,000 kg CO_2e by air. A container ship is the most efficient freight transport method – approximately 50 times lower emissions than air freight.

Air freight is particularly hard to decarbonise (due to weight, energy density and fuel storage). Biofuels for aeroplanes, sometimes advocated as a green solution, would put enormous pressure on land for food security and biodiversity.

Air and shipping each represent 2% of global GHG emissions and are predicted to grow significantly so shifting to low carbon options and investing in net zero fuels, innovation, technologies and infrastructure are needed.









2.0 INDICATIVE GHG IMPACTS

Using available data¹ Julie's Bicycle has modelled the GHG emissions of the global visual arts sector in 2019 to indicatively calculate its GHG footprint. It is in the order of **70 million tonnes CO₂e per annum**, the equivalent of 8,692 10 MW turbines' annual generation of renewable electricity².

We estimate 16 million t CO₂e comes from energy-related emissions (Scope 1 and 2, Greenhouse Gas Protocol)³ from art galleries, artist studios and art fair venues. This is calculated as:

- 7.2 million tonnes CO₂e from 15,500 public art galleries
- 1.9 million tonnes CO₂e from 19,000 commercial art galleries
- 825,000 tonnes CO₂e from 14,230 auction houses
- 1.3 million tonnes CO₂e from 261,270 art businesses
- 4.8 million tonnes CO₂e from 2.9 million artist studios
- 20,000 t CO₂e from 100 major art fair venues

Art shipment and business travel is estimated to account for 2 million tonnes CO_2e . We estimate ~52 million t CO_2e is from visitor travel emissions (Scope 3) based on the assumption that 85% of the sector's pre-pandemic carbon emissions are generated by visitors travelling to and from galleries and art fairs.

The majority of carbon emissions are associated with large headline galleries and art fairs, tourist spots that are key contributors to city and national economies. In the UK alone an estimated 50 million visitors enjoyed trips to art galleries and museums in 2019. Travel to these iconic sites is, by a significant margin, the greatest source of arts sector greenhouse gas emissions, even taking into account urban public transport infrastructures.

¹Appendix 1

² Estimates for wind turbines and solar panels are indicative – for an electrified economy, technologies would be different (electric vehicles, heat pumps, etc.) and it would not be necessary to replace 1 kWh of fossil energy with 1 kWh of renewable electricity. This study also ignores timing/intermittency, storage and distribution. ³ <u>Greenhouse Gas Protocol</u>

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NOTE ON DATA

The purpose of the carbon footprinting exercise is to give an order of magnitude for the visual arts sector. These figures are therefore estimates extrapolated from data collected by Julie's Bicycle via the **Creative Green Tools**, consultancy projects, published data on the size and scale of the sector and a number of key assumptions (see Appendix 1).

Impact areas not included in the estimate due to lack of data available: art making and exhibition materials, procurement, food, water and waste.

These figures are estimates: more data is required for every source of greenhouse gas emissions.

EYE ON DIGITAL

The art industry uses digital technology in a number of different ways:

- 1. archiving and storing artwork
- 2. interactive experiences within galleries and online experiences for audiences
- 3. creating artwork
- 4. trading artwork

Each of these is increasing and digital technology for trading art is coming under increasing scrutiny for its potential to generate significant GHG emissions.

At its simplest, a trade is a digital contract between a buyer and seller for ownership of Intellectual Property. At its most complicated, it is a full trading infrastructure similar to a cryptocurrency. There are various cryptocurrencies, but the most successful – Bitcoin – generates significant GHG emissions as a result of the amount of computing power by Bitcoin miners to compete for updating the ledger of trades.

Bitcoin accounts for 0.55% of global electricity consumption, similar to the amount the Netherlands and Norway consume⁴. Digital art trading does not have to result in high GHG emissions, but it will depend on which technology platform and infrastructure dominates.

⁴ University of Cambridge Centre for Alternative Finance <u>https://cbeci.org cbeci/comparisons</u>







3.0 MEETING OUR CLIMATE GOALS

The ace card of the visual arts is its capacity to mobilise climate action. To meet this potential, art and artists need to be supported by all parts of the visual arts community.

THE CHALLENGE

Cities, sectors and companies all over the world are committing to ambitious reductions, many of which aim to achieve net zero by 2030 and some are aiming even higher.⁵ The visual arts sector will need to reduce emissions by at least half by 2030, preferably more, to come even close to aligning to the global goal of limiting warming to 1.5° C.

A 50% reduction of the visual art sector represents in the region of 35 million tonnes CO_2e (excluding sources outside this research, such as materials). Direct transportation and buildings would deliver a reduction of around 9 million tonnes CO_2e from energy efficiency and electrification of transport; and if the number of people able to experience art is to grow the remaining GHG reductions will need to come from the ways people travel and access art.

The sector cannot do this alone. A significant percentage of emissions are locked into infrastructure, especially travel and energy generation. But the visual arts should waste no time in reducing emissions that are within its control and start to map pathways to 2030 now.

SETTING SCIENCE BASED TARGETS

Over 1,000 companies, spanning 60 countries and nearly 50 sectors and with a combined market capitalisation of over \$15.4 trillion USD have formally adopted Science Based Targets⁶ (pathways and targets that align with the reductions in emissions that <u>IPCC</u>⁷ scientists are demanding) to reduce their emissions in line with scientific advice on climate. Using science based targets will hold the sector in good stead. There are a growing number of organisations committing to go beyond net carbon zero and become carbon negative.

IN FOCUS

CULTURAL GHG TARGETS

Arts Council England has required over 800 arts organisations to report on environmental impacts as a funding requirement since 2012. Julie's Bicycle's Spotlight programme helps these companies to set carbon targets which align with the Paris Climate Agreement to reach net zero. Of these 30 participating organisations, five are from the visual arts: Baltic Centre for Contemporary Arts, The Serpentine, Southbank Centre (Hayward Gallery), Whitechapel Gallery and Whitworth Art Gallery. Each organisation is measuring their building energy impacts, setting a carbon reduction target, and adopting good energy management practices, with energy monitoring software, training and peer sharing.

⁵ See Appendix 2 for definitions ⁷ <u>IPCC</u>

⁶ Science Based Targets

4.0 SNAPSHOTS FROM THE FIELD

Creativity is in good shape. Artists, curators, designers, institutions and networks across the world are abandoning outworn ideas in search of deeper connection and values with one another and the planet.

Julie's Bicycle has been mapping the creative climate movement — art, activism, enlightened policy-making, circular design and materials, and organisations rethinking missions and business, inspired by the stories and ideas bubbling up everywhere and exploring the frontier where culture meets climate change. Art and artists are revealing just how interwoven the environment is with everything else and creative resurgence is everywhere.



WITNESSING

IMAGINING

BLURRING

EXPLORING

ART & ARTISTS ARE:

Shai Zakai; El Anatsui Edward Burtynsky; Brother Nut; Daan Roosegaarde; Ai Weiwei; Nyaba L Ouedraogo; Cai Guo-Qiang; Paulo Grangeon; Gabriel Orozco; John Sabraw, Arthur Jafa

 QUESTIONING
 art world's consumption (Alejandro Aravena's installation for the Venice Architecture Biennale 2016;

 Katie Paterson's Future Library)

the consequences of climate change (Michael Pinsky's Plunge; Lars Jan's Holoscenes; Yinka Shonibare's Refugee Astronaut; Mel Chin's Unmoored)

the boundaries between artistic and scientific exploration (Susan Schuppli, Nazih Mestaoui's Virtual Forests, rAndom Internatinal's Rain Room, Pedro Reyes)

intersections of colonialism, human rights, and climate and nature justice (Robert Zaho Renhui, John Akomfrah, and numerous exhibitions)

CHALLENGING sponsorship and funding partnerships (ArtnotOil, Liberate Tate)

RESTORINGhabitats, urban living and nature (Jason de Caires Taylor, Agnes Dene, Daan Roosegarde's Smog,
Patricia Johanson, Mierle Laderman Ukeles)

 MOBILISING
 communities through urban gardens (Mary Mattingly's Swale); helping us better understand

 pollution (Natalie Jeremijenko's Mussel Choir, Bonnie Ora Sherk, A Living Library Mary Miss

 Greenwood Pond: Double Site)

CREATING fossil-free technologies (Olafur Eliasson's Little Sun solar lights; Amor Muñoz' YUCA_TECH wearable photovoltaic textiles)

 PROTESTING
 ecological destruction and crimes (Cecylia Malik's Polish Mothers on Tree Stumps,

 INTERPRT), Aviva Rahmani's Blued Trees, Nyaba Leon Ouedraogo, The Hell of Copper



5.0 CONCLUSIONS

THE VISUAL ARTS ARE NOT YET PREPARED

The visual arts are predominantly not prepared for the transition to net zero carbon. On the basis of our research the sector has a limited understanding of its environmental impacts, with a small number of galleries, fairs and artists making their carbon footprints public. More carbon footprint data is needed, and the methodology should be standardised, footprints shared and progress monitored.

A ROADMAP INFORMED BY SCIENCE BASED TARGETS

The visual arts sector needs a roadmap to net carbon zero informed by science based targets, with a common understanding of its environmental impacts; measuring and reporting carbon footprints, assessing progress and taking effective action to mitigate and adapt to climate change. This roadmap should align to a just transition.

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THERE ARE POCKETS OF EXCELLENCE, BUT NOT ENOUGH

There are pockets of excellence but nowhere near enough. For example, at one end of the spectrum Arts Council England require over 800 arts organisations to report on environmental impacts as a funding requirement and, at the other end, businesses have not begun to think about this issue. Many of the most exciting examples of climate leadership are small-scale activations that operate outside the establishment art world.

COMMITMENT IS EVIDENT

Commitment is evident in the extraordinary work of many artists and some organisations. However, there is almost no resource, public nor private, which champions and scales these responses.

5 ARTISTS NEED TO BE SUPPORTED IN THEIR CLIMATE WORK

Artists making work are helping us all to connect to the climate crisis. Artists need the galleries that exhibit their work and the fairs that sell it to act in solidarity with their climate commitments.

6 LEADERSHIP IS NEEDED

All parts of the visual arts sector can, together, take climate action but leadership is needed. Building consensus, strengthening existing leadership and energising new leadership with partnerships in and beyond the sector, will save precious time.

7 RECOVERY IS A ONCE-IN-A-GENERATION OPPORTUNITY

Whilst the impact of the COVID-19 pandemic will be felt for many years, recovery nevertheless presents a once-in-ageneration opportunity to radically rethink and reset.

8 VISUAL ARTS CAN MAKE AN EXCEPTIONAL CONTRIBUTION

Whatever decisions are made now the facts of the climate crisis are clear, unavoidable and urgent. Visual arts have the potential to make an exceptional contribution to meet the climate crisis with courage and creativity. Decisions must be made that are oriented toward resilience and justice, net zero carbon and restoration of nature before it is too late.



6.0 TAKING CREATIVE CLIMATE ACTION

TRANSPORT

Digital technologies

- Use digital communications to avoid business travel.
- Optimise digital opportunities to show and/or sell work, such as VR technology.

Exhibition

· Work with local contractors and partners for installations and material sourcing.

Art movement

- Coordination between shippers, insurers, museums, galleries and artists is needed to reduce emissions.
- Avoid air freighting artworks and exhibition materials, prioritise sea freight.
- Use rail freight where possible, especially in countries with mainly electrified rail.
- Work with transport agents who have invested in efficient fleets and low-carbon transport modes.
- Avoid the use of part-load vehicles with lenders to reduce the number of vehicles required when shipping artworks.
- Improve internal coordination and partnership with other galleries to consolidate shipment of artworks.
- Reduce packaging weight and volume for artwork transport.

Visitor travel

- Develop regional touring exhibition business models that do not rely on long-distance visitor travel.
- Offer incentives for low carbon transport options (walking, cycling, public transport) for the public as well as staff, for example free entry to galleries, exhibitions and fairs, discounts on merchandise, salarysacrifice schemes for purchases of public transport season tickets or bicycles.
- Support and lobby for local investments in active travel and/or public transport.
- Install electric car charging points at public museums and galleries.

BUILDINGS

- Reduce operational energy consumption in galleries, studios, storage facilities by improving controls and settings of heating, cooling and lighting systems.
- Upgrade to energy efficient equipment, and install low carbon technologies.
- Procure renewable energy and wherever possible generate your own on-site and/or from local renewables (solar, wind, geothermal, hydro-electric, tidal).
- Review the need to impose standard environmental conditions as a blanket requirement.

DON'T LOOK AWAY

- Once all else has been done to reduce emissions as much as possible as fast as possible, the visual arts can compensate for the remaining greenhouse gas emissions.
- Carbon offsetting is a mechanism for reducing emissions equivalent to those produced from an activity (e.g. a flight) by making a payment to a third party, which will create carbon savings elsewhere e.g. through making payments for renewable energy or tree planting projects. It's a theoretical way to cover the cost of damage caused, but rarely achieves all it needs to.
- Carbon offsetting projects should only be selected that follow good practice standards and are gold standard certified.
- Opportunities for sector carbon offset collaborations should be explored.
- Environmental and climate justice initiatives or nature conservation should be considered (see Julie's
 Bicycle carbon offsetting report).

A NOTE ON FINANCE

Global finance is a powerful lever for ethical change. Investing in clean pensions, endowments, banking, bonds, insurance, etc., helps to catalyse the rethink of the values that underpin the global economic system.

COLLABORATION

GALLERY CLIMATE COALITION

The aim of the coalition is to reduce galleries GHG emissions by 50% by 2030 to align with the Paris Agreement, and to promote near zero waste practices. The Coalition is a rapidly growing London-based not-for-profit that provides tools and resources to galleries around the world to measure their carbon footprint and to take action in building management, shipping and packaging.

COLLABORATION

ARTS COUNCIL ENGLAND

Since 2012 Arts Council England (ACE) has required all regularly funded organisations, now over 800 organisations, to submit their environmental impact data, an environmental policy and action plan as part of their funding agreements. Julie's Bicycle provides the carbon tools and analysis alongside a rich programme co-curated with the arts community, of events, resources, support and projects. This is a world first and has yielded, across the portfolio, prepandemic, a 35% decrease in energy use emissions (67,600 tonnes to 44,000 across 700 organisations over the last 5 years averaging 7% year on year). This relatively simple policy requirement with a support programme to back it up has transformed environmental literacy and expertise across the cultural sector.

GHG EMISSION PROFILES & ACTION POINTS

Materials 🛱 Art shipment 🖉 Goods & services 🖓 Energy 💞 Business travel 🛄 Visitor travel

KEY PLAYERS	MAIN CARBON IMPACTS	GREATEST LEVERS TO DRIVE CHANGE
Artists		Creative content and speaking out
Private galleries	4 8 8 🗈	Renewable energy, digital technology, green logistic suppliers, finance
Public institutions	4 😐 🗟 🖉	Environmental policies, green procurement, public transport, finance
Art fairs		Environmental policies, green procurement, public transport, digital technology, finance
Auction houses	S7 4	Digital technology, green logistics finance
Private collectors		Digital technology, finance, commissioning
Public funders	N/A	Environmmental policy and reporting, skills training and information resources, finance, commissioning
Private funders	N/A	Environmmental policy and reporting, skills training and information resources, finance, commissioning
Trade bodies	SF 4	Skills training and information, knowledge sharing
Logistics companies	×	Green logistics, carbon reporting
Exhibition design	State	Circular design principles
Publications		Digital technology, sustainable printing materials

CASE STUDIES

STUDIO OLAFUR ELIASSON

Studio Olafur Eliasson has collaborated with Julie's Bicycle to better understand the impact art making can have on the environment. Through tracking the carbon footprint of three large-scale artworks, the report provides insights and a tangible basis of knowledge that outlines areas to prioritise for future action. Below is an overview of three examples – a public art project, a site specific installation, and a digital platform. By making the results publicly available, Studio Olafur Eliasson has demonstrated its commitment to addressing the climate conversation on the sector level.





ICE WATCH LONDON 2018	IMPACT	TONNES CO ₂ E	% OF TOTAL
55 tonnes CO ₂ e	Ŵ	0	0
	4	1	2
= 52 people flying return from London	S	9	16
to witness the icebergs melting	Č.	45	82

لا Website & App

Studio devices







EARTH SPEAKR 2020	IMPACT	TONNES CO ₂ E	% OF TOTAL	
29.1 tonnes CO ₂ e	Ś	6.6	23	
		0.5	2	
= 11 people flying from San Francisco	S	11.9	41	
to Berlin return		1.0	4	
	B	8.9	31	
		0.2	1	

Online meetings

CASE STUDIES

MUSEUM OF TOMORROW

The Museum of Tomorrow, a **science museum** in **Rio de Janeiro**, Brazil, has five main areas: **Cosmos, Earth, Anthropocene**, Tomorrow, and Us, and mixes science with an innovative design to focus on sustainable cities and an ecological world.

CHRISTIE'S

In March 2021, Christie's announced a new sustainability strategy and its commitment to be net zero carbon by 2030. At the same time, Christie's published its 2019 footprint and committed to publishing an annual environmental report. Of the total footprint of 33,743 tonnes CO_2e , 35% comes from shipping, 25% from building energy use, 25% from business travel and 15% from publishing.



ONASSIS STEGI, ATHENS

Onassis Cultural Centre, Athens has been taking climate action holistically, including climate advocacy in Greece and internationally. Practical achievements include energy use decrease of 17% between 2018 and 2019, clean energy, solar water heating and a Recycle Lab for exhibitions and productions.



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ARTICHECK

Articheck offers an online tool to make it easy for museums, galleries and shippers to prepare and organise object condition reports thereby ensuring better collection care.

ARTLOGIC

Artlogic launched an online FAIR with the New Art Dealers Alliance, with 20% of all transactions shared equally among participating artists.

CASE STUDIES

TATE MODERN

The Tate Modern exhibition "Radical Eye" is a successful example of testing new ways of packaging using slotted crates for framed and glazed works from different lenders. When starting to consider an exhibition tour or collaboration, Tate is taking into consideration the location of the partner venues with aim of putting together a tour schedule which reduces shipping and considers environmental impacts at different stages of the planning process. Shipping Companies such as **Martin Speed** are looking at energy efficiency and renewables in their warehouses, new and more efficient fleets, reusable packaging and crates, training of their staff, and consolidation of shipments.



ART BASEL ONLINE VIEWING ROOMS

In Summer 2020 Art Basel launched its Online Viewing Rooms used by 235 exhibitors showing more than 2,000 works. Prices ranged from US\$750 to US\$3,000,000 with an aggregate value of around US \$270 million.



CHART ART FAIR

Denmark's Chart Art Fair 2020 took place across its 28 participating galleries based in the five Nordic capitals: Copenhagen, Helsinki, Oslo, Reykjavik and Stockholm. Billed as a "de-centred art fair format", only works by women artists went on show.



ROKBOX

RokBox has designed a reusable art crate made from recycled and recyclable materials. The crate provides a secure, versatile, robust and weatherproof transport solution for moving artworks.

FUTURE MATERIALS BANK

The **Future Materials Bank** showcases sustainable, biodegradable or non-toxic materials for artists. Initiated by the Nature Research department at the Jan van Eyck Académie it helps artists to make informed choices about material use.

For further information, see resources in Appendix 3



APPENDIX 1

CARBON FOOTPRINT METHODOLOGY

- The Greenhouse Gas (GHG) Protocol, a widely used international methodology, was used to set the scope and approach for calculating the visual arts world's GHG footprint⁸. This report focused on energy (Scope 1 and Scope 2) emissions sources and transport emissions (Scope 3) from art shipment and people movement (art professionals and visitors), representing the most significant source of emissions but also the best data sources.
- 2. Datasets held by Julie's Bicycle on building energy consumption and transport were used as the basis to extrapolate GHG emissions per activity. These datasets have been derived from JB's Creative Green consultancy projects, and Arts Council England's Environmental Programme, that requires ~800 of core-funded arts organisations to annually report GHG impacts via Julie's Bicycle's Creative Green Tools data. Most of the carbon data is sourced from the arts sector based in England.
- 3. Building energy emissions (Scope 1 and 2) have been calculated by estimating the number of art fairs, art studios, auction houses and galleries (commercial and public) from Art Market Report 2020 and Global Art Gallery Report 2016. These figures were multiplied by an average energy-related GHG footprint per gallery, studio, business, auction house and fair of different sizes as calculated from the Julie's Bicycle carbon data set.
- 4. Transport emissions (Scope 3) associated with art shipment were based on assumptions made on the number and size of exhibitions presented each year, and extrapolating GHG emissions from shipment figures based on case study data of different exhibition sizes.
- 5. Transport emissions (Scope 3) associated with art professionals' business travel was based on an assumption that 200,000 artists and art professionals fly 6,000 km = 1 tonne CO_2e ; 75,000 artists and art professionals fly 30,000 km = 5 tonnes CO_2e ; and 30,000 artists and art professionals fly 60,000 km = 10 tonnes CO_2e .
- 6. Transport emissions (Scope 3) associated with visitor travel were extrapolated based on the proportion that these emissions generally contribute to a large public gallery's GHG footprint. Julie's Bicycle's analysis frequently finds that visitor travel emissions make up between 70% to 90% of these organisation's GHG footprint, an analysis which typically also includes emissions from energy, business travel, waste and water. The proportion of emissions that visitor travel emissions contribute depends on the mode and distance travelled by visitors, but the figures above assume that visitor travel represents 85% of emissions.

⁸ The methodology for defining and measuring the carbon footprint of a business and activity is set out in the GHG Protocol, the standard international methodology.

Without more robust data (particularly from outside the UK) this is **only a very indicative estimate of the visual arts sector's GHG emissions associated with energy use and transport**, and therefore should be understood as an order of magnitude. **It is not possible with the data available to accurately calculate the visual arts sector's total global GHG emissions.**

HOW TO MEASURE GHG IMPACTS

Buildings Energy-related GHG emissions can be measured by summing the kilowatt hours consumed per year and multiplying by the national electricity and gas GHG emission conversion factors. Information on energy consumption will be available on bills or from meters.

Transport GHG emissions from transport are calculated by looking about the type of mode (e.g. car, truck, public transport and plane), the distance travelled and the number (e.g. people or vehicles). Alternatively, the amount of fuel that is used (e.g. litres of diesel or petrol). This transport consumption or mode information is multiplied by the GHG emission conversion factors.

Goods and services GHG emissions from materials, paper, retail goods and food/beverages etc. is calculated by knowing the quantify, weight and/or expenditure of the items and then using goods and services GHG emission conversion factor databases.

Julie's Bicycle and the Gallery Climate Coalition have free online carbon footprinting tools to make the effort of calculating the GHG emissions of the art world easy.

The visual arts sector produces GHG emissions primarily from building energy use (Scope 1 and 2 of the Greenhouse Gas Protocol, see below); transporting artwork and people (Scope 3); and procuring and selling goods and services (e.g. food, materials, merchandise, waste and water etc.) (Scope 3).

- An indicative estimate of the global visual arts GHG footprint is at least ~70 million t CO₂e
- 18 million t CO₂e is made up from energy-related emissions (Scope 1 and 2) from art galleries, artist studios and art fair venues and transport related emissions (Scope 3) from art shipment and business travel.
- 52 million t CO₂e is from visitor travel emissions (Scope 3) based on the assumption that 85% of the sector's GHG emissions are related to visitors travelling to and from galleries and fairs.

NB These figures are extrapolated using data from Julie's Bicycle via the CG Tools, consultancy projects, published data on the size and scale of the sector and a number of key assumptions. The purpose of the exercise is to give an order of magnitude for the sector. More data is required.

Impacts areas not included in the estimate due to lack of data available: art making and exhibition materials, procurement, food, water and waste.

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APPENDIX 2

GLOSSARY

INTERNATIONAL SUSTAINABILITY FRAMEWORKS

Sustainable Development Goals

In October 2015, more than 150 countries adopted 17 Sustainable Development Goals (SDGs) to end poverty, protect the planet and ensure prosperity for all by 2030. For the Goals to be reached, everyone needs to play their part: governments, organisations, businesses and civil society. It is generally acknowledged that in order for meaningful progress to be made towards the SDGs, all parts of society must work together to meet the targets.



The Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) committed signatory nations to limit global temperature increase to no more than 1.5° C. It was signed in 2016 and currently has been ratified by 185 UNFCCC parties. The next Conference of the Parties will be in November 2021 hosted by the UK.

SCIENCE

Climate Change

The Special Report on Global Warming of 1.5°C (SR15) was published by the Intergovernmental Panel on Climate Change (IPCC) in October 2018. Human activities are estimated to have caused approximately 1.0°C global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. Its key finding was that while emissions reductions were possible, deep and far-reaching societal changes would need to take place to avert runaway climate change.



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Biodiversity

The Global Assessment Report on Biodiversity and Ecosystem Services is an overview of the state of our planet's rapidly declining biodiversity due to changes in land and sea use, direct exploitation of organisms, climate change, pollution and invasive alien species. It concludes we have a limited window of action to avoid unprecedented damage to our life support systems. The Special Report on Climate Change and Land provides an analysis of the pressure on terrestrial ecosystems due to climate change, desertification and land degradation. It presents pathways to land management to keep global warming below 2° C and ensure long-term food security.

Mitigation & Adaptation

Action on climate change generally falls into two, mutually reinforcing approaches:

- 1. Mitigation refers to action that lowers or removes greenhouse gas emissions from the atmosphere (reducing impacts, low carbon technologies and infrastructure).
- 2. Adaptation refers to action that makes systems and societies more resilient to the impacts of climate change (such as flood defences, drought resistant vegetation, adapting building codes to future climate conditions).

GLOSSARY

METHODOLOGIES

GHG Protocol

GHG Protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions. GHG Protocol works with governments, industry associations, NGOs, businesses and other organisations. The GHG Protocol has developed over the course of a 20-year partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).



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GHG Emission Scope

GHG emissions measurement (also commonly referred to as carbon foot printing) organised by three emission boundaries. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in an organisation's value chain.

CARBON PATHWAYS

Net Carbon Zero

A "net-zero" target is not the same as zero carbon, which means that no carbon will be emitted at all. A net zero commitment allows for remaining greenhouse gas emissions when all reductions have been made are 'balanced' – removed – with an equivalent amount via offsets such as peatland preservation, carbon credits or carbon capture technologies.

Science Based Targets

Science Based Targets are reduction targets that align with scientific evidence. The Science Based Targets Initiative⁹ defines net zero as 'achieving a state in which the activities within the value chain of a company result in no net impact on the climate from greenhouse gas emissions. This is achieved by reducing value chain greenhouse gas emissions, in line with 1.5° C pathways, and by balancing the impact of any remaining greenhouse gas emissions with an appropriate amount of carbon removals.¹⁰ Net carbon zero can also be referred to as being carbon neutral.

Climate Positive / Carbon Positive

People are increasingly recognising that reducing emissions to zero is not enough to tackle the climate crisis. Climate Positive activities go beyond achieving net zero carbon emissions and generate environmental benefits by removing additional carbon dioxide from the atmosphere – in other words, putting back more than you take.

⁹ <u>Science Based Targets</u>

¹⁰ Business Ambition for 1.5° C FAQ

GLOSSARY

Carbon offsets: paying to pollute

Offsets are intended to 'balance', 'compensate', or 'neutralise' the carbon emissions from a given activity by paying into a scheme or project that will reduce emissions somewhere else, either by removing an 'equivalent' amount of carbon from the atmosphere, or avoiding an equal amount of carbon from being emitted in the future.

Offsets are usually sold as units with a price per tonne of carbon dioxide (CO_2) . Offsetting should never be a substitute for actions to reduce emissions at source, nor delay climate action. The accepted carbon management hierarchy focuses on avoiding and reducing your emissions first.

Offsets can be purchased on carbon markets as cheaply as a few dollars per tonne; studies estimating the true cost of the damages caused by emissions have reached values as high as several hundred dollars.

For emissions you cannot avoid or reduce, decide on an approach to 'price in' environmental costs. Official offsets are just one way of doing this; deciding the best and most meaningful approach may be a combination of the following:

- Buy certified carbon credits/offsets on the voluntary carbon market through an offsetting platform where they are sold as units with a price per Tonne of CO2. These have the benefit of being quantifiable and relatively regulated, and may be necessary to meet net zero commitments. If you choose to buy offsets, look for Gold Standard certified projects.
- 2. Research, and set your own price per Tonne of CO2 and donate to a project or charity driving environmental change and climate justice, such as conservation, campaigns, education, research, legal and financial reform, etc. This has the benefit of supporting transformational causes which are harder to quantify in terms of carbon emissions, but are contributing to wider change and can resonate with audiences, staff, and partners.
- 3. 'Inset' internally by setting an internal price per Tonne of CO2 and creating a ring-fenced budget for reducing your own emissions e.g. a fund for on-site renewable energy or energy efficiency, or to invest in reducing the emissions of your supply chain. This has the benefit of creating a resource for environmental action and driving emissions reductions at home.
- 4. Invest directly into projects with an environmental return, such as community energy shares. This has the benefit of supporting a new green economy, but doesn't count towards net zero commitments in the same way as a carbon offset credit.

APPENDIX 3

RESOURCES

Further reading from Julie's Bicycle and beyond

Carbon Offsets Arts Council England Season for Change CG Tools

 LEED Programme

 The Road to Zero Carbon webinar

 Art on the Move webinar

 How to buy sustainably sourced power guide

 Greening your Capital Projects webinar

 FSC and the Arts Factsheet

 Paper and the Environment Factsheet

 The Circular Economy webinar

 Culture Beyond Plastic – Understanding and Eliminating Problem Plastics guide.

 Waste Management in Buildings.

 Water Management in Buildings

USEFUL LINKS

Art Basel Online Viewing Rooms Articheck Arts and Climate Change Artlogic Environment and Climate Network. Art Not Oil Arts: Earth Partnership BIZOT Green Protocol Chart Art Fair Climate Heritage Climate Museum Culture Declares a Climate and Ecological Emergence

Future Materials Bank Hauser and Wirth Virtual Reality (HWVR) ArtLab Invisible Dust Khoj Land Art Generator Museums and Climate Change Network Museum of Tomorrow Onassis Cultural Centre, Athens Platform London RokBox Serpentine London Tate Verbier Art Summit

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ABOUT

JULIE'S BICYCLE

Julie's Bicycle is a not-for-profit founded by the UK music industry in 2007 and now working across arts and culture internationally to mobilise environmental action in the creative community. Our work includes research, tools, consultancy and training, bringing together networks that translate the climate crisis into practical actions and ideas. We also work with cultural policymakers to catalyse structural change at local and national levels. JB's freely available resources are the most comprehensive library of good environmental practice for culture anywhere, co-created with the thousands of artists and creative organisations we have worked with. We are at the heart of a thriving informal network of people who share our vision across the world.

AKO FOUNDATION

The AKO Foundation supports charitable causes that improve education, promote the arts, or combat the climate emergency. Established in 2013 by Nicolai Tangen, the founder of AKO Capital, the Foundation has to date been funded with a total of more than £600 million, and has made charitable grants in excess of £100 million.

The AKO Foundation is pleased to have been able to provide the necessary funding to permit the publication of this important report.



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Julie's Bicycle

CREATIVE · CLIMATE · ACTION

