

The Impact of Art Shipping on The Environment

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Introduction

As set forth in the Paris Climate Agreement, in order to “significantly reduce the risks and impacts of climate change” we need to limit the global average temperature rise to “well below 2°C,” pursue further efforts to limit warming to below 1.5°C, and achieve net zero emissions no later than 2050¹. This is a lofty goal, but an essential one to avoid the most catastrophic effects of climate change the world is beginning to witness.

Global warming is caused by the increase in heat-trapping greenhouse gases (GHG) emissions into the atmosphere, one such gas being Carbon Dioxide (CO₂). GHGs are released through human activities such as deforestation and combustion of fossil fuels. While each member country of the Paris Climate Agreement laid out plans at the national level to reduce greenhouse emissions, it is also crucial for individuals and corporations to do their part and make commitments to reduce their own emissions in order to meet these targets.

ARTA is committed to being a thought leader in pushing the art industry to take an honest look at current business practices, and take meaningful action to reduce its carbon footprint. The goal of this white paper is to share data and educational information that will help our clients estimate their emissions from shipping specifically, as well as encourage those in the industry to become increasingly focused on environmentally-conscious solutions moving forward.

Moving towards net zero emissions

Realizing net zero emissions²—where emissions are in balance with removals—can be achieved using two methods. We can emit less CO₂ into the air (emissions reduction) and we can remove existing CO₂ from the air (carbon removal). The science and research around global warming shows that we must do both to achieve this goal. Given the urgency, swift action and widespread contribution to these efforts is needed.

Companies and organizations will need to use every tool at their disposal to achieve emission reduction goals. The first step to do so is to calculate the current carbon footprint of a given activity. From there, organizations must take educated steps to reduce those emissions, as well as find a means to offset the emissions that are an inevitable part of running a business via carbon removal. In the coming months, we will present our thesis on carbon removal, and our plans to help our clients reduce their footprint. As a logistics provider, we hope not only to provide our clients with information and data to help them assess and reduce their environmental impact from shipping, but also to provide a seamless and efficient way to neutralize the CO₂ that is emitted from each shipment.

Calculating your carbon footprint from art transport

One of the largest contributors to climate change from the art industry is the emission of CO₂ into the atmosphere while transporting art. In 2016, the transportation sector surpassed the power sector as the largest emitter of greenhouse gasses in the U.S. (responsible for over 29% of emissions), driven by changes in both consumer and business market behavior.³ This is due to a number of factors, including the growth of e-commerce and expansion of international shipping as a result of globalization.

As a logistics provider, we realize that calculating an entity's carbon footprint from shipping is challenging: we ship unique works via varying transport methods all over the world. To accurately calculate the carbon footprint from shipping would be incredibly time consuming and require resources many entities do not have access to. Rather than being daunted by this task and thus avoiding it entirely, we recommend starting with an estimate in order to get a sense of the scope of your emissions.

Below, we've calculated carbon emissions for average sized works, across various distances and modes of transport. These calculations do not include the carbon footprint of the manufacturing of package material, but solely the carbon released from transportation. Our hope is that art organizations can begin to formulate an estimate and general understanding of their carbon footprint using this data, thereby coming to terms with the amount of effort required to contribute to an overall industry reduction in emissions.

Emissions produced by shipping art

Note: All weights include packaging.
[Learn about our methodology here](#)

Emissions from shipping an artwork **via consolidated road freight shuttle** from **New York City, NY** to **Los Angeles, CA**

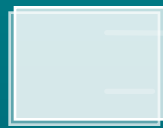
(2,790 miles / 4,490 km)

Light
(15 lbs / 6.8 kg,
softpacked)



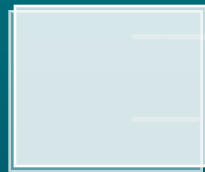
4.36 Kg CO₂e

Medium
(50 lbs / 22.68 kg,
softpacked)



14.54 Kg CO₂e

Heavy
(100 lbs / 45.35 kg,
softpacked)



29.07 Kg CO₂e

Emissions from shipping an artwork **via air freight (ARTA Parcel)** from **New York City, NY** to **Los Angeles, CA**

(2,451 miles / 3,945 km)

Light
(20 lbs / 9.07 kg,
with strongbox)



31.29 Kg CO₂e

Medium
(55 lbs / 24.94 kg,
with strongbox)

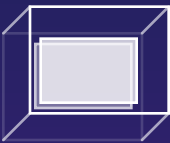


86.05 Kg CO₂e

Emissions from shipping an artwork **via air freight** from **New York City, NY** to **London, England**

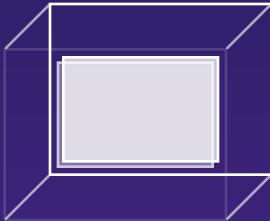
(3,470 miles / 5,584 km)

Light
(50 lbs / 22.68 kg,
crated)



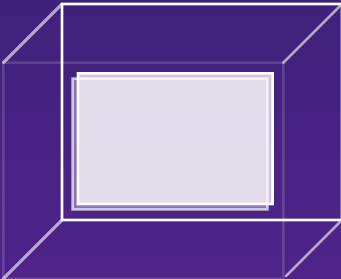
110.74 Kg CO₂e

Medium
(100 lbs / 45.35 kg,
crated)



221.49 Kg CO₂e

Heavy
(200 lbs / 90.70 kg,
crated)



442.98 Kg CO₂e

Emissions from shipping an artwork **via sea freight** from **New York City, NY** to **London, England**

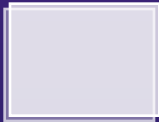
(3,008 nautical miles)
(3,462 miles)

Light
(50 lbs / 22.68 kg,
crated)



3.53 Kg CO₂e

Medium
(100 lbs / 45.35 kg,
crated)



7.06 Kg CO₂e

Heavy
(200 lbs / 90.70 kg,
crated)



14.13 Kg CO₂e

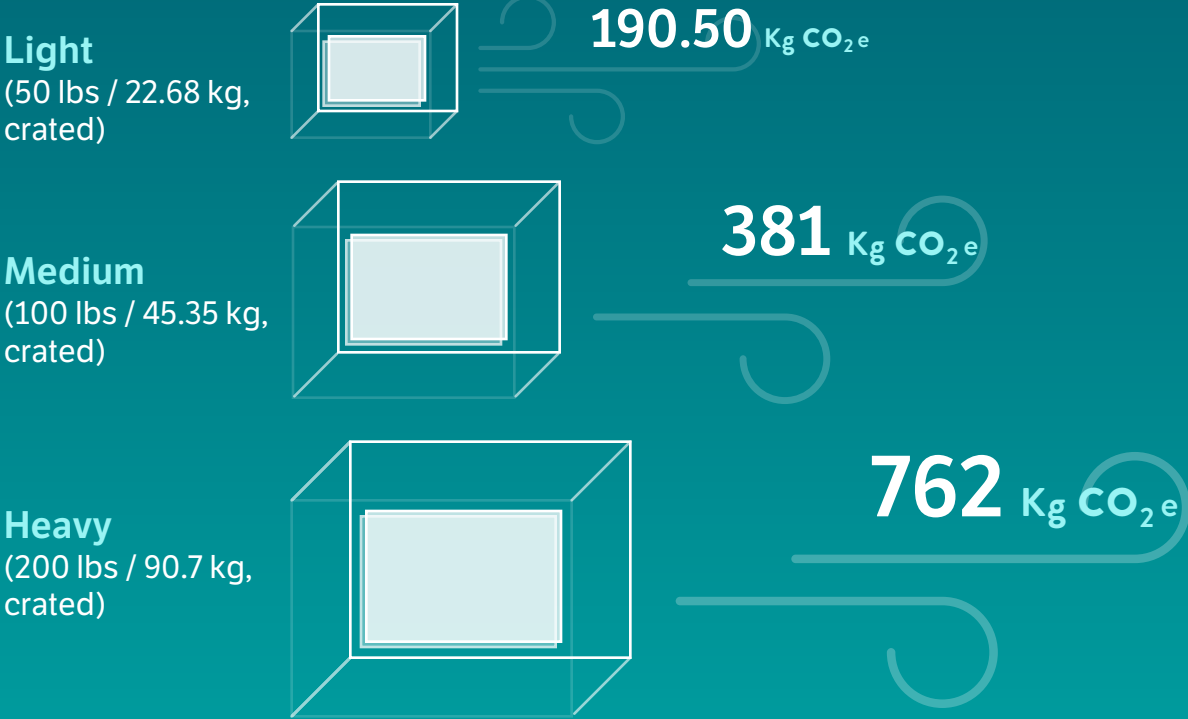
Emissions from shipping an artwork **via consolidated road freight shuttle** from **London**, England to **Paris**, France

(290 miles / 467 km)



Emissions from shipping an artwork **via air freight** from **Paris**, France to **Hong Kong**

(5,969 miles 9,606 km)



How to use this data in practice:

After speaking with clients around the world, we learned many wanted to calculate their carbon footprint but did not know where to begin. Below is an example of how an organization could use the above data to get a general estimate of carbon emissions from art transportation, which is one of the largest contributors to overall emissions for an art organization. While this is a great first step, we recommend that clients who are serious about prioritizing emissions reduction look across all of their business practices and identify opportunities to make measurable changes.

Use the following emissions factors: **0.000104 kg CO₂e/lb-mile** for road freight or **0.000638 kg CO₂e/lb-mile** for air freight

Confirm the **weight of your shipment in pounds** and **distance traveled in miles**

Calculate each of your shipments using the following formula:

weight x distance x appropriate emissions factor = kg CO₂e

How small changes can reduce carbon footprint:

There are many ways to reduce shipping-related GHG emissions, including transport mode, freight optimization, or packaging design to name a few. Shifting the mode of transportation is one of the single largest ways to reduce shipping emissions.

A switch from air to sea on a transatlantic shipment of an average-scale crate can lower carbon emissions by a factor of up to 40.

Another option is to engage green freight programs like **EPA's SmartWay** and **BSR's Clean Cargo Working Group**. These cargo shippers follow guidelines to reduce their footprint, have better capacity utilization, and track their progress year-on-year. **ARTA is joining the EPA's SmartWay program**, and will be encouraging our partners to do the same as we work to do better for the environment.

Conclusion

Once an organization has an estimate or precise calculation of their carbon footprint, then what? While either a carbon-free or carbon-neutral goal is admirable, we also know it is highly ambitious and will require profound change within the industry as a whole—change that requires cooperation across all industry participants. In terms of transportation, one solution that will have a great impact on net emissions is a transition to low-carbon fuels and renewable energy, but this is also an evolution that will take time and a considerable amount of capital investment.

Moving forward, we encourage our clients and partners to take a profound look at their business practices and to try to identify the areas in which they can reduce their own emissions. On top of this reduction, we also believe that investing in fully-vetted carbon removal projects to offset emissions is an impactful step on the path to address climate change in a meaningful way. ARTA is here to help educate and provide tools for our clients to tackle both of these initiatives, which we look forward to launching in the next year.

Contact

To inquire about our plans and approach to sustainability, or to learn more about ARTA sea freight options, please contact:

hello@shiparta.com

Methodology

The emissions data in this report was calculated by The Carbon Accounting Company, a third party carbon auditor with personnel certified as Greenhouse Gas Inventory Quantifiers under CSA Standards.

Calculations reference the March 2020 US EPA GHG Emission Factors, utilizing the following inputs: method of travel, total weight including packaging, and distance traveled.

Calculations use factors from the distance-based method in Scope 3 Category 4: Upstream Transportation and Distribution and Category 9: Downstream Transportation and Distribution.

Footnotes

¹ United Nations Climate Change, Paris Agreement: essential elements, Revised September 21, 2020, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

² Kelly Levin Kelly Levin and Chantal Davis, What Does "Net-Zero Emissions" Mean? 6 Common Questions, September 17, 2019, World Resources Institute, <https://www.wri.org/blog/2019/09/what-does-net-zero-emissions-mean-6-common-questions-answered>

³ Stephanie Harris, COVID-19's Impact on Shipping Emissions — and What Companies Can Do About It, August 26, 2020, <https://3degreesinc.com/resources/covid-19-impact-on-shipping-emissions/>