CROZIER

Stewards of Nature and Culture:

How the Art World Can Help Protect the Planet

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In autumn 2025, the academic journal BioScience published its state of the climate report. Tellingly, it was subtitled “a planet on the brink”, and the authors made no attempt to massage the message: they say that the world is hurtling toward climate chaos, and that global efforts to reduce greenhouse gas emissions have shown “extreme insufficiency”.

While renewable energy use set new records in 2025, it was ultimately 31 times lower than oil, gas, and coal; indeed, fossil fuel consumption also reached new peaks over the past year. The United Nations Environment Programme (UNEP) reports that there’s now more carbon dioxide in the atmosphere than at any point in the past two million years.

The latest international goal was to limit the average global temperature increase to 1.5 °C by the end of the century; it’s now inevitable that 1.5 °C of warming will be surpassed within a decade.

The priority is to ensure, through ambitious and audacious action, that this overshoot will be as moderate and temporary as possible. Every effort counts, and industries and organizations can make an impact by reconsidering and reconfiguring their own standards, processes, and operations.

This call to action extends to the art world.

The contribution of art and culture organizations to climate change is relatively small compared to other sectors of the global economy. But the art world takes many different forms — museums, galleries, private collections, auction houses, art fairs, and the logistical networks of transportation and storage that connect them. Collectively, if all these stakeholders examine their emissions and make progress toward mitigating them, it can make a meaningful difference.

Doing so isn't just ethical and responsible; in many cases, it's readily possible. It can also deliver tangible benefits to art collectors and organizations, since energy efficiency often leads to cost efficiency, and ecological sustainability can drive financial sustainability.

But in order to realize these benefits, there are serious obstacles that must be overcome. This whitepaper will examine what those are, and how individuals and institutions can rise to the challenge.

The challenge of building a sustainable art world

Speaking at a panel in September 2025, Annabel Keenan — an author and independent curator whose reporting has established her as a respected expert on sustainability in the art world — identified several intersecting challenges in creating a more environmentally responsible sector.

Chief among these challenges is the fact that the international art world is incredibly diverse and dispersed, meaning there's no centralized authority to affect system-wide change. And while large institutions can redefine and redesign the standards by which they operate, imposing strict rules can alienate independent museums, galleries, and collections that don't have the same vast resources.

Then there's the fact that the global sector can be highly competitive. For private collections, commercial galleries, auction houses, and art fairs, considerations of expediency and cost often supersede sustainability; and with huge sums of money at stake, exclusivity and confidentiality override transparency and collaboration, and organizations are often reluctant to "open their books".

As Keenan reports in The Art Newspaper, galleries and auction houses also feel pressure to keep the price of shipping low after negotiating sales with their buyers. They also want expedient transportation, as many collectors are luxury consumers accustomed to white-glove service and convenience. This frequently rules out lower-carbon options such as sea freight, where lengthy delays and a lack of precision can be a nuisance for clients.

Logistical hurdles pose major problems

Unfortunately, efficient transportation for museums, galleries, auctions houses, and collectors tends to be extremely inefficient for the environment. McKinsey notes that for most organizations, their greatest greenhouse gas emissions come not from direct operations, but from supply chain logistics and activities. It's estimated that freight and warehousing produce at least 7 percent of global greenhouse gas emissions.

In the international measuring system known as the Greenhouse Gas Protocol, these are Scope 3 emissions, and reducing them should be a priority for arts patrons and organizations. Scope 3 emissions account for around 90 percent of the average company's total emissions, making it critical for stakeholders to be conscientious about how they ship works of art, and who they choose as their logistics partner.

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use goes to maintaining temperature and humidity in the average museum—typically the museum's largest budget drain and biggest source of greenhouse gas emissions.

Climate control standards are outdated

Museums, galleries, private collections, and storage facilities can be extremely energy-intensive, ostensibly to conserve the quality and integrity of the artworks. But the climate control guidelines prevalent today originate from the post-WWII era, when heating, ventilation, and air conditioning (HVAC) systems were being widely implemented for the first time.

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For the average museum, maintaining temperature and humidity accounts for 60 to 70 percent of energy consumption, and can be a massive drain on an already limited budget. This is also the museum's single greatest source of greenhouse gas emissions.

Adjusting climate control standards based on the requirements of specific collections is feasible, but difficult. It entails multidisciplinary coordination between conservators, technical experts, and sustainability consultants that can be contracted or hired in-house, with approval from directors and other senior stakeholders. All of that takes resources that museums and galleries may not have readily available.

Meaningful change entails a collaborative effort

While the decentralization for the international art world might make it impossible for a single arbiter or authority to mandate transformation across the sector, stakeholders at all levels can shift their attitudes, operations, and priorities to collectively realize a more sustainable future.

i. Logistics
Already, leading logistics operators are offering sustainable shipping and storage alternatives to gallerists, curators, and collectors who partner with them. When the Gallery Climate Coalition conducted a survey of 12 shipping companies in 2023, all had rolled out modes and routes of transportation with lower emissions compared to typical air freight.

Other solutions, such as reusable and recyclable crates, are also being adopted. However, many logistics operators cite the problem of low uptake; while their clients frequently express interest in green alternatives, there's a reluctance to pay for these services.

ii. Collectors
Those who acquire works of art are in a unique position to decide how those works are packed, stored, and shipped. Thus, collectors have considerable power in determining how green these processes will be, and it's up to them to use the most sustainable methods available. It appears that this is gradually gaining momentum as a younger, more climate-conscious generation of art collectors enters the market.

There are real-world instances where client demand has made a positive impact, such as in the insurance industry. In the past, fine art insurers made the cost of sea freight prohibitive, often citing the challenge of adequate climate control, but now many are allowing it — a direct result of pressure from the clientele. Many insurers have also started recommending reusable crates, having become convinced that they outperform traditional wooden ones.

iii. Artists
Like collectors, artists have decision-making authority in how their work is shipped to galleries and art fairs, and can plan accordingly for greener methods with longer lead times. When an individual or institution is going to showcase or acquire their work, they can stipulate how that work should be delivered.

Making such demands of museums, galleries, auction houses, and buyers can be daunting, which is why strength in numbers can help. A good example of this grassroots action is Artists Commit, an artist-led collective where the signatories have agreed to hold the organizations they work with accountable for auditing and reducing their carbon emissions.

iv. Institutions
Just as artists have voluntary initiatives such as Artists Commit, there's a version for institutions known as Galleries Commit. This is valuable, because there are several important ways that organizations can improve the sustainability of the art world.

Along with producing climate impact reports — an initiative championed by Artists Commit and Galleries Commit, so that arts organizations can track and share carbon emissions progress in a non-judgemental way, with the goal of ongoing improvement — institutions can do a great deal to make more environmentally friendly choices when transporting works.

For the average commercial gallery, art fairs account for a third of their annual emissions; and although there can be insurmountable challenges in reducing energy consumption, due to the high-speed and high-pressure nature of these events, every effort and initiative matters.

Large institutions can also reassess the requirements for handling, storing, and showing works of different mediums so they don't consume excess energy, and this can significantly reduce Scope 2 emissions— caused by energy products purchased from offsite providers — across the sector. Ultimately, by reevaluating the temperature and humidity ranges embedded in their loan agreements, the world's leading museums and galleries can help set new standards.

v. Regulators
The greatest drivers of sector-wide change are leading galleries and museums, which can share data, metrics, and best practices to set more sustainable standards, and embrace transparency and accountability.

However, there's potential for policy to make a difference as well. The art world is international and as such, institutions and logistics partners may operate across many jurisdictions. If one of those jurisdictions maintains effective regulations around emissions reductions, it can have positive impacts everywhere as organizations adapt their operations to comply with the strictest set of rules.

Leading by Example

Guggenheim Museum Bilbao amended temperature and humidity standards in 2022 to align more accurately the needs of its local climate. The gallery's registrars and conservators avoided the challenge of loan agreements by exclusively monitoring works in its own permanent collection.

Now, the gallery can extend these relaxed standards to other organizations through its own loan agreements, which have been enthusiastically received by its peers. It has also reduced gas consumption by 30 percent, cut electricity consumption by 6 percent, and lowered its energy bill by approximately €20,000 per month.

Innovative solutions for a cleaner, greener future

While Scope 1 emissions are caused by an organization's direct operations, Scope 2 emissions are produced by the purchase of electricity, and Scope 3 emissions are the result of upstream and downstream activity, there's another category that isn't part of the original Greenhouse Gas Protocol.

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Sometimes, Scope 4 is dubbed the carbon handprint. While the familiar concept of the carbon footprint calculates the toll that extractive and consumptive practices take on the planet, the carbon handprint calculates the deliberate actions that can be taken to combat climate change.

There are several promising developments that can help the art world become more resilient and sustainable. Here are a few worth watching.

More eco-friendly fuels for sea freight

To put into perspective how energy intensive air freight is, choosing sea freight can potentially reduce emissions by 95 percent, and transporting artworks by ship must be embraced as a new normal. Even so, shipping does produce a large amount of greenhouse gases, and is estimated to be responsible for 2 to 3 percent of global emissions.

In 2023, the International Maritime Organization (IMO) debuted revised goals to transition the industry away from fossil fuels, and there are compelling candidates. While the energy capacity of batteries is insufficient for ocean shipping, and hydrogen has such a low energy density that ships would have to store huge reserves of it as a cryogenic liquid, ammonia and methanol are both emerging as sustainable fuel alternatives.

Ammonia fuel is already widely used in the fertilizer industry, meaning its storage and handling requirements are well understood. Green ammonia, produced from renewable hydrogen, emits no direct carbon dioxide when it's combusted, and advanced testing has shown that with the engines currently under development, the tank-to-wake emissions of ammonia-powered ships could be reduced by 90 to 95 percent.

There are still risks to assess. The emission of nitrogen oxides can reduce air quality, while nitrous oxide is a greenhouse gas much more potent than carbon dioxide over the long term. And ammonia itself is highly toxic, posing hazards in the event of a leak or a spill. But with the first ammonia-powered ships now successfully piloted, engine testing in the final phases, and bunkering trials taking place at major ports, it's rapidly approaching proof of concept as a shipping fuel, according to Global Maritime Forum.

Shipping companies are already placing orders for these types of vessels, and it's predicted that ammonia could comprise anywhere from 35 to 50 percent of the marine fuel mix by 2050. In fact, some analysts suggest that in theory, a 40 to 50 percent reduction in logistics emissions is possible by 2030 using the solutions that currently exist.

Methanol, which doesn't have the same cooling or pressurization requirements as ammonia, is already moving toward initial scale, with approximately 60 methanol-capable vessels in use, 300 more on order, and almost 20 ports providing green methanol bunkering. This compound is less toxic than ammonia, but it does produce some carbon dioxide when burned. Ultimately, both fuels are likely to contribute to the overall decarbonization of the shipping industry.

Expanded use of renewable electricity

Pawel Woelke, co-leader of the Applied Science practice at Thornton Tomasetti and the head of the company's decarbonization and industrial R&D initiatives, notes that another intriguing development — along with sustainable shipping fuels — is the proliferation of virtual power plants (VPPs).

A VPP is created by a critical mass of small-scale devices that generate and store renewable energy, such as solar panels, batteries, or electric vehicle chargers used by local homes and businesses. If hundreds of thousands of these devices are connected to the electric grid, utilities providers can save the surplus energy for future demand, or supply it to other customers as a sustainable power source. The owners of the devices can then receive compensation.

So these aren't power plants at all, but portfolios of distributed resources that are "virtual" because there's no central facility; and by tapping into them, the carbon footprint of a region's entire energy system can be greatly reduced, as can the various costs associated with it. This could yield enormous benefits for galleries, museums, and warehouses, given that such a disproportionate allocation of budget is currently spent on energy bills.

Conservation extends beyond the art collection

Measuring, monitoring, baselining, and target-setting form the foundation for any attempt at decarbonization, as noted by McKinsey. That's especially true for Scope 3 emissions, caused by indirect activities such as transportation, which can frequently account for the majority of an organization's greenhouse gases yet require greater effort to track.

Remaining committed, diligent, and transparent in the collection and disclosure of such data is the best way for the art world to establish the standards and best practices that will enable true sustainability. This has long been a priority for Crozier.

As the premier partner in global fine art logistics, the firm's operations span every facet of the art ecosystem; and by connecting the dots from galleries and museums to collectors and auction houses, no one is better positioned to recognize opportunities for decarbonization. That's why Crozier is collaborating with Thornton Tomasetti, leveraging world-class data and technology to deliver environmentally responsible solutions.

Conservation has always been the beating heart of the global art world, preserving the greatest feats of culture for posterity. This ethos of conservation must be applied equally to the natural world, protecting it now so that it can be appreciated for generations to come.