# Art and science unite to highlight the overlooked environmental toll of digital overconsumption



Artists and climate scientists have collaborated to bring vivid attention to the environmental damage driven by technology consumption, employing striking visualisations of some of the world’s most iconic landscapes to portray potential future degradation caused by the climate crisis. This interdisciplinary project, showcased at the Last Shot Gallery in London and spearheaded by University College London Earth system scientist Mark Maslin, highlights the often-overlooked role of tech overconsumption in accelerating environmental harm.

Among the locations transformed through artistic interpretation are Venice, the Giant’s Causeway in Northern Ireland, Iguazu Falls on the Argentina-Brazil border, and the Seine River in Paris. Maslin used climate modelling to project how these places could be affected under different climate scenarios by the century’s end. While the visualisations are not meant as precise forecasts, they serve as powerful tools to convey the urgent need for consumer awareness about the ecological footprint of everyday technology use. Maslin underscores that tech consumption accounts for approximately 6% of human-driven climate change—twice as impactful as the aviation industry—which calls attention to the scale of overconsumption embedded in digital lifestyles.

The environmental costs are manifold, spanning from the extraction of critical but socially and environmentally problematic minerals like tantalum, cobalt, and tin required for devices, to the mishandling of e-waste. Discarded electronics commonly release greenhouse gases such as methane and carbon dioxide when incinerated or leach toxic chemicals like mercury and lead into soil and water when dumped improperly. This cycle amplifies pollution and climate damage substantially. Legislation is beginning to respond; for example, the European Union recently introduced regulations intended to curb built-in obsolescence and promote repairability, including universal charging standards and extended product guarantees. Nonetheless, tech companies have often resisted these measures, citing concerns over market interference.

The scale of digital consumption’s carbon footprint is further emphasised by recent data demonstrating the rapid growth of emissions from energy-intensive AI and data centres. A United Nations International Telecommunication Union report notes that indirect carbon emissions linked to major AI-focused firms’ data centres surged by 150% from 2020 to 2023, accelerating at a rate far exceeding overall electricity demand growth. Amazon’s operational emissions grew by 182%, with Microsoft, Meta, and Alphabet also experiencing steep rises. This escalation is primarily driven by the massive computational power required for AI training, where a single model can produce emissions comparable to those of multiple vehicles over their lifetime.

The rising energy hunger of digital infrastructure underpins these trends. Data centres, which support cloud computing and streaming services, consume around 1-2% of global electricity—a figure expected to climb. The technology behind AI, video streaming, internet usage, and frequent tech product upgrades demands continuous energy-intensive cooling and power, most often sourced from fossil fuels. The consequent greenhouse gas emissions from digital sectors now represent an estimated 3.4% of worldwide emissions, comparable to the annual carbon footprint of driving 3,500 kilometres per person.

Moreover, the sheer volume of electronic waste intensifies the problem. Globally, e-waste production hit a record 62 million tonnes in 2022, with less than 20% being properly recycled. The rapid turnover of smartphones, laptops, and tablets not only wastes precious materials but also leads to harmful environmental pollution. Initiatives promoting refurbished technology markets, like Back Market—which co-produced the climate-focused exhibition—stress the importance of longer device lifespans, accessible sustainable options, and greater consumer education to curtail the cycle of overconsumption and landfill.

Efforts to mitigate the digital sector’s environmental footprint include calls for behavioural shifts such as reducing unnecessary device replacements, choosing more energy-efficient hardware, and limiting demand for streaming and cloud services. Experts emphasise the need to enhance transparency around energy consumption related to AI and digital services, integrate regulatory measures, and invest in renewable energy and advanced hardware efficiency. However, there is ongoing concern about the Jevons Paradox—where improvements in efficiency paradoxically lead to greater overall consumption—particularly as AI technologies expand rapidly.

In sum, while digital technologies contribute invaluable benefits, their hidden ecological toll necessitates urgent systemic and individual action. Awareness campaigns like the artistic visualisations and policy initiatives to curb planned obsolescence and boost repairability are crucial first steps. Equally important is a collective shift towards valuing device longevity and sustainable digital habits to stave off escalating climate damage linked directly and indirectly to the tech sector’s carbon footprint.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet)
* Paragraph 2 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet), [[4]](https://www.lemonde.fr/en/pixels/article/2025/02/07/climate-annual-use-of-digital-media-is-equivalent-to-a-3-500-kilometer-road-trip_6737909_13.html)
* Paragraph 3 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet), [[3]](https://climatechange-summit.org/the-hidden-carbon-footprint-how-technology-servers-and-digitalization-accelerate-climate-change/)
* Paragraph 4 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet), [[2]](https://www.reuters.com/sustainability/climate-energy/tech-giants-indirect-emissions-rose-150-three-years-ai-expands-un-agency-says-2025-06-05/)
* Paragraph 5 – [[3]](https://climatechange-summit.org/the-hidden-carbon-footprint-how-technology-servers-and-digitalization-accelerate-climate-change/), [[4]](https://www.lemonde.fr/en/pixels/article/2025/02/07/climate-annual-use-of-digital-media-is-equivalent-to-a-3-500-kilometer-road-trip_6737909_13.html)
* Paragraph 6 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet), [[3]](https://climatechange-summit.org/the-hidden-carbon-footprint-how-technology-servers-and-digitalization-accelerate-climate-change/), [[4]](https://www.lemonde.fr/en/pixels/article/2025/02/07/climate-annual-use-of-digital-media-is-equivalent-to-a-3-500-kilometer-road-trip_6737909_13.html)
* Paragraph 7 – [[1]](https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet)
* Paragraph 8 – [[2]](https://www.reuters.com/sustainability/climate-energy/tech-giants-indirect-emissions-rose-150-three-years-ai-expands-un-agency-says-2025-06-05/), [[5]](https://apnews.com/article/c6218681ffdbad5bf427b47347fddcb9), [[6]](https://time.com/6987773/ai-data-centers-energy-usage-climate-change/)

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## Bibliography

1. <https://www.theguardian.com/environment/2025/oct/17/overconsumption-before-after-images-tech-harm-planet> - Please view link - unable to able to access data
2. <https://www.reuters.com/sustainability/climate-energy/tech-giants-indirect-emissions-rose-150-three-years-ai-expands-un-agency-says-2025-06-05/> - A United Nations report by the International Telecommunication Union (ITU) reveals that indirect carbon emissions from major AI-focused tech companies—Amazon, Microsoft, Alphabet, and Meta—rose by an average of 150% between 2020 and 2023. The sharp increase is driven by energy-hungry data centers powering artificial intelligence technologies. Indirect emissions are those generated from sources such as purchased electricity, heating, and cooling. Amazon recorded the highest rise in operational carbon emissions at 182%, followed by Microsoft (155%), Meta (145%), and Alphabet (138%). The report tracked emissions from 200 leading digital firms and warned that growing AI investments could result in up to 102.6 million tons of carbon dioxide equivalent emissions annually. This surge in energy demand from data centers significantly surpasses overall global electricity consumption rates. While many tech companies have pledged to reduce emissions, the report noted that these commitments have not yet led to substantial emission reductions. Meta responded by referencing its sustainability measures; other companies did not comment. The findings highlight concerns over AI's environmental impact and the strain on existing energy infrastructure.
3. <https://climatechange-summit.org/the-hidden-carbon-footprint-how-technology-servers-and-digitalization-accelerate-climate-change/> - Digital technology and the internet have transformed our lives, bringing unprecedented convenience and efficiency, but they come with hidden environmental costs. The expansion of servers, data centers, cloud computing, and electronic devices is fueling a dramatic rise in energy use, which in turn accelerates global warming. New technologies, the underlying digital infrastructure, and the escalating production of e-waste all play a pivotal role in exacerbating climate change. Servers generate enormous amounts of heat, requiring continuous air conditioning or specialized cooling systems to prevent overheating. Many of these data centers rely on fossil fuels for their electricity, making them significant contributors to greenhouse gas emissions. Data centers come with enormous energy demands – consuming about 1-2% of the world’s total electricity, and that figure is expected to rise as the internet continues to expand. The growth of cloud computing has been a revolutionary shift, enabling businesses to store and process data remotely. But as companies and individuals increasingly rely on the cloud, the demand for large-scale data centers has surged. These facilities require immense amounts of energy to process, store, and transmit data. Even more energy-intensive is artificial intelligence (AI). Training a single AI model can require the computational power equivalent to five cars’ worth of carbon emissions over their lifetime (based on research from the University of Massachusetts). Every time you send an email, stream a video, or search the internet, energy is consumed. Internet services are powered by massive infrastructures, including data centers, networks, and end-user devices, all of which require electricity to operate. For instance, it is estimated that streaming video alone accounts for nearly 1% of global CO2 emissions, with platforms like Netflix, YouTube, and others seeing rapidly growing energy demand as more people consume media online. The global obsession with constant technological upgrades plays a significant role in driving the energy demand and environmental impact of digitalization. As manufacturers release new models of smartphones and laptops, consumers are encouraged to replace their devices frequently. This results in not only more e-waste but also more energy being used in the production, transportation, and disposal of digital devices. Alongside the expansion of digital services comes the increasing proliferation of electronic devices. The world now produces more than 53 million metric tons of electronic waste (e-waste) annually, with less than 20% of it being properly recycled. The constant turnover of smartphones, laptops, tablets, and other devices means that millions of outdated products end up in landfills, where they release harmful toxins and greenhouse gases into the environment. This e-waste contributes significantly to global warming. When discarded electronics are improperly disposed of, they leak toxic substances like mercury, lead, and cadmium, which contaminate soil and water.
4. <https://www.lemonde.fr/en/pixels/article/2025/02/07/climate-annual-use-of-digital-media-is-equivalent-to-a-3-500-kilometer-road-trip_6737909_13.html> - A 2023 study by French expert group GreenIT revealed that the digital sector accounted for 3.4% of global greenhouse gas emissions, equating to roughly 3,500 km of car travel per user annually. This consumption represents about 40% of the individual carbon allowance needed to limit global warming to 1.5°C, as outlined in the Paris Agreement. Emissions are split between networks/data centers and end-user electronic devices, with device usage contributing nearly 40% of the sector’s impact. In France, due to cleaner electricity, emissions from use are lower, but production remains a dominant factor, accounting for around 65% of digital emissions. To reduce this footprint, French users are advised to prioritize extending device lifespans, avoid replacing non-essential tech, and opt for energy-efficient devices. Globally, reducing video streaming and favoring Wi-Fi over mobile networks are key. The report also highlights the environmental impact of metal and mineral consumption, which GreenIT identifies as even more critical than greenhouse gas emissions. The depletion of rare resources poses a grave risk to future tech production, as current substitutes remain unreliable.
5. <https://apnews.com/article/c6218681ffdbad5bf427b47347fddcb9> - As artificial intelligence (AI) becomes increasingly embedded in daily life, it is contributing to a growing environmental impact that remains largely invisible to most users. Energy-intensive data centers, often powered by fossil fuels, support AI applications, leading to increased greenhouse gas emissions and substantial water use for cooling; large centers can need as much as 5 million gallons of water per day. Simple AI tasks consume significantly more energy than traditional digital activities—for instance, an AI-enhanced search can use 23 times more energy than a standard Google search. Experts warn of the Jevons Paradox: as technology becomes more efficient, usage typically increases, potentially negating environmental gains. Quantifying AI's total footprint is challenging due to inconsistent data, but comparisons suggest complex AI tasks can rival or surpass the energy used in video streaming or multi-person video calls. Efforts to mitigate this impact include using local AI models, minimizing prompts, using eco-conscious platforms like Ecosia, and reducing screen time to limit energy-intensive data collection by social media. These strategies aim to reduce personal contributions to AI-driven energy demand. Ultimately, awareness and conscious digital habits are essential in managing tech’s role in climate change.
6. <https://time.com/6987773/ai-data-centers-energy-usage-climate-change/> - The use of AI is causing a dramatic increase in energy consumption due to the need for extensive computing power in data centers. The International Energy Agency projects that data center electricity demand will more than double from 2022 to 2026, largely driven by AI activities. These data centers, essential for functions like cloud storage and financial transactions, are proliferating, contributing significantly to global electricity use and greenhouse gas emissions. AI model training is particularly energy-intensive, with a ChatGPT query requiring ten times more energy than a Google query. This surge in energy use threatens tech companies' climate goals and puts additional pressure on power and water resources, leading to local community resistance and potential regulatory actions. Tech companies are investing in improving energy efficiency, such as through advanced chip hardware, and supporting renewable energy developments. However, there are concerns that increased efficiency might lead to higher overall resource consumption, as posited by Jevons Paradox. Transparency and regulation are deemed crucial to manage AI's environmental impact effectively going forward.