

Making AI (truly) sustainable: from environmental costs to social impacts

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Setting the Scene: The Global
Landscape of Sustainable AI
Geneva, July 7th, 2026



Sustainable AI
Group

An aerial photograph of a river winding through a lush green forest. The river is light blue, and the surrounding trees are dark green. A semi-transparent white rectangular box is centered over the image, containing the text "Measuring AI's Costs".

Measuring AI's Costs

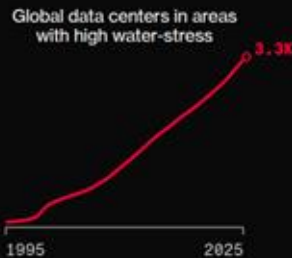
The Cloud now has a greater carbon footprint than the airline industry. A single data center can consume the equivalent electricity of 50,000 homes.

HOLLY TAFT

SCIENCE MAY 22, 2025 2:09 PM

AI Is Eating Data Center Power Demand—and It's Only Getting Worse

A new analysis of AI hardware being produced and how it is being used attempts to estimate the vast amount of electricity being consumed by AI.



**AI IS DRAINING
WATER FROM AREAS
THAT NEED IT MOST**

Google's Emissions Shot Up 48% Over Five Years Due to AI

A new report shows that the artificial intelligence boom will test Silicon Valley's climate commitments.



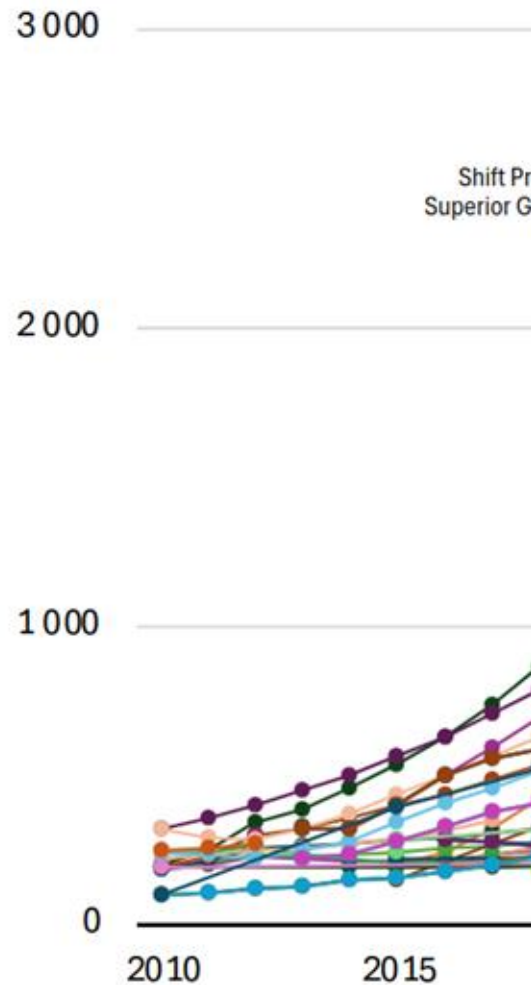
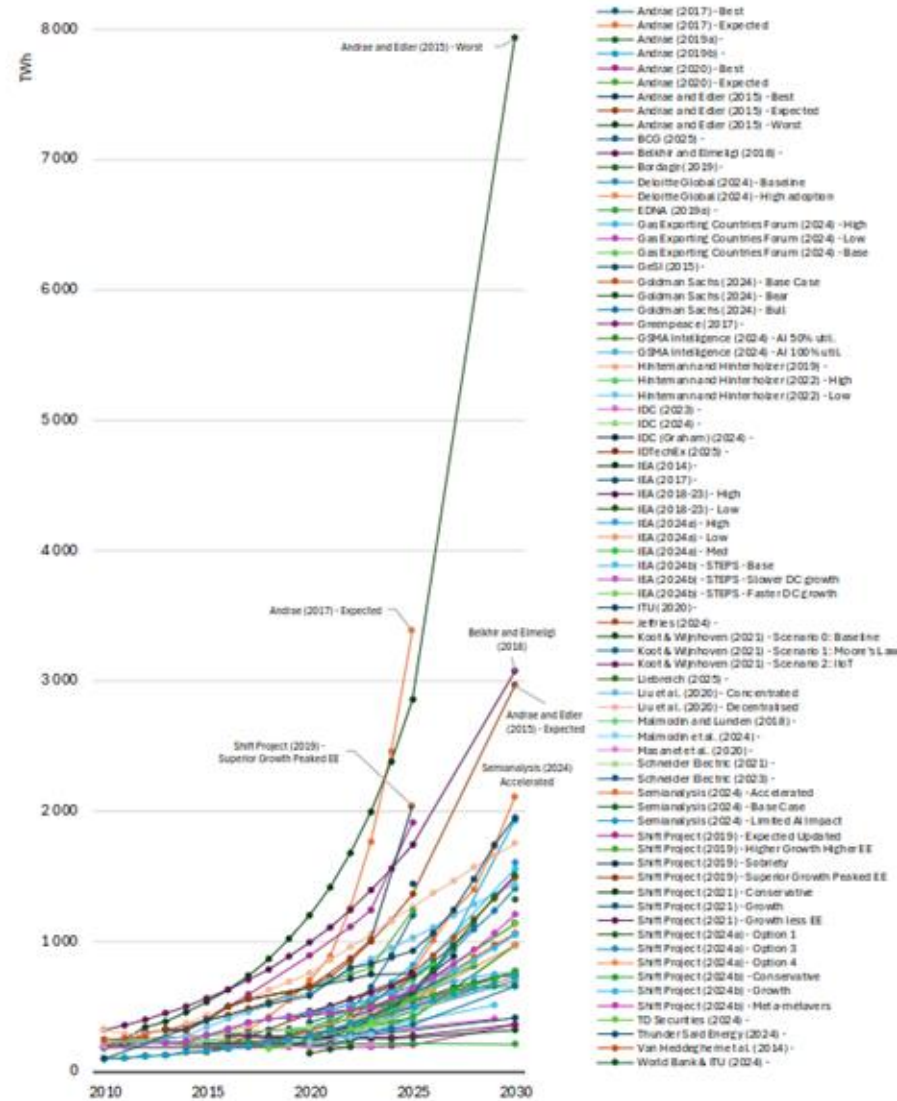


Figure 3.1 Global data centre energy estimates and projections published since 2014



Note: All published estimates are shown to illustrate the full range of estimates and projections.

(4b) - STEPS - Faster DC growth
 (20) -
 (2024) -
 Mjnhoven (2021) - Scenario 0: Baseline
 Mjnhoven (2021) - Scenario 1: Moore's Law
 Mjnhoven (2021) - Scenario 2: IoT
 h (2025) -
 . (2020) - Concentrated
 . (2020) - Decentralised
 in and Lunden (2018) -
 in et al. (2024) -
 t et al. (2020) -
 er Electric (2021) -
 er Electric (2023) -
 alysis (2024) - Accelerated
 alysis (2024) - Base Case
 alysis (2024) - Limited AI Impact
 ject (2019) - Expected Updated
 ject (2019) - Higher Growth Higher EE
 ject (2019) - Sobriety
 ject (2019) - Superior Growth Peaked EE
 ject (2021) - Conservative
 ject (2021) - Growth
 ject (2021) - Growth less EE
 ject (2024a) - Option 1
 ject (2024a) - Option 3
 ject (2024a) - Option 4
 ject (2024b) - Conservative
 ject (2024b) - Growth
 ject (2024b) - Met a-métavers
 rities (2024) -
 Said Energy (2024) -
 Ideghem et al (2014) -
 ank & ITU (2024) -

What's the carbon footprint of using ChatGPT?

Very small compared to most of the other stuff you do.



HANNAH RITCHIE

MAY 05, 2025

OpenAI

electricity. (People are often curious about how much energy a ChatGPT query uses; the average query uses about 0.34 watt-hours, about what an oven would use in a little over one second, or a high-efficiency lightbulb would use in a couple of minutes. It also uses about 0.000085 gallons of water; roughly one fifteenth of a teaspoon.)

Score: D

Source: [Sam Altman's blog](#)

Date: June 2025

Methodological approach: ????? (vibes 🤔)



Google

impact of Gemini prompts. Using this methodology, we estimate the median Gemini Apps text prompt uses 0.24 watt-hours (Wh) of energy, emits 0.03 grams of carbon dioxide equivalent (gCO₂e), and consumes 0.26 milliliters (or about five drops) of water¹ — figures that are

Score: B-

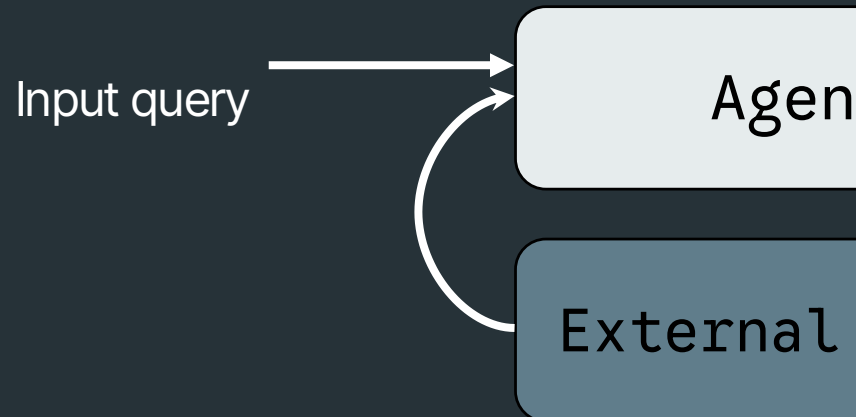
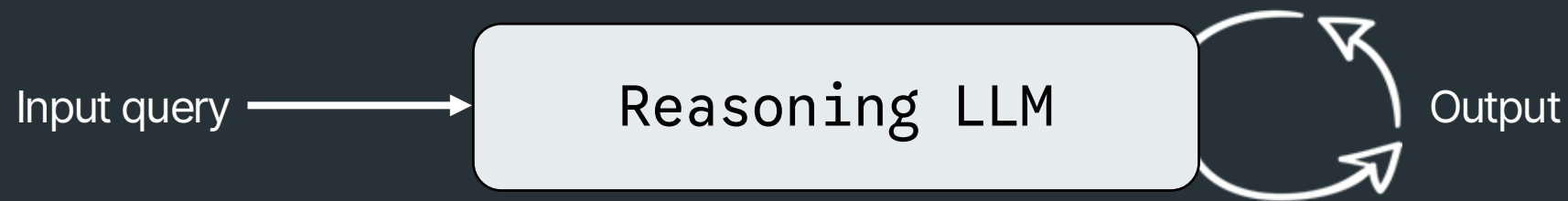
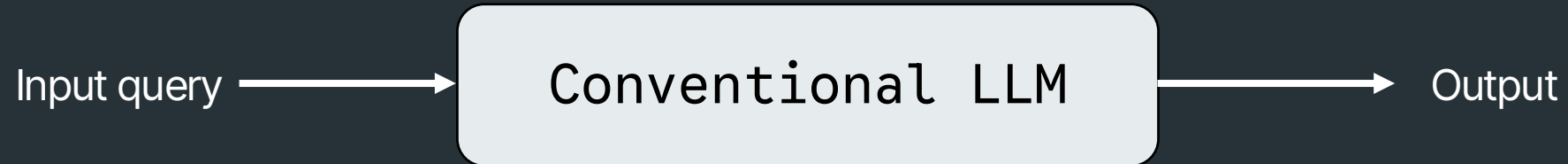
Source: [Preprint and blog post](#)

Date: August 2025

Methodological approach: internal study

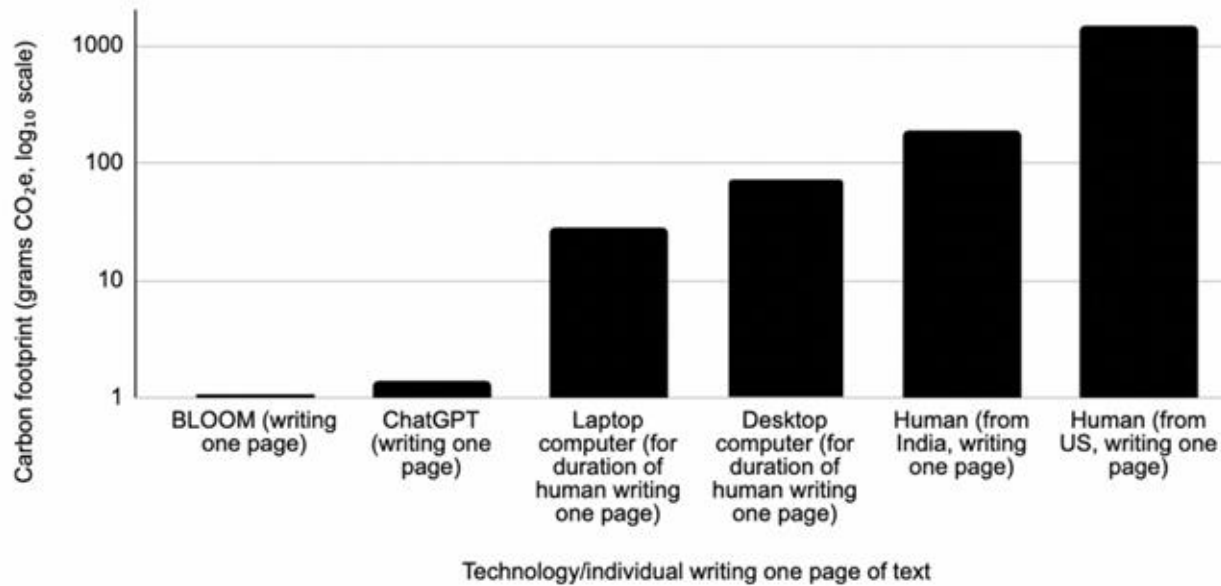
Environmental Impact Transparency of Notable AI Models by Release Year

Different modalities add up

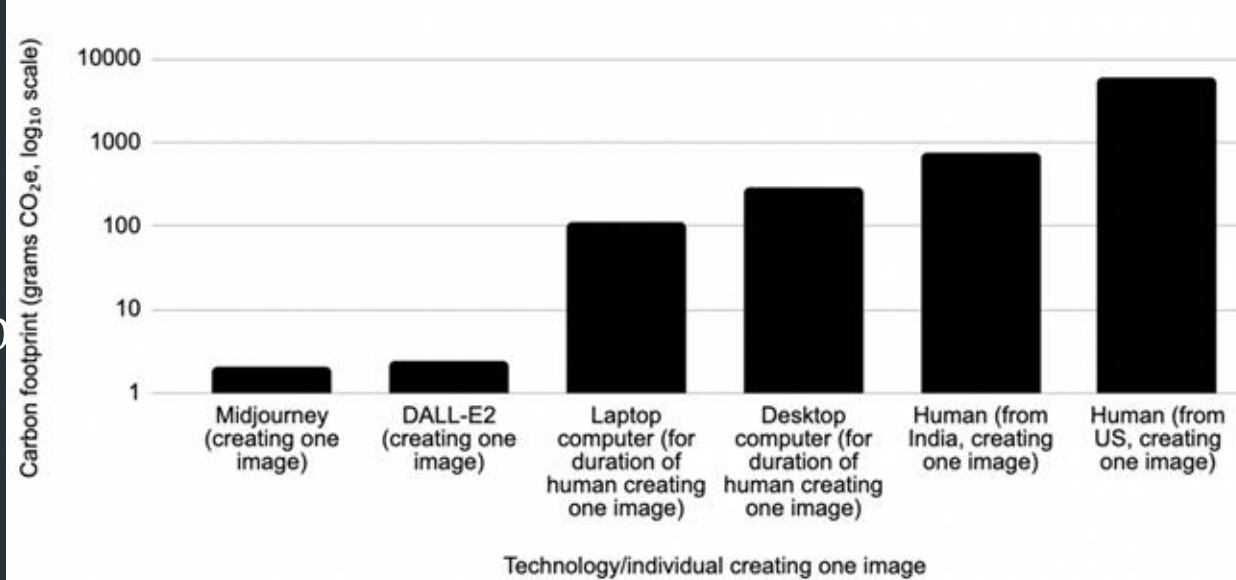


If we were to scale the same per-query figures to Google's 13.7 billion daily searches, the power numbers would raise single-turn ShareGPT (70B) to 1.5 GW and Reflexion (70B) to nearly 200 GW, far beyond any announced datacenter project (e.g., Meta's recently announced 5 GW AI datacenter Hyperion is scheduled for deployment in 2030 [74]) and exceeding the power budgets of many national grids. To put this number into perspective, a 200 GW is almost half of the *entire* U.S. grid's average load (which amounts to

Carbon footprint (grams CO₂e) for Text Writing



Carbon footprint (grams CO₂e) for Image Creation



Tomlinson et al., (2024)

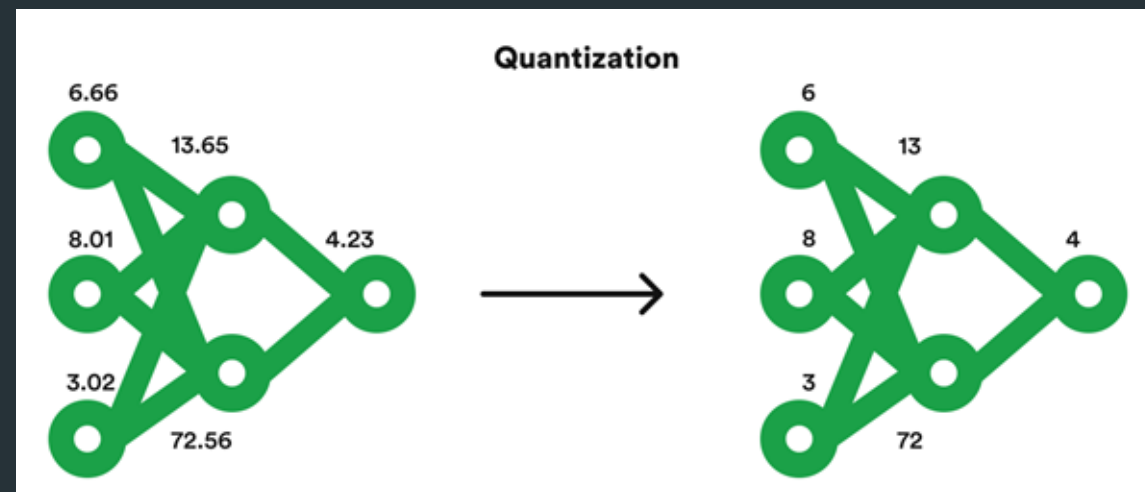
“AI writing produces 130–1500 times less CO₂e per page than a human author”

“AI image creation produces 310–2900 times less CO₂e per image than human creators.”

“[...] Emissions analyses do not account for social impacts such as professional displacement, legality, and rebound effects.”

An aerial photograph showing a yellow biplane with black stripes on its wings flying over a landscape. The landscape includes a dense forest of green trees, a winding river, and a sandy or light-colored area. The text "What We Need" is overlaid in a white serif font on a semi-transparent rectangular background.

What We Need



Technical Solutions

Energy efficiency requirements under the EU AI Act

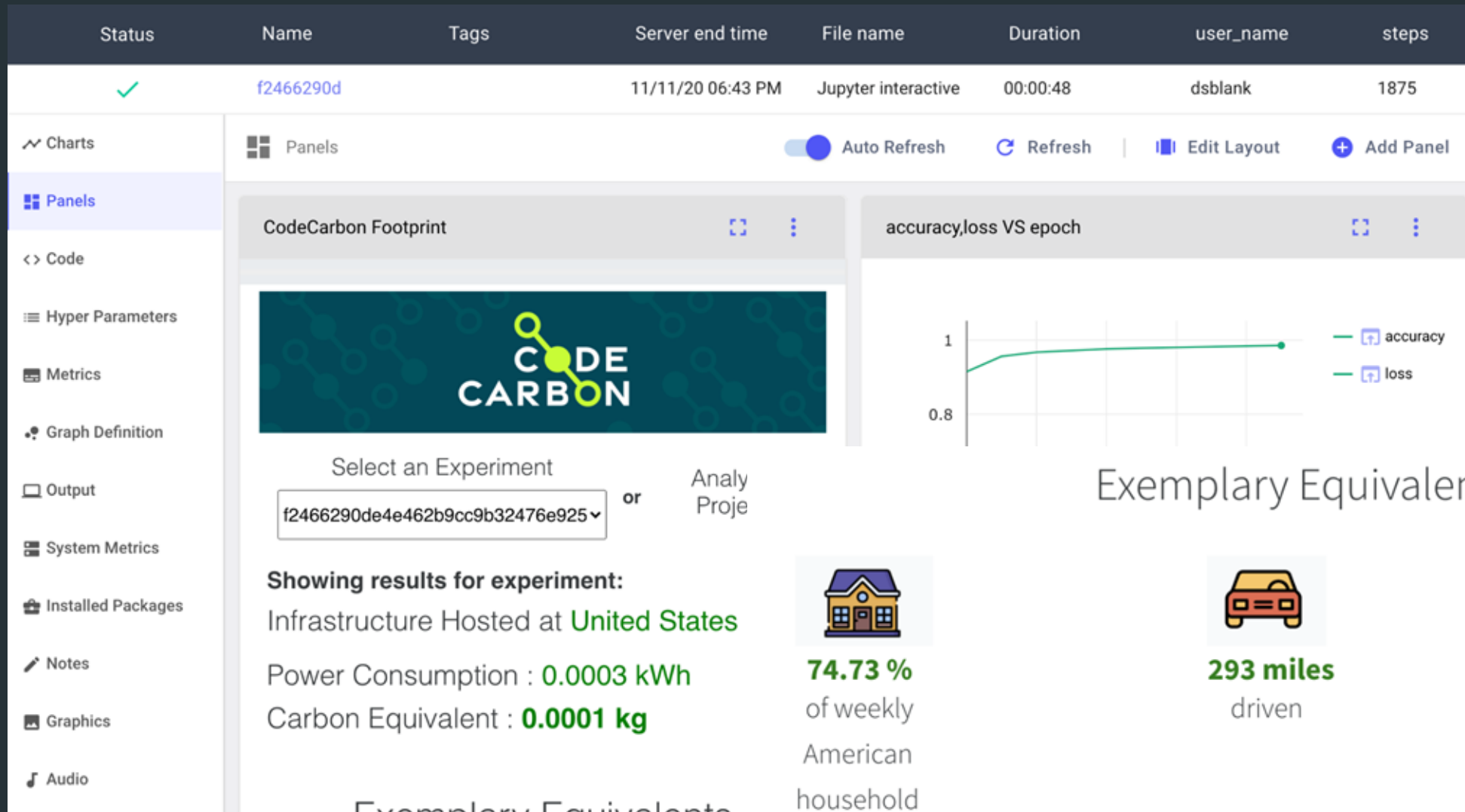
The Energy Efficiency Directive

(More!) Regulation

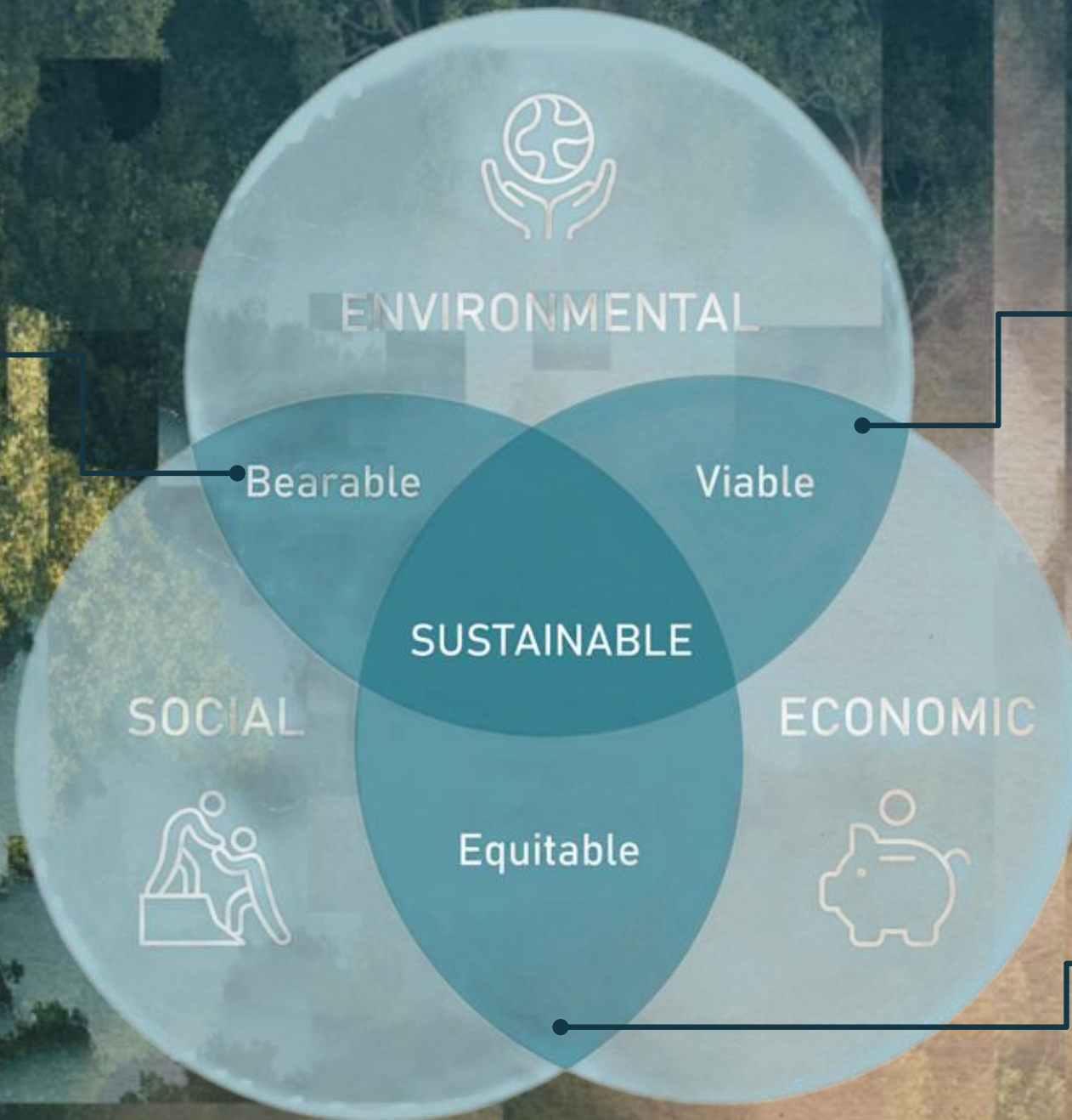
**The EU Taxonomy Assessment Framework for
Data Centres**

Standards for energy efficiency in AI

Direct Measurements



accessible
unbiased



efficient
frugal

sovereign
private



Thank you for your attention!

Source des images:
[Better Images of AI](#)