futureability

WORKSHOP BRIEFING · RESEARCH ANALYSIS

AI and the environment: what the claims actually say

A realistic, evidence-checked analysis of the most-repeated claims about AI's environmental impact - with a traffic-light viability rating, the facts on personal per-prompt use, and what is being done to address each risk.

FutureAbility | June 2026 | Prepared for client AI workshops | PhD-level desk research, multi-source verified

EXECUTIVE SUMMARY

The short version

Two things are true at once, and most headlines only tell you one of them. **Individual use of AI is environmentally trivial** - a single text prompt costs about the energy of nine seconds of television. **The aggregate industry build-out is a genuine issue** - data-centre electricity is set to roughly double by 2030. The alarming personal claims mostly fall apart on inspection; the real conversation is about infrastructure, grids and corporate emissions.

~0.24–0.3 Wh
Energy per text prompt (Google, Epoch, OpenAI all converge)

~0.3 mL
On-site water per prompt - a few drops

~3%
Data centres' projected share of world electricity by 2030 (IEA)

~2x
Likely growth in data-centre power 2024-2030

The honest headline for your workshops: running prompts all day does almost nothing to your personal footprint. What matters environmentally is the **type** of AI use (text is tiny; video is thousands of times heavier), the **scale** of the global build-out, and the **cleanliness of the grid** powering it - not whether an individual skips a few prompts.

How to read this report

- **Section 1 - Personal use:** the facts on per-prompt energy and water, including Microsoft Copilot, and everyday comparisons.
- **Section 2 - The twelve claims:** each rated 🟢 Green, 🟠 Amber or 🔴 Red for how well the evidence holds up, with what is being done about it.
- **Section 3 - Method & sources:** how the ratings were stress-tested, and a full categorised source list with confidence ratings.

SECTION 1 · THE QUESTION YOU WILL GET ASKED

"If I run prompts all day, what am I doing to the planet?"

The honest answer: at an individual level, very little. A single text prompt in Copilot, ChatGPT or Gemini uses roughly the energy of a few seconds of television and a few drops of water. The figure is trustworthy because three near-independent estimates land in the same place - Google measured 0.24 Wh for Gemini, Epoch AI estimated ~0.3 Wh for GPT-4o, and OpenAI cited 0.34 Wh.

On Microsoft Copilot specifically: Microsoft has **not** published a per-prompt energy or water figure, and the precise "0.31 Wh" circulating online traces to an AI-generated website with obvious factual errors - do not quote it. Copilot runs on the same GPT models as ChatGPT, so ~0.3 Wh is a sound *proxy* for a text prompt, without the false precision.

Not all prompts are equal - the type matters far more than the count

This is the single most useful idea for a workshop. The energy of an AI action depends overwhelmingly on what kind of action it is. Text is trivial; image generation is a few times more; long "deep research" runs are tens of times more; and video is in another league entirely.

Activity	Energy (each)	On-site water	vs a text prompt	Basis	Confidence
Text prompt (chat, Copilot)	~0.3 Wh	~0.3 mL	**1x**	Google / Epoch / OpenAI converge	HIGH
AI image	~1 Wh	~0.9 mL	**~3x**	MIT Technology Review	MEDIUM
Deep research / long run	~10-30 Wh	~9-26 mL	**~30-100x**	Epoch long-context scaling	MEDIUM
5-second AI video clip	~700-1,000 Wh	~0.6-0.9 L	**~1,000x**	Ritchie / MIT (video ~700x an image)	LOW

Water and CO2 scale roughly with energy. The video figure is genuinely uncertain (public estimates vary enormously and are not yet reliably measured) and should be presented as a rough, high-uncertainty order of magnitude.

Putting one prompt in everyday context

Everyday activity	Energy	Equivalent in text prompts
One text prompt	~0.3 Wh	about 9 seconds of television
A Google search (2009 figure)	~0.3 Wh	roughly one text prompt
Charging a smartphone	~12 Wh	~40 text prompts
A 60 W bulb for one hour	60 Wh	~200 text prompts
One hour of streaming video	~77 Wh	~250 text prompts
Boiling an electric kettle	~100 Wh	~330 text prompts

One beef burger (embodied)	~thousands of Wh	a year of heavy daily use

Scale check: even a heavy user running ~50 prompts every working day uses on the order of a few kilowatt-hours a year - roughly a day or two of an average home’s electricity, spread across the whole year. The caveat: this is for **text**. A handful of AI video clips would dwarf it.

SECTION 2 · THE EVIDENCE, CLAIM BY CLAIM

Traffic-light assessment of the top twelve claims

Green - well-supported & accurate

Amber - partly true / context-dependent / outdated

Red - misleading or false as commonly stated

RED

CLAIM 1

Each prompt you personally run has a meaningful environmental impact

Misleading as commonly stated

WHAT IS CLAIMED

Workshop attendees often assume that "burning tokens" by running prompts repeatedly causes real personal harm - water evaporating and fuel burning with every query.

WHAT THE EVIDENCE SAYS

A typical text prompt uses about 0.24-0.3 Wh (Google measured 0.24 Wh for Gemini; Epoch AI estimates ~0.3 Wh for GPT-4o; OpenAI cites 0.34 Wh) and roughly 0.3 mL of on-site water - the energy of about nine seconds of television and a few drops of water. Even 100 prompts a day for a year is a small fraction of one household's electricity. The "tokens = fuel = water" chain is real, but the per-prompt quantities are tiny.

WHAT IS BEING DONE ABOUT IT

Models and chips keep getting more efficient - Google reported a 33x drop in the energy of its median prompt over 12 months. For individuals there is essentially nothing to mitigate; the real lever is the cleanliness of the grid, not prompt-rationing.

Confidence: HIGH - three near-independent estimates converge at ~0.3 Wh.

RED

CLAIM 2

"AI uses 10x the energy of a Google search"

Misleading as commonly stated

WHAT IS CLAIMED

A widely repeated line (amplified by the IEA in 2024) that a ChatGPT query uses ~2.9 Wh versus ~0.3 Wh for a Google search.

WHAT THE EVIDENCE SAYS

The 2.9 Wh figure came from a 2023 estimate assuming an old model, old chips and ~2,000-token outputs (far longer than real queries). The 0.3 Wh "Google search" number is from a 2009 Google blog post. Corrected estimates put a modern text query at ~0.3 Wh - about the same as that old search figure. The "10x" gap has largely collapsed.

WHAT IS BEING DONE ABOUT IT

Greater transparency (Google's 2025 per-prompt disclosure, Epoch's open methodology) allowed the inflated figure to be corrected publicly. Hannah Ritchie, who had cited 3 Wh, retracted it as "an order of magnitude too high."

Confidence: HIGH on the debunk; the modern Google-search baseline is itself uncertain.

RED

CLAIM 3

"Training one AI model emits as much CO2 as five cars in their lifetimes"

Misleading as commonly stated

WHAT IS CLAIMED

A 2019 study (Strubell et al.), popularised by MIT Technology Review, that training a model emits ~284 tonnes CO2e - "nearly 5x the lifetime emissions of a car."

WHAT THE EVIDENCE SAYS

That 284-tonne figure was the cost of a neural architecture search - an automated process that trained thousands of model variants - not a single model. In the same paper, training one model without tuning emitted ~0.65 tonnes. The "five cars" statistic is roughly 435x a normal training run. Real large-model training is significant (GPT-3 ~550 tonnes), but the "five cars" framing is an outlier presented as typical.

WHAT IS BEING DONE ABOUT IT

Later peer-reviewed work (Patterson 2021; Luccioni's BLOOM study) established rigorous, lower lifecycle figures and corrected the record. Training on low-carbon grids (e.g. BLOOM in France) cut emissions roughly 20-fold versus a high-carbon grid.

Confidence: HIGH - the original authors' own paper contains the smaller numbers.

AMBER

CLAIM 4

"AI will consume 8-12% of global electricity by 2030"

Partly true / context-dependent

WHAT IS CLAIMED

Alarming headlines that AI or data centres will consume 8-12% of the entire world's electricity within a few years.

WHAT THE EVIDENCE SAYS

The 6.7-12% figure comes from a US Berkeley Lab report and applies to US data centres by 2028. Globally, the IEA projects data centres at about 3% of world electricity by 2030 (945 TWh). Credible 2030 estimates span roughly 1-4% of global electricity. The 8-12% number is real but is routinely transplanted from "US, 2028" to "global, 2030."

WHAT IS BEING DONE ABOUT IT

Efficiency improvements (chips, cooling, algorithms) and the IEA's "High Efficiency" scenario could keep growth ~20% below the base case. The fix here is mostly accuracy: cite the correct denominator and year.

Confidence: HIGH - both figures are from authoritative reports; the error is in how they are combined.

AMBER

CLAIM 5

"A ChatGPT conversation drinks a 500 mL bottle of water"

Partly true / context-dependent

WHAT IS CLAIMED

That every short AI conversation consumes a 500 mL bottle of fresh water.

WHAT THE EVIDENCE SAYS

The figure is from a 2023 study modelling GPT-3 (an older, larger model), is an estimate rather than a measurement, and depends heavily on location, season and grid. It also blends on-site cooling water with off-site power-station water. Modern per-prompt water is a few millilitres on-site (Google measured 0.26 mL for Gemini). The headline number is real research, badly flattened in retelling.

WHAT IS BEING DONE ABOUT IT

Operators are moving to closed-loop and air cooling (Microsoft's newest designs claim near-zero cooling water; Google switched drought-region sites to air cooling) and reporting water-use effectiveness, which has fallen ~40% at Microsoft since 2021.

Confidence: HIGH on the study and its caveats; LOW that any single per-prompt number is universal.

AMBER

CLAIM 6

Data centres are draining water from drought-stricken communities

Partly true / context-dependent

WHAT IS CLAIMED

That AI data centres are consuming scarce drinking water in places already short of it.

WHAT THE EVIDENCE SAYS

Genuine local controversies exist (Google in The Dalles, Oregon used ~29% of the town's water; proposed sites in Chile and Uruguay sparked permit fights during droughts). But nationally, US data centres' direct water is roughly 0.05% of US withdrawals (~0.2% including the power they draw). Golf-course irrigation uses about 40x more. The honest framing is local concentration and the consumptive (evaporative) nature of cooling - not aggregate volume.

WHAT IS BEING DONE ABOUT IT

Air and closed-loop cooling, siting away from stressed basins, recycled and non-potable water, and "water-positive by 2030" replenishment pledges from Microsoft and Google - though those offsets are often in different watersheds and progress is well behind target (Google was at ~18% of its 120% goal in 2023).

Confidence: HIGH on local cases (metered records) and on the national share; offset effectiveness is contested.

AMBER

CLAIM 7

AI is straining electricity grids and pushing up power bills

Partly true / context-dependent

WHAT IS CLAIMED

That AI data-centre demand is overloading grids and raising electricity prices for ordinary consumers.

WHAT THE EVIDENCE SAYS

Well-evidenced in specific places: Ireland’s data centres reached 22% of national electricity (2024), and the largest US grid (PJM) saw record capacity prices, with its independent monitor attributing a large share of a recent increase to data-centre load. But capacity costs are only part of a bill, some analysts argue large loads can spread fixed grid costs, and the precise household impact is disputed. New transmission and gas turbines also face multi-year delays.

WHAT IS BEING DONE ABOUT IT

On-site and "behind-the-meter" generation, demand flexibility, large clean-power and nuclear deals, and emerging rules requiring data centres to fund their own grid connections. The IEA estimates only ~20% of planned projects face delay risk - strain, not collapse.

Confidence: MEDIUM-HIGH for US/Ireland; the magnitude of bill impact is genuinely contested.

GREEN

CLAIM 8

Data-centre electricity demand will roughly double by 2030

Well-supported & accurate

WHAT IS CLAIMED

That data-centre power use is on track to roughly double this decade.

WHAT THE EVIDENCE SAYS

The IEA’s 2025 Energy and AI report projects data-centre electricity rising from ~415 TWh in 2024 (~1.5% of world electricity) to ~945 TWh by 2030 - more than doubling, with AI-optimised servers driving nearly half the growth. Data-centre electricity has grown ~12% a year since 2017, over four times faster than total electricity demand.

WHAT IS BEING DONE ABOUT IT

This is the trend that the renewables, nuclear, efficiency and regulation efforts are all responding to. The IEA models a range of outcomes; faster efficiency gains could materially soften the curve.

Confidence: HIGH for the central projection; the 2035 range (700-1,700 TWh) shows real long-range uncertainty.

GREEN

CLAIM 9

AI is driving Big Tech’s emissions up and putting climate targets at risk

Well-supported & accurate

WHAT IS CLAIMED

That the AI build-out has reversed progress on the major tech firms’ climate commitments.

WHAT THE EVIDENCE SAYS

Google’s emissions rose ~48% over five years; Microsoft’s total emissions are up ~30% since 2020, driven almost entirely by Scope 3 - the embodied carbon in building AI data centres (steel, concrete, chips). Both have acknowledged their 2030 net-zero / carbon-negative goals are now harder. These come from the companies’ own environmental reports.

WHAT IS BEING DONE ABOUT IT

Massive clean-power procurement (Microsoft has contracted ~34 GW), nuclear restarts and SMR deals, low-carbon construction materials, and supplier decarbonisation programmes. Whether these close the gap by 2030 is the open question.

Confidence: HIGH - self-reported and independently corroborated.

AMBER

CLAIM 10

AI will create a mountain of electronic waste

Partly true / context-dependent

WHAT IS CLAIMED

That rapid AI hardware turnover will generate vast quantities of e-waste.

WHAT THE EVIDENCE SAYS

A 2024 Nature study projects generative AI could add up to ~5 million tonnes of e-waste cumulatively by 2030 (up to ~2.5 Mt per year). For scale, the world already produces ~62 Mt of e-waste a year, so AI is a few percent of the stream - real and fast-growing, but not the dominant driver. It is a modelling estimate with wide uncertainty.

WHAT IS BEING DONE ABOUT IT

The same study finds circular-economy measures (refurbishment, reuse, longer hardware lifecycles, component recovery) could cut AI e-waste by 16-86%. Slower chip-replacement cycles are among the most effective levers.

Confidence: HIGH on the range; MEDIUM on exact figures (a single modelling study).

AMBER

CLAIM 11

"100% renewable" data centres mean AI runs clean today

Partly true / context-dependent

WHAT IS CLAIMED

That because hyperscalers buy "100% renewable energy," AI workloads are effectively carbon-free now.

WHAT THE EVIDENCE SAYS

Most claims rely on annual or volumetric matching - buying enough clean-energy certificates over a year to offset total use, even while running on fossil power at night. A 2024 peer-reviewed Joule study found this approach "almost entirely ineffective" at cutting system emissions; only true 24/7 hourly matching works. Google is at ~64-66% genuine carbon-free energy by the hour, and absolute emissions are still rising.

WHAT IS BEING DONE ABOUT IT

Google's 24/7 carbon-free-energy-by-2030 goal, hourly matching, geographic clean-energy expansion, and round-the-clock clean power from new nuclear and storage are the credible fixes. Annual-certificate accounting is increasingly criticised as offsetting.

Confidence: HIGH - the matching critique is peer-reviewed; company carbon-free-energy percentages are self-reported.

AMBER

CLAIM 12

Efficiency gains will solve AI's environmental footprint

Partly true / context-dependent

WHAT IS CLAIMED

That because AI keeps getting more efficient, its environmental impact will take care of itself.

WHAT THE EVIDENCE SAYS

Efficiency is improving remarkably: the compute needed for a given capability roughly halves every ~8 months, chips gain ~3x performance-per-watt a generation, and top data centres run at near-ideal power efficiency. But absolute energy, water and emissions keep climbing because usage grows faster than efficiency - the rebound effect (Jevons paradox), which Microsoft's own CEO invoked approvingly. Both halves are true at once.

WHAT IS BEING DONE ABOUT IT

Efficiency standards, hourly clean-energy matching, transparency rules (the EU now mandates data-centre PUE/WUE reporting and the AI Act requires energy documentation), and demand-side measures aim to ensure efficiency translates into lower totals rather than just more use.

Confidence: HIGH on both the efficiency gains and the rebound effect; the net direction is genuinely contested.

SECTION 3 · HOW TO TRUST THIS

Method, uncertainty and sources

How the ratings were made

Each claim was researched across multiple independent sources, then stress-tested three ways:

- **Convergence check** - does the figure hold across sources that do not share a method? The per-prompt energy number is trusted partly because Google (0.24 Wh), Epoch AI (0.3 Wh) and OpenAI (0.34 Wh) arrive at the same place by different routes.
- **Provenance check** - tracing viral numbers to their origin often reveals they are outdated (the "five cars" and "10x search" statistics) or fabricated (the "Copilot 0.31 Wh" figure).
- **Scope & arithmetic check** - separating water *withdrawal* from *consumption*, on-site from off-site, and goals from achieved results; and re-doing the unit conversions by hand.

Where the uncertainty is honest

- **Per-prompt figures** are company self-reports or external estimates - no audited, standardised number yet exists.
- **2030 projections** span a wide band (data-centre power could be ~1-4% of world electricity) depending on build-out and efficiency assumptions.
- **Water** is the most-conflated topic in the debate - almost every alarming headline collapses at least one important distinction.

Sources

Grouped by theme, with a confidence or role tag for each. All figures load-bearing in this report trace to these primary or authoritative sources.

Per-prompt energy & water (personal use)

Google Cloud - "Measuring the environmental impact of AI inference" (Aug 2025) HIGH
https://cloud.google.com/blog/products/infrastructure/measuring-the-environmental-impact-of-ai-inference

Google - technical paper, arXiv:2508.15734 (2025) HIGH
https://arxiv.org/abs/2508.15734

Epoch AI - "How much energy does ChatGPT use?" (Feb 2025) MED-HIGH
https://epoch.ai/gradient-updates/how-much-energy-does-chatgpt-use

MIT Technology Review - Gemini AI energy (Aug 2025) HIGH
https://www.technologyreview.com/2025/08/21/1122288/google-gemini-ai-energy/

MIT Technology Review - what Google left out (Aug 2025) HIGH
https://www.technologyreview.com/2025/08/28/1122685/ai-energy-use-gemini/

Sam Altman (OpenAI) - "The Gentle Singularity" (Jun 2025) SELF-REPORT
https://blog.samaltman.com/the-gentle-singularity

A. de Vries - "The growing energy footprint of AI", Joule (2023) HIGH
https://www.sciencedirect.com/science/article/pii/S2542435123003653

Google (2009) - "Powering a Google search" DATED
https://googleblog.blogspot.com/2009/01/powering-google-search.html

Hannah Ritchie - energy-use comparisons MEDIUM
https://hannahritchie.github.io/energy-use-comparisons/

IEA - streaming video carbon footprint (fact-check) MEDIUM
https://www.iea.org/commentaries/the-carbon-footprint-of-streaming-video-fact-checking-the-headlines

Microsoft Research - "Energy Use of AI Inference" METHOD
https://www.microsoft.com/en-us/research/publication/energy-use-of-ai-inference-efficiency-pathways-and-test-time-compute/

Data-centre electricity, growth & grid

IEA - "Energy and AI" special report (Apr 2025) HIGH
https://www.iea.org/reports/energy-and-ai

LBNL - 2024 US Data Center Energy Usage Report (Dec 2024) HIGH
https://eta.lbl.gov/publications/2024-lbnl-data-center-energy-usage-report

US DOE - release on data-centre electricity demand (Dec 2024) HIGH
https://www.energy.gov/articles/doe-releases-new-report-evaluating-increase-electricity-demand-data-centers

Ireland CSO - Data Centres Metered Electricity 2024 HIGH
https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2024/

JLARC - Virginia Data Center Study (Dec 2024) HIGH
https://jlarc.virginia.gov/pdfs/presentations/JLARC%20Virginia%20Data%20Center%20Study_FINAL_12-09-2024.pdf

WRI - US data centers electricity demand MEDIUM
https://www.wri.org/insights/us-data-centers-electricity-demand

Goldman Sachs - data-centre power demand SELF-REPORT
https://www.goldmansachs.com/insights/articles/accelerating-power-demand-from-data-centers-poised-to-boost-new-energy-technologies

IEEFA - PJM capacity prices and data centres MED-HIGH
https://ieefa.org/resources/projected-data-center-growth-spurs-pjm-capacity-prices-factor-10

PolitiFact - data centres and electricity costs (2026) MEDIUM
https://www.politifact.com/factchecks/2026/jun/12/elizabeth-warren/data-centers-rising-electricity-costs/

Training, lifecycle & corporate emissions

Patterson et al. - "Carbon Emissions and Large Neural Network Training" (2021) HIGH
https://arxiv.org/pdf/2104.10350

Strubell et al. - "Energy and Policy Considerations" (ACL 2019) SOURCE
https://aclanthology.org/P19-1355.pdf

MIT Technology Review - "five cars" article (2019) CONTEXT
https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/

Luccioni et al. - "Carbon Footprint of BLOOM" (JMLR 2023) HIGH
https://www.jmlr.org/papers/volume24/23-0069/23-0069.pdf

Wu et al. (Meta) - "Sustainable AI" (MLSys 2022), arXiv:2111.00364 MED-HIGH
https://arxiv.org/abs/2111.00364

Google - 2024 Environmental Report HIGH
https://www.gstatic.com/gumdrop/sustainability/google-2024-environmental-report.pdf

Microsoft - 2024 Environmental Sustainability Report HIGH
https://blogs.microsoft.com/on-the-issues/2024/05/15/microsoft-environmental-sustainability-report-2024/

NPR - "AI brings soaring emissions for Google and Microsoft" (Jul 2024) HIGH
https://www.npr.org/2024/07/12/g-s1-9545/ai-brings-soaring-emissions-for-google-and-microsoft-a-major-contributor-to-climate-change

Gupta et al. - "Life-Cycle Emissions of AI Hardware", arXiv:2502.01671 MEDIUM
https://arxiv.org/html/2502.01671v1

Water consumption

Li, Yang, Islam & Ren - "Making AI Less Thirsty" (arXiv 2304.03271 / CACM 2025) HIGH
https://arxiv.org/abs/2304.03271

UC Riverside - study summary (Apr 2023) HIGH
https://news.ucr.edu/articles/2023/04/28/ai-programs-consume-large-volumes-scarce-water

Associated Press - "ChatGPT was built in Iowa with a lot of water" (Sep 2023) HIGH
https://apnews.com/article/chatgpt-gpt4-iowa-ai-water-consumption-microsoft-f551fde98083d17a7e8d904f8be822c4

EESI - data centres and water consumption MED-HIGH
https://www.eesi.org/articles/view/data-centers-and-water-consumption

US EIA - thermoelectric water withdrawal vs consumption HIGH
https://www.eia.gov/todayinenergy/detail.php?id=56820

Data Center Dynamics - Google The Dalles, Oregon water use HIGH
https://www.datacenterdynamics.com/en/news/we-now-know-how-much-water-googles-oregon-data-centers-use-after-city-drops-lawsuit-against-journalists/

Microsoft - water positive by 2030 commitment (2020) SELF-REPORT
https://blogs.microsoft.com/blog/2020/09/21/microsoft-will-replenish-more-water-than-it-consumes-by-2030/

Google - replenish 120% of freshwater by 2030 SELF-REPORT
https://blog.google/outreach-initiatives/sustainability/replenishing-water/

E-waste, efficiency, mitigations & regulation

Wang et al. - "E-waste challenges of generative AI", Nature Comp. Sci. (2024) HIGH
https://www.nature.com/articles/s43588-024-00712-6

Epoch AI - "Algorithmic progress in language models" (2024) HIGH
https://epoch.ai/blog/algorithmic-progress-in-language-models

OpenAI - "AI and Efficiency" (2020) HIGH
https://openai.com/index/ai-and-efficiency/

Uptime Institute - Global Data Center Survey 2024 HIGH
https://uptimeinstitute.com/resources/research-and-reports/uptime-institute-global-data-center-survey-results-2024

Xu/Ricks/Jenkins et al. - clean-power procurement, Joule (Jan 2024) HIGH
https://engineering.princeton.edu/news/2024/01/22/buyer-beware-most-clean-power-purchasing-strategies-do-little-cut-emissions

MIT Technology Review - the problem with Big Tech climate claims (2024) MEDIUM
https://www.technologyreview.com/2024/07/17/1095019/google-amazon-and-the-problem-with-big-techs-climate-claims/

Constellation - Three Mile Island / Crane restart (Sep 2024) HIGH
https://www.constellationenergy.com/newsroom/2024/Constellation-to-Launch-Crane-Clean-Energy-Center-Restoring-Jobs-and-Carbon-Free-Power-to-The-Grid.html

Kairos Power - Google 500 MW SMR partnership (Oct 2024) HIGH
https://www.kairospower.com/updates/google-and-kairos-power-partner-to-deploy-500-mw-of-clean-electricity-generation/

Microsoft - next-gen zero-water cooling (Dec 2024) SELF-REPORT
https://www.microsoft.com/en-us/microsoft-cloud/blog/2024/12/09/sustainable-by-design-next-generation-datacenters-consume-zero-water-for-cooling/

EU - Energy Efficiency Directive, Delegated Reg. 2024/1364 REGULATION
https://eur-lex.europa.eu/eli/reg_del/2024/1364/oj

EU AI Act - Annex XI (energy documentation) REGULATION
https://artificialintelligenceact.eu/annex/11/

Luccioni et al. - "From Efficiency Gains to Rebound Effects" (FAccT 2025) HIGH
https://arxiv.org/abs/2501.16548

futureability

Prepared by FutureAbility for client AI workshops, June 2026. Figures reflect the best public evidence at time of writing and carry genuine uncertainty - treat them as well-grounded orders of magnitude, not precise constants.