How Much Water Am I Using With Artificial Intelligence?

"AI" commonly mistaken for ChatGPT or Generative AI. Saying "AI consumes water" is like saying "transportation emits CO_2." A cargo ship, a bicycle, and a private jet all fall under "transportation," but the scale and impact differ wildly.

The same is true in AI:

- **Linear/logistic regression, stochastic models like Random Forests** (classic, small models) are computationally cheap, often running on a laptop with negligible energy. These models are used to do predictive analysis in research areas like climate science, engineering, etc.
- **Agentic Generative systems like ChatGPT (GPT-3.5, 4, 5)** involve billions or trillions of parameters, millions of GPU-hours, and specialized datacenters. Their energy, water, and material costs are orders of magnitude higher. These models are trained specifically for next word prediction.

Key idea: When the world talks about "AI," and its energy and water consumption, it flattens these differences, obscuring who benefits and who pays. Companies like OpenAI, xAI, Microsoft, Google oversimplify the technology and industry in a marketing tactic because these organizations are trying to sell you the technology.

Energy & Water

OpenAI has released several iterations of their models and with each iteration, the scale has increased including the electricity and water consumption.

- **Energy per query (1):**
  - GPT-3.5: ~0.3 Wh
  - GPT-4: ~0.3–1 Wh depending on length
  - GPT-5: ~18 Wh on average, up to 40 Wh for long/complex queries
- **Water per query:**
  - Average estimates range from a few milliliters (a sip of water) to ~130 mL depending on model and cooling method of the datacenter that hosts the model.
  - Multiplied by billions of queries, this adds up to **millions of liters per day**, straining local water supplies.
  - Some datacenters are air-cooled, and some are cooled with water depending on geography.
- **Where it runs and who is running it matters:**
  - Microsoft is reopening Three Mile Island to power its datacenters
  - OpenAI's "Stargate" center in Texas is installing gas turbines to keep up with demand (fossil fuel reliance).
  - xAI (Elon Musk's venture into AI) is purchasing decommissioned coal power plants to fuel its clusters, prioritizing raw scale over sustainability.

Key idea: The energy and water usage are not root causes; they are **symptoms of decisions about infrastructure, location, and profit. The datacenter you use affects the consumption of water and energy. Corporations are not always transparent about the operations of their datacenters.**

The Colonial Structures of Gen AI

- **Resource extraction**: AI needs cobalt, lithium, rare earths — mined disproportionately in the Global South under exploitative conditions.
- **Water & energy**: Data centers cluster in areas with "cheap" land and power, often in Indigenous or rural communities, intensifying local water scarcity or grid strain.
- **Knowledge labor**: Data annotation is outsourced to underpaid workers in Kenya, the Philippines, etc.
- **Who benefits?** Profits accrue to corporations and investors in the Global North, while costs (ecological, social, material) are exported elsewhere.

Key idea: Energy and water metrics are visible, but they point to deeper colonial ties to extraction and exploitation.

Rethinking Responsibility

- Instead of asking *"Should I be using AI if it's so bad for the environment"* we should ask:
    - Who owns the infrastructure?
    - Who sets the rules for its growth and transparency?
    - Who bears the cost (ecological, social, labor) of keeping these systems running?
    - How do we hold the owners of infrastructure accountable?
- AI is actively being embedded into our society in ways that will be hard to avoid. Like plastic, living without interacting with AI will become very difficult.

Call to action:

- Demand transparency in reporting not just energy, but also water and labor practices from your local and state lawmakers.
- Push for regulation on datacenters in water-scarce regions.
- Support movements challenging extractive AI, from Indigenous land defenders to data worker unions.

Want to learn more?