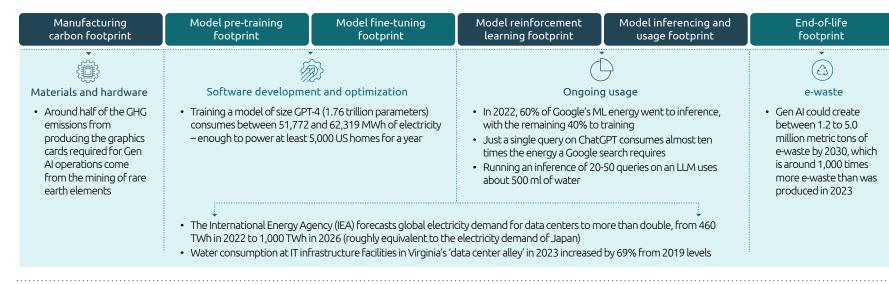


Gen AI has a significant environmental impact

Gen AI consumes vast quantities of resources and leaves notable financial and environmental footprints



Source: Capgemini Research Institute analysis, Harvard Business Review, "How to make generative AI greener," July 2023, IEA, Electricity 2024: Analysis and forecast to 2026, January 2024, Financial Times, "US tech groups' water consumption soars in 'data centre alley'," August 2024, Vox, "AI already uses as much energy as a small country. It's only the beginning," March 2024, OECD, "How much water does AI consume? The public deserves to know," November 2023, ARXIV, "The carbon footprint of machine learning training will plateau, then shrink," April 2022, Frontline Magazine, "E-waste from AI computers could 'escalate beyond control': study," October 2024.

- Gen Al's hardware requirements put a strain on natural resources and habitats
- Gen AI models are energy-hungry and water-thirsty
- Gen Al training and inferencing drive-up energy requirements in data centers
- Widespread Gen Al adoption will see e-waste levels shoot up

Gen AI is one of the reasons for the rise in GHG emissions in nearly half of the organizations

say their organization's GHG emissions have increased in the past 12 months, by nearly **6%** on average

agree that Gen Al is

one of the reasons for increase in their organization's GHG emissions

say they have had to relook at their sustainability commitments due to Gen Al

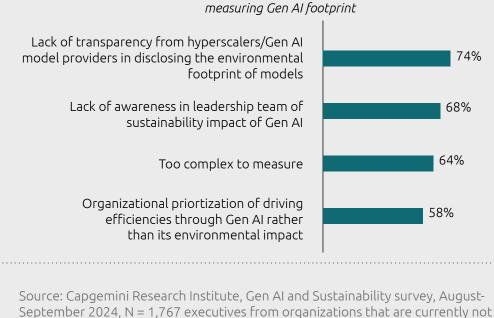
The sustainability of Gen AI remains a low priority

Most organizations fail to measure the impact of Gen AI

- Only 12% of organizations measure environmental impact of Gen AI
- 74% say a lack of transparency from Gen AI providers makes measurement challenging
- Organizations look to the tech sector to drive sustainable Gen AI



Percentage of executives saying



Percentage of executives citing the below reasons for not

Sustainability survey, August-September 2024, N

= 2,000 executives from organizations that are

working on Gen Al initiatives.

77%

Percentage of executives ranking the below among the top five factors taken into consideration

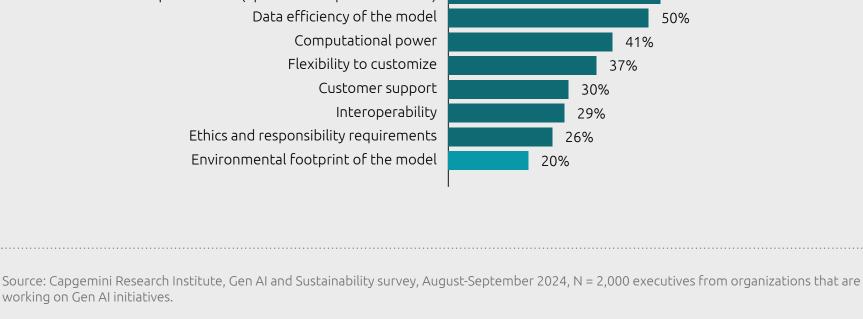
when selecting or building a Gen AI model

Sustainability isn't a consideration during Gen AI model evaluation

measuring their Gen Al footprint.

Scalability 74% Cybersecurity and data privacy guardrails 62% Cost competitiveness (upfront and operational cost) 53%

Performance



energy implications before selecting one

Algorithm-related measures

Organizations are at the early stages of reducing Gen Al's environmental impact

say they compare Gen AI models on the

with environmental footprint only a minor consideration

Organizations are just beginning to incorporate sustainability measures throughout the Gen AI lifecycle

say their organizations puts a premium on

the cost and quality benefits of Gen AI,

Ensuring/using energy-efficient hardware specifically designed for AI applications 13% Hardware-related measures Ensuring recyclability of AI/Gen AI hardware in use Ensuring/implementing e-waste management for Gen AI hardware

Ensuring/using energy-efficient coding for Gen Al

Percentage of executives implementing/planning the following measures to reduce Gen Al's environmental footprint

Ensuring/employing efficient algorithms for training and operating Gen AI models

Fine-tuning models Model architecture-related Using smaller models measures Optimizing models* (with model compression, pruning, quantization, or knowledge distillation, etc.) 8% 139 Processing data in batches to improve computational efficiency Data related measures Minimizing the amount of data required for training Gen AI solutions Optimizing cooling systems in data centers Data center-related measures Powering Gen AI infrastructure with renewable energy sources Utilizing energy-efficient/green data centers Transitioning to green cloud architecture Infrastructur e- related measures Utilizing edge computing for Gen Al Continuously monitoring and reporting Gen Al usage to identify/eliminate unnecessary use Usage-related measures Implementing query optimization techniques ■ Planning to implement in next 12 months ■ Planning to implement in next 24 months ■ Not planning to implement Source: Capgemini Research Institute, Gen AI and Sustainability survey, August-September 2024, N = 660 technology executives from organizations that are working on Gen AI initiatives.

A roadmap to responsible Gen AI for

sustainable business value



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