

Green Claims in the Age of AI: Opportunities and Risks in Climate-specific Applications

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DATA
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Climate-domain specific LLMs/ChatBots emerging

BETA

ClimateGPT

by Erasmus.AI

Our Story

Your History

AN

is Apple's net zero target credible?

Home > Report

General perspective

Yes, Apple's net zero target is credible.

Apple has set a target to become carbon neutral across its entire business, including its supply chain and product life cycle, by 2030. The company has already made significant progress towards this goal, including reducing its carbon footprint by 70% since 2015 and investing in renewable energy. Apple has also committed to using 100% renewable energy for its operations worldwide by 2025.

Other perspectives

Economic

Apple's net zero target is credible given the company's track record of achieving its previous sustainability goals. Apple has already achieved a 100% renewable energy goal and has reduced its carbon footprint by 70% since...

CarbonChat: Large Language Model-Based Corporate Carbon Emission Analysis and Climate Knowledge Q&A System

transparency and accountability.

Overall, Apple's net zero target is credible and demonstrates the company's commitment to addressing climate change.

General Climate Agent (rag_1)

References

Top 4 of 1,788,974 references

Explore

Scientific

Apple's net zero target is credible because the company has already made significant progress in reducing its carbon footprint. In 2015, Apple achieved 100% renewable energy for its operations worldwide.

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BETA

ChatNDC

ChatNDC

Case Studies

Data

About

Privacy Policy

ChatNDC is an AI-powered platform designed to enhance access to and understanding of climate policy data information.

Ask anything about NDCs and countries' climate progress

1. Nationally Determined Contributions (NDC) Overview

2. Emissions Profile

3. Progress Towards Targets

4. Adaptation and Resilience Strategies

5. Climate Finance and Investments

6. International Cooperation and Partnerships

7. Non-state actors

8. Linkages and Opportunities for Enhanced Ambition

ChatReport

Angel Hsu

Apple Sustainability Report

Conformity Score: 43/100

Governance

Question 01

How does the company's board oversee climate-related risks and opportunities?

ClimateQ&A

Is Apple's net-zero target credible?

16:00

Enter your question...

Please wait...

BETA

QCHAT

NET ZERO

Helping to demystify net zero.

Ask me a question e.g. Does Walmart's net zero target cover all of its emissions?

CO₂

What is the net-zero target of Walmart, and do they report scope 3 emissions?

SCOPE 3

If an entity relies on fossil fuels, does that mean it's not pledging net zero credibly?

SCOPE 3

What are Scope 3 emissions? Should a company cover them as part of its net zero target?

ChatNetZero is engineered to merge expert-level Net Zero domain knowledge with the capabilities of Large Language Models (LLMs), all while overcoming the limitations that have made LLMs less trusted within the climate change community.

Question: “If an entity relies on fossil fuels, is it still pledging net zero credibly?”

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Chat GPT-4: “An entity (such as a company, government, or institution) that currently relies on fossil fuels isn't necessarily failing to make a credible net-zero pledge. ...”

Domain-specific climate chatbots can be anchored + fine-tuned

Question: “If an entity relies on fossil fuels, is it still pledging net zero credibly?”

ChatNetZero

Answer: “No”

If an entity relies on fossil fuels and does not have a specific plan to phase down and out fossil fuel extraction and use, **it is not pledging net zero credibly.**

The recommendations state that non-state actors cannot claim to be net zero while continuing to build or invest in new fossil fuel supply.

Achieving credible net zero requires the phasing down and out of fossil fuel extraction and use, with any residual emissions being removed by carbon dioxide removal.

Therefore, an entity that relies on fossil fuels without a clear plan to transition away from them is not credibly pledging net zero.

Source:

https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf

page: 7

GPT-4

Answer: “Yes”

An entity (such as a company, government, or institution) that currently relies on fossil fuels **isn't necessarily failing to make a credible net-zero pledge**. The credibility of a net-zero commitment depends on several factors, including:

Timeframe: How quickly is the entity planning to achieve net-zero emissions? Some industries may take longer to transition away from fossil fuels due to technological or financial limitations.

Transition Plan: Does the entity have a detailed, transparent plan for how it will transition away from fossil fuels? A credible plan would outline specific measures such as adopting renewable energy, improving energy efficiency, and making operational changes.

Scope: Does the net-zero commitment cover all scopes of emissions, including Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased electricity), and Scope 3 (other indirect emissions from the supply chain, employee travel, etc.)?

Accountability: Is there a third-party verification system in place to validate the entity's emissions reductions and offset strategies?

Interim Targets: Does the entity have short- and medium-term targets that align with its long-term net-zero commitment? Meeting these interim milestones can provide evidence of the entity's commitment.

Investment in New Technologies: Is the entity investing in new technologies that will allow it to transition away from fossil fuels more effectively?

Public Reporting: Does the entity regularly report on its progress towards achieving its net-zero commitment?

Integrity of Offsets: If the entity plans to use carbon offsets to achieve net-zero, are these offsets credible, verifiable, and contributing to additional carbon reductions?

Governance: Is climate action integrated into the entity's governance structures, with clear responsibilities and incentives for achieving net-zero?

Stakeholder Engagement: Is the entity engaging with stakeholders, including communities, employees, and investors, in its transition to net-zero?

If an entity currently relies on fossil fuels but has a credible plan addressing the above points, its net-zero pledge could be considered credible. However, continued reliance on fossil fuels without a clear and accountable transition plan would likely cast doubt on the credibility of a net-zero commitment.

ChatClimate

Answer: “No”

Relying on fossil fuels does raise questions about the credibility of an entity's pledge to achieve net zero emissions. The transition away from fossil fuels is necessary to meet the goals of the Paris Agreement, and studies have shown that it is technically feasible and relatively low in cost to replace fossil fuels with renewables (McCollum et al. 2018). However, the transition is constrained by existing fossil fuel-based infrastructure and stranded investments (IPCC_AR6_WGIII_Chapter17, p. 45). Fossil fuel-dependent countries are particularly vulnerable to the impacts of climate change and may face challenges in transitioning their economies away from fossil fuels (Peszko et al. 2020). Additionally, the extraction of fossil fuel resources may not be compatible with limiting global warming to 2 degrees Celsius or below, and developing countries reliant on fossil fuel extraction will need to find alternative sources of income (McGlade and Ekins 2015; IPCC_AR6_WGIII_Chapter17, p. 19). Overall, relying on fossil fuels can undermine the credibility of a net zero pledge due to the need for a transition away from fossil fuels and the associated challenges and risks (IPCC_AR6_WGIII_Chapter17, p. 45). (In-house knowledge)

Challenge: verifying LLM/Chatbot output

1. How does Walmart’s climate goals compare with Amazon’s and other large retail stores?
 2. How many nations in the world have a net zero target enshrined in law?
 3. How many companies rule out the use of offsets / credits for their net zero targets?
 4. Does 3M or Pfizer have any conditions on the use of offsets?
 5. How do the United States, China, Wal-Mart, Apple and California compare in terms of their decarbonization efforts
 6. How does Foxconn’s climate goals compare with Fast Retailing’s? Limit response to 100 words and use your most recent information, including databases and searching online.
 7. How does VakifBank and Saudi Aramco compare in terms of their climate policy’s end target status? Limit response to 100 words and use your most recent information, including databases and searching online.
 8. How does Reliance Industries and Emaar Properties compare in terms of their climate interim targets? Limit response to 100 words and use your most recent information, including databases and searching online.

Figure 3: Domain-specific questions posed to each LLM for evaluating factual accuracy of responses.

Model	Step 1	Step 2
ChatNetZero	0.70	0.81±0.30
ChatClimate	0.20	0.17±0.39
GPT	0.40	0.40±0.40
Gemini	0.30	0.28±0.40
Coral	0.30	0.42±0.40

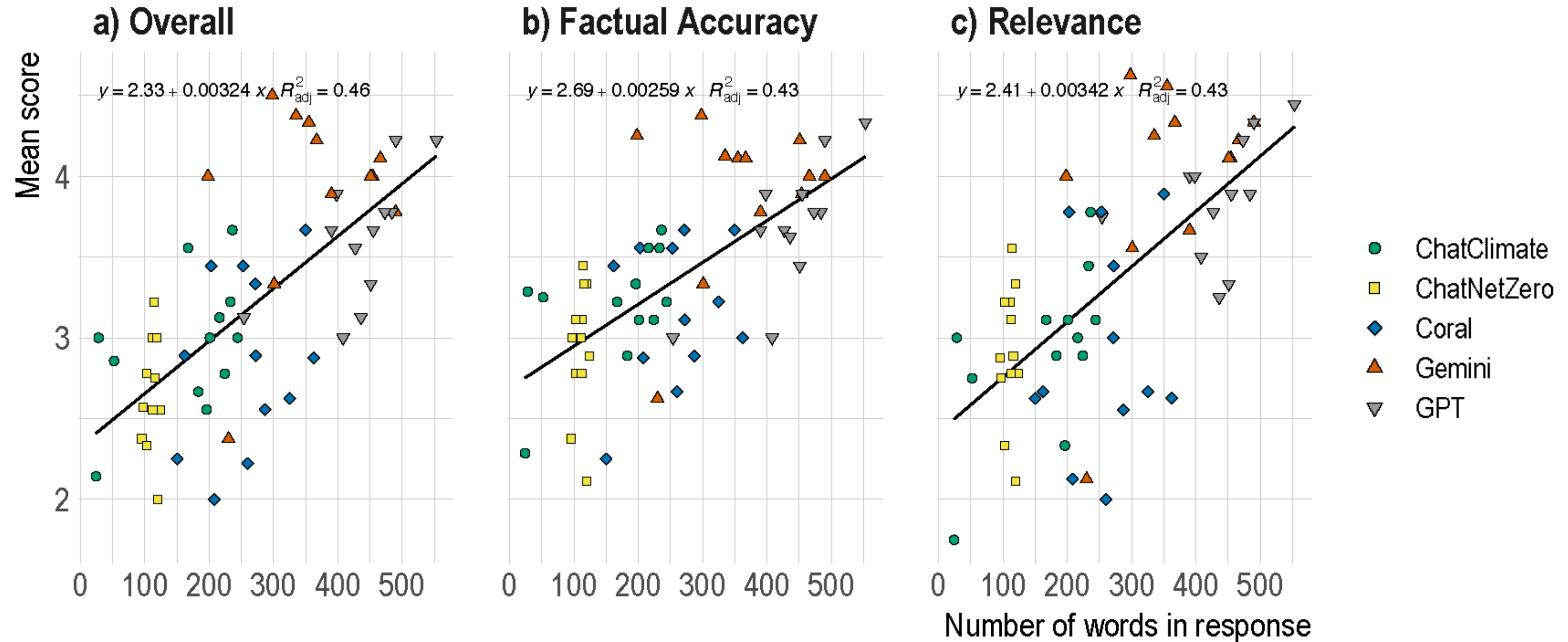
Table 1. Factual evaluation – ratio of true statements over total number of statements generated.

$$Embellishment\ Ratio = \frac{\sum S_{non-factual}}{\sum S_{statements}}$$

Model	Embellishment ratio
ChatNetZero	0.12±0.16
ChatClimate	0.33±0.34
GPT	0.65±0.28
Gemini	0.61±0.38
Coral	0.23±0.30

Table 2. Embellishment ratio – non-factual statements over total number of statements generated.

Challenge: verifying LLM/Chatbot output



Elephant in the room: Environmental Footprint of AI

Development:

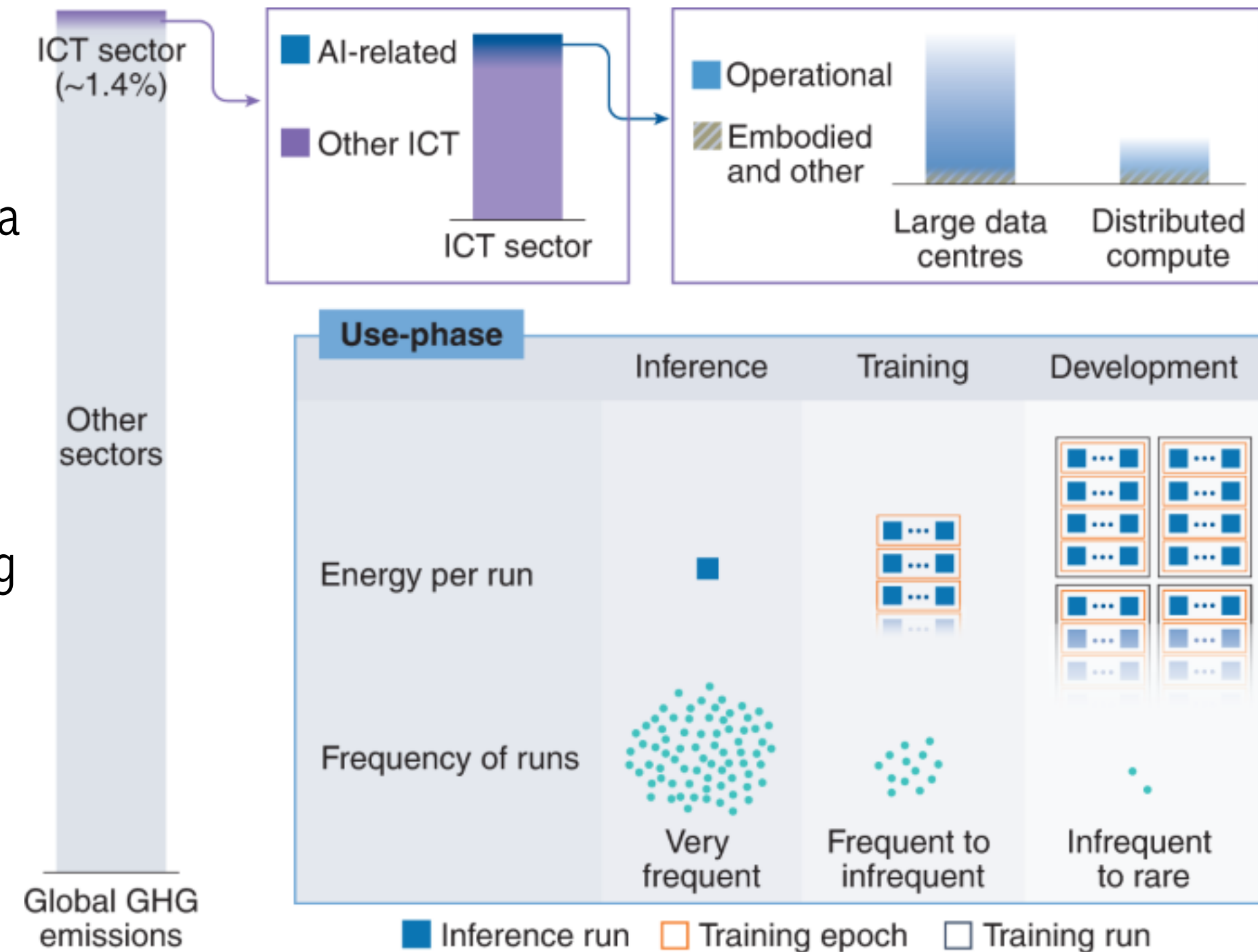
-  *Most energy- and compute-intensive stage*
- Involves training thousands of models to optimize performance
- Rare but impactful — emissions can rival lifetime emissions of a car

Training:

-  *Higher energy per run* than inference (approx. $3\times$ more)
- Performed less frequently — from hourly to monthly depending on use case

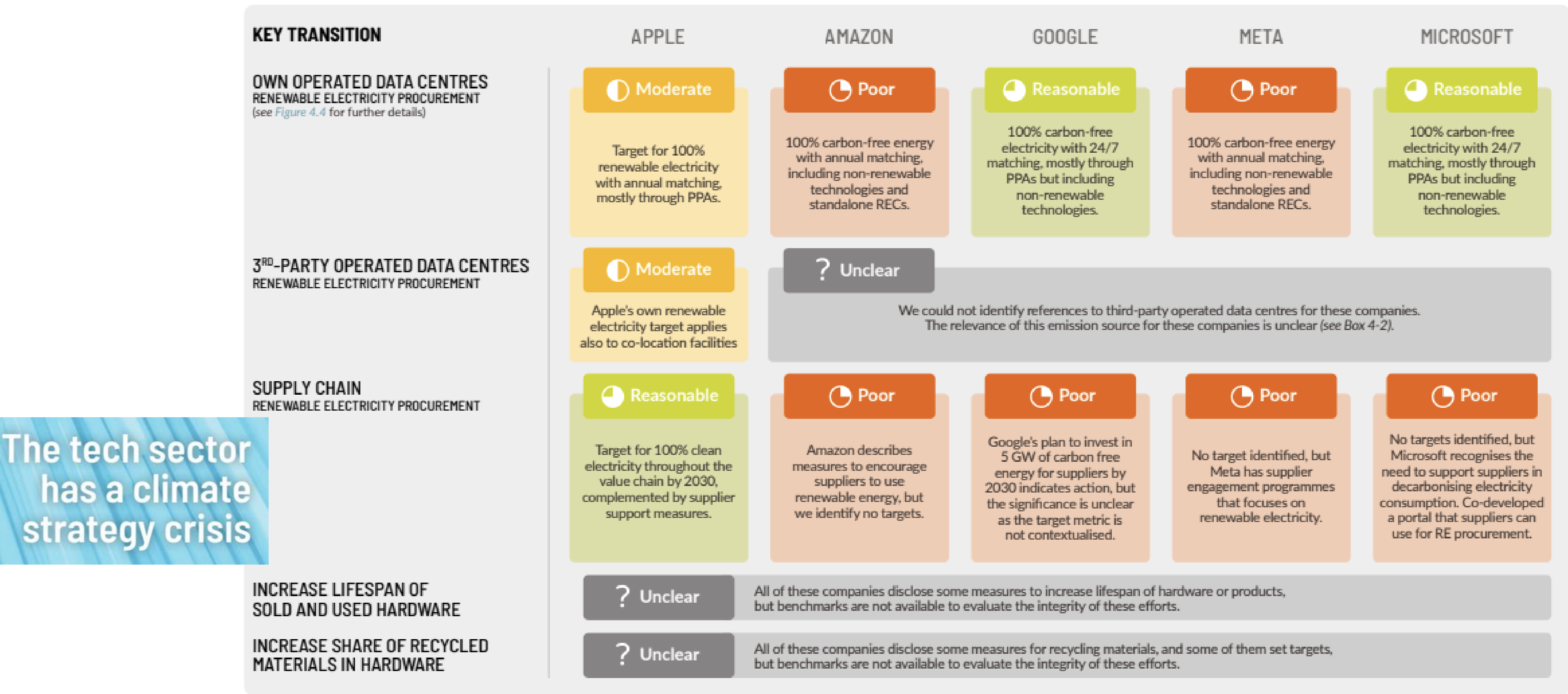
Inference (Use phase):

-  *Lowest energy per run* but *highest frequency of use*
- Used billions of times daily (e.g., asking ChatGPT questions)



AI/Tech company climate targets under scrutiny

Figure 4.5: Tech companies' strategies for other key transitions (see section 4-2 for further details in company case studies)

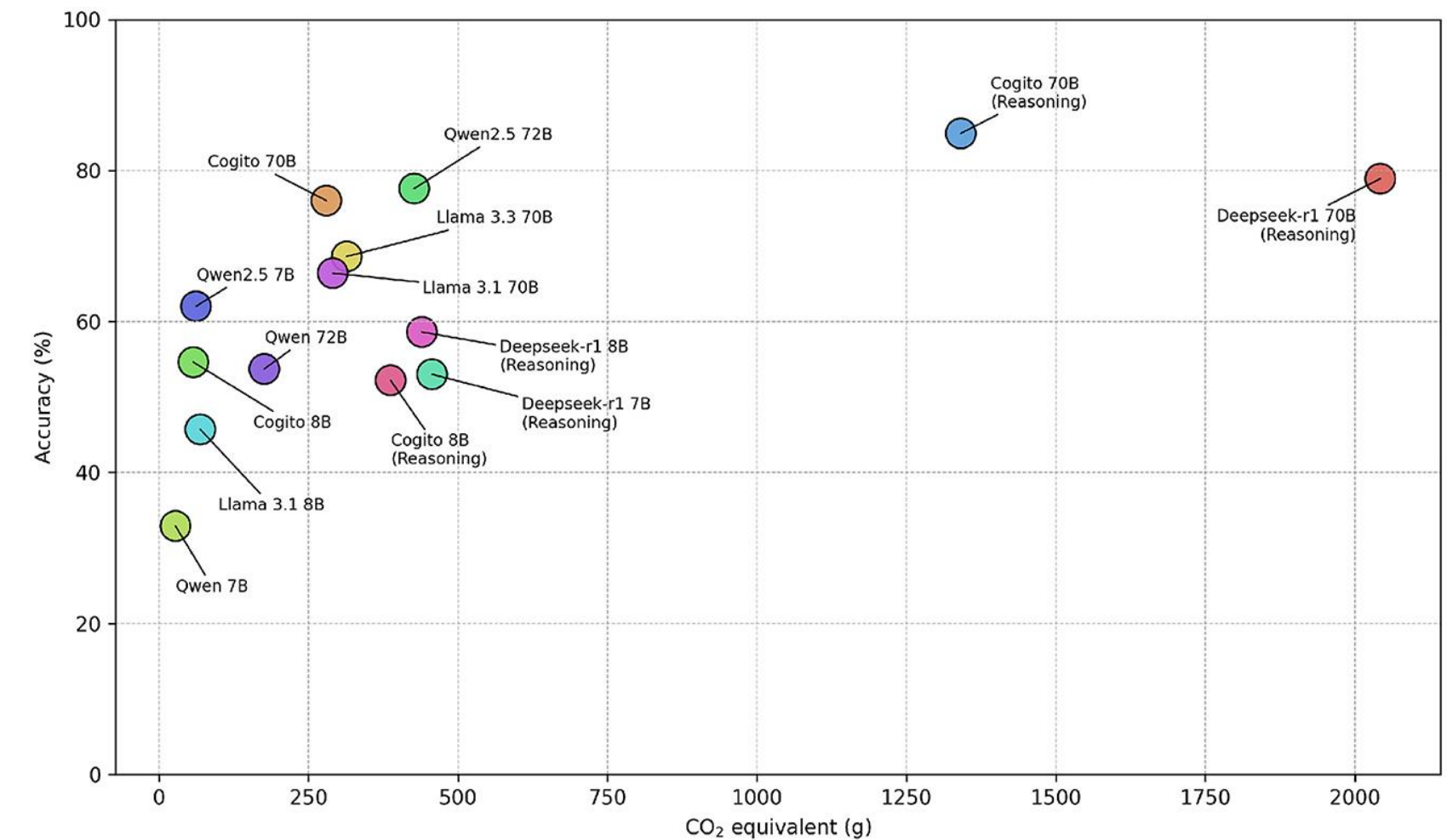


96% (n=3578) of companies already at risk of green claim greenwashing

	Company has no interim target	Company provides no scope 3 coverage	Company has no plan to achieve their emissions reduction target	Company plans for questionable use of carbon credits and offsets	Inventory doesn't cover appropriate gases for target	Company lobbies against climate policies	Company is not on track to achieve their target
Potential greenwashing Set to 1 when:	In NZT data, no interim target reported	No targets in CDP disclosure mention scope 3 coverage	In NZT data, company has no publicly available plan that lays out steps toward its target	Company plans to use offsets without any conditions specified	End target implies coverage of multiple gases ("Net zero", "GHG neutrality", etc.) but inventory coverage is "CO2 only" or "Not specified"	Company's LobbyMap Performance Band is grade of C or lower	Company's pro-rated emissions reduction target achievement (PETA) is negative
		Reported "No" or "Not Specified" scope 3 coverage in NZT		Company does not specify whether it plans to use offsets			
		Missing					
Not potential greenwashing Set to 0 when:	Otherwise	Reported "Yes" or "Partial" scope 3 coverage in NZT	Otherwise	Company does not plan to use offsets	Otherwise	Company's LobbyMap Performance Band is grade of C+ or higher	Company's pro-rated emissions reduction target achievement (PETA) is zero or greater
		Any target in CDP disclosure mentions scope 3 coverage		Company plans to use offsets, subject to specific conditions (high integrity, avoiding social harm, etc.)		Otherwise	Otherwise
				Otherwise			
At risk of greenwashing	20%	70%	17%	41%	12%	10%	20%

Redefining performance to include energy/carbon benchmarks

- AI-powered chatbots demand more energy than traditional search tasks.
- But:
 - other efficiencies could be generated that offset
 - models can be made more efficient without sacrificing accuracy.
 - user awareness/education also important
 - need greater accounting/accountability to curtail the growing problem.



Ruf, B., & Detyniecki, M. (2024, September). Mitigating the Carbon Footprint of Chatbots as Consumers. In *International Conference on Trends in Sustainable Computing and Machine Intelligence* (pp. 15-23). Singapore: Springer Nature Singapore.

CLAIM: Center for Climate Leadership and AI-driven Integrity in Mitigation

Three aims:

- (1) rigorously interrogating genAI, LLMs, and machine learning/NLP models to address disinformation, misinformation, and greenwashing;
- (2) designing new metrics and benchmarks to evaluate the accuracy and credibility of genAI information regarding climate commitments; and
- (3) convening specific projects to examine the societal impacts of genAI on corporate climate behavior and governance.



CLAIM
Center for Climate Leadership & AI-driven Integrity in Mitigation

Climate Action in the Age of AI: Can Intelligent Systems Save the Planet?

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