

Assessment of Sustainability Practices Among Hyperscalers — Meta, Microsoft, Alphabet, Amazon

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BACKGROUND

Cloud computing today rests on a small number of **hyperscale operators**. Their competition has moved beyond software and market share into a capital-intensive race for computing, energy, and physical infrastructure, mostly directed at **AI data centers**. This creates a growth paradox: the same capacity that secures competitive position also concentrates the **electricity and water use** that regulators and the public increasingly scrutinize. The exposure is uneven: operators differ in where they build, how much capacity they own versus lease, how fully and consistently they disclose, and how close their current efficiency sits to incoming thresholds. These differences determine which operators can **absorb tightening without disruption**, and which **face compliance or stranded-asset risk**.

Which hyperscalers – Amazon, Microsoft, Google and Meta – are best positioned to absorb regulatory tightening around data centre sustainability?

Hypothesis: hyperscalers differ materially and systematically in regulatory exposure, driven by geographic operations, disclosure/transparency, existing sustainability initiatives, and value at risk.

Scope:

- Geographic level: Five jurisdictions chosen for regulatory diversity and material exposure — the United States (US), the European Union (EU), Japan, Singapore, and Australia.

METHODOLOGY

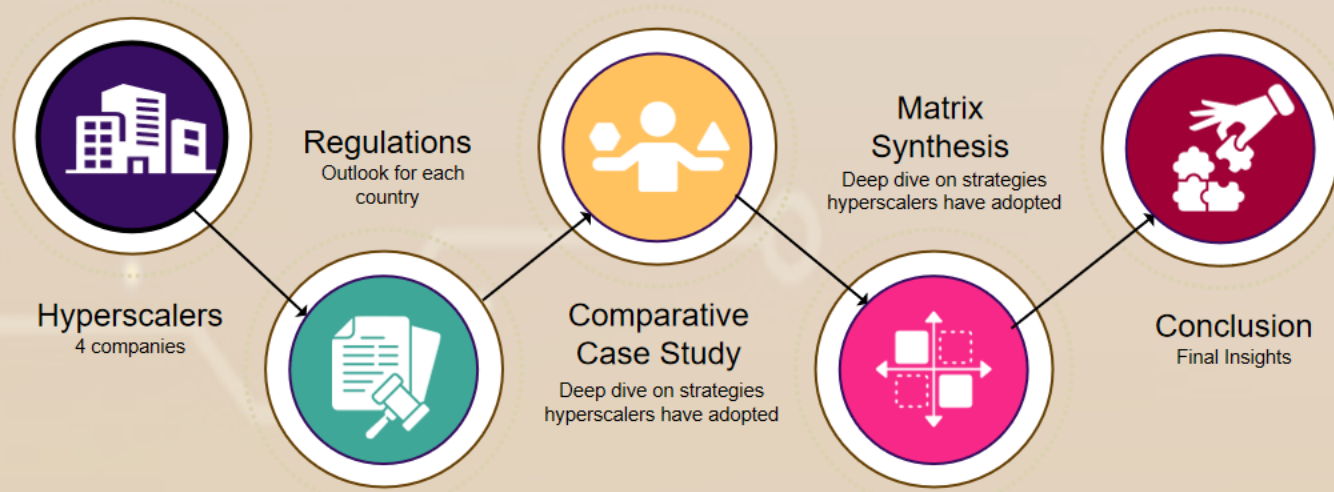


Figure 1: Research Flow

Research Design

- Comparative Analysis with Matrix Synthesis.**
- Detailed research on footprint, targets, observable regulatory responses, efficiency innovations.

Materiality Assessment

- Rank the topics through **alignment across frameworks** and its **relevance to data center operation**, **Energy** and **Water** emerged as the most material topics.

RESEARCH FOCUS

Material Topic	SASB	MSCI	S&P Global	Self-Reported	Total
Energy	Very Important	Very Important	Moderately Important	Reported by all	3.5/4
Water	Very Important	Very Important	Low importance	Reported by all	3/4
Data Privacy and Security	Very Important	Low Importance	Very Important	Reported for Meta only	2.5/4
Waste & Emissions	Low Importance	Moderately Important	Low Importance	Reported by all	2.5/4

Table 1: Reporting Importance by Rating Agencies

KEY FINDINGS

	WUE (L/kwh)	PUE	EWIF (as per US Estimate)	WUEsource
Amazon	0.15	1.15	3.142	3.7633
Google	1.15*	1.09	3.142	4.57478
Microsoft	0.3	1.16	3.142	3.94472
Meta	0.18	1.08	3.142	3.57336

Table 2: Key Performance Indicator of the Hyperscalers

	Cash / Total Assets	OCF / CAPEX	Funding Ratio	OCF / Current Liabilities	Debt / Equity	Debt / Asset	Interest Coverage Ratio	ROE Ratio	Asset Turnover Ratio
Amazon	12.08%	1.24	215.83%	0.79x	19.12%	9.04%	71.54x	18.05%	0.92x
Microsoft	6.91%	1.98	248.50%	1.09x	12.23%	6.73%	103.57x	29.52%	0.47x
Google	9.61%	1.8	378.96%	1.70x	6.52%	4.73%	242.91x	27.21%	0.66x
Meta	11.49%	1.65	309.26%	2.66x	16.37%	10.62%	124.08x	26.45%	0.55x

Liquidity Solvency Profitability/Efficiency

Table 3: Financial Ratios of the Hyperscalers

	aws	Microsoft	G	Meta
Net Zero Goal	Reach net-zero carbon emissions across own global operations by 2040	Be carbon negative by 2030	Achieve net zero emissions across all own operations and value chain by 2030	Achieve net zero emissions across value chain by 2030
Energy Target	Match 100% of the electricity consumed by our global operations with renewable energy	Match 100% of annual electricity use with clean and renewable energy	100% renewable energy match on a global basis achieved in 2017	Match 100% of annual electricity use with clean and renewable energy
Progress	Yearly 100% renewable energy match Achieved in 2024	Yearly 100% renewable energy match Achieved in 2025	Yearly 100% renewable energy match Achieved in 2017	Yearly 100% renewable energy match Achieved in 2020
Scope 2 size	22%	2%	20%	2%

Table 4: Hyperscaler Net-Zero Ambition and Green Energy Coverage

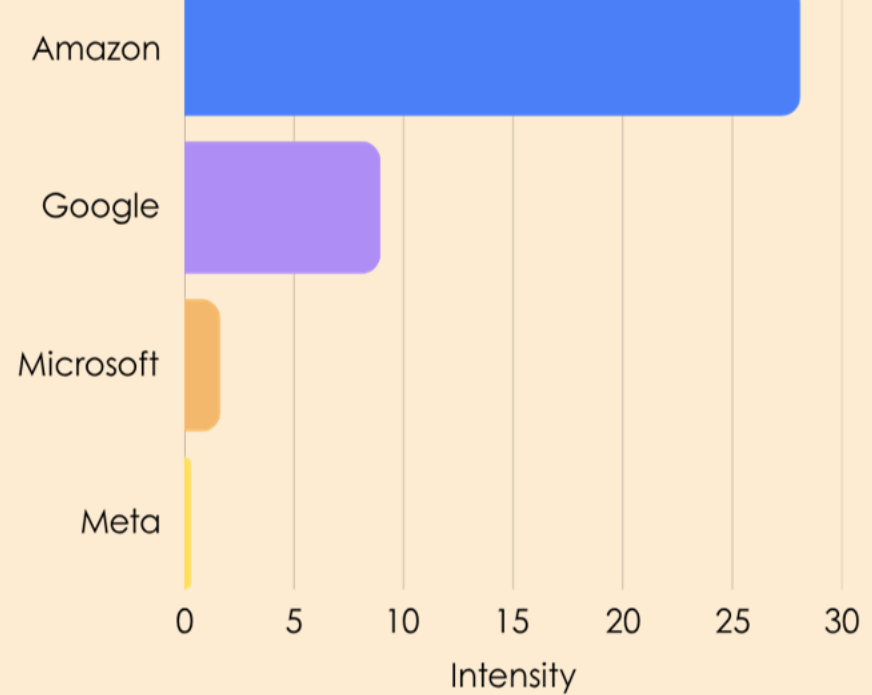


Figure 2: Hyperscalers' Carbon Emission Intensity

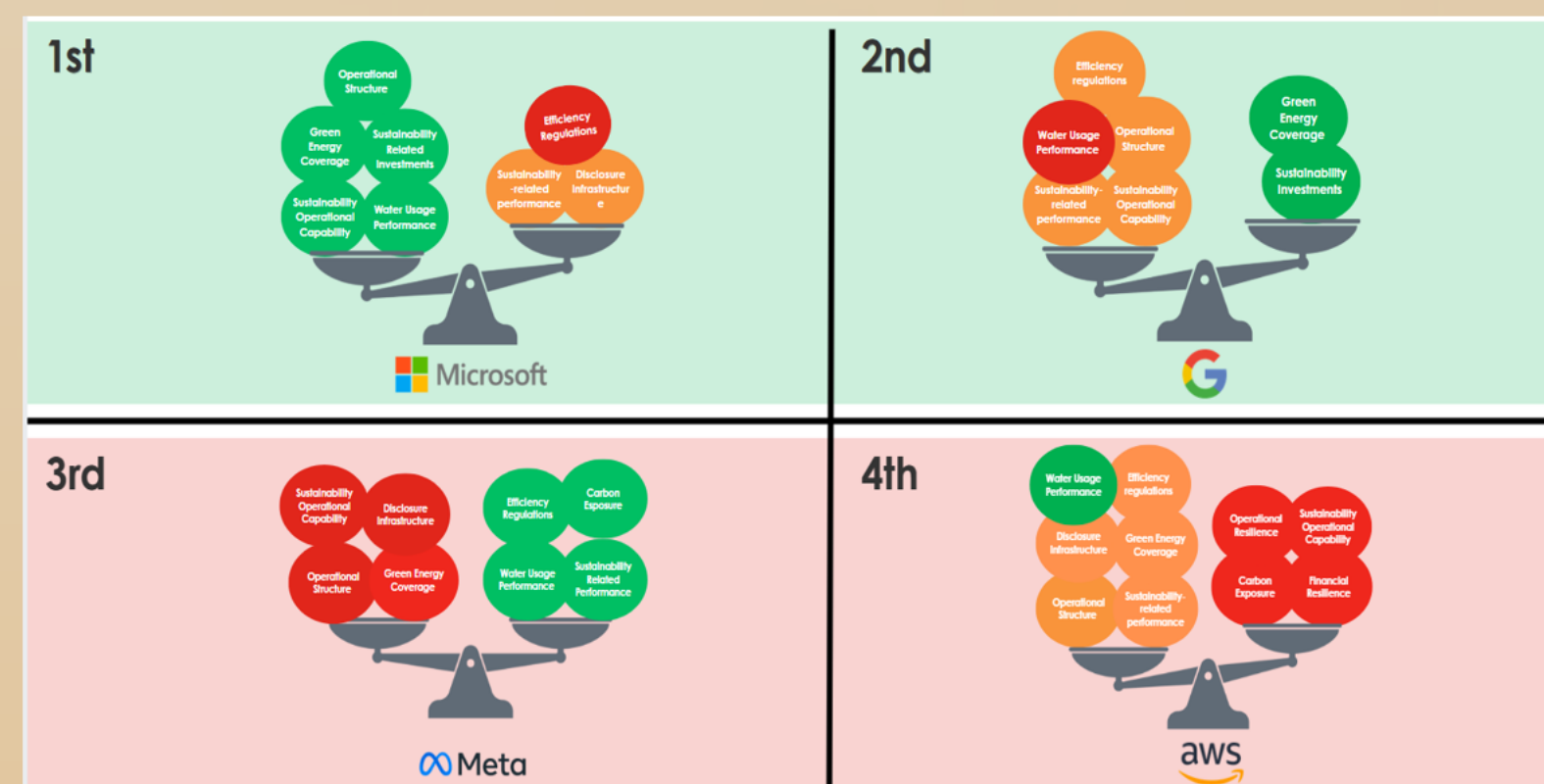


Figure 3: Overall Company Evaluation

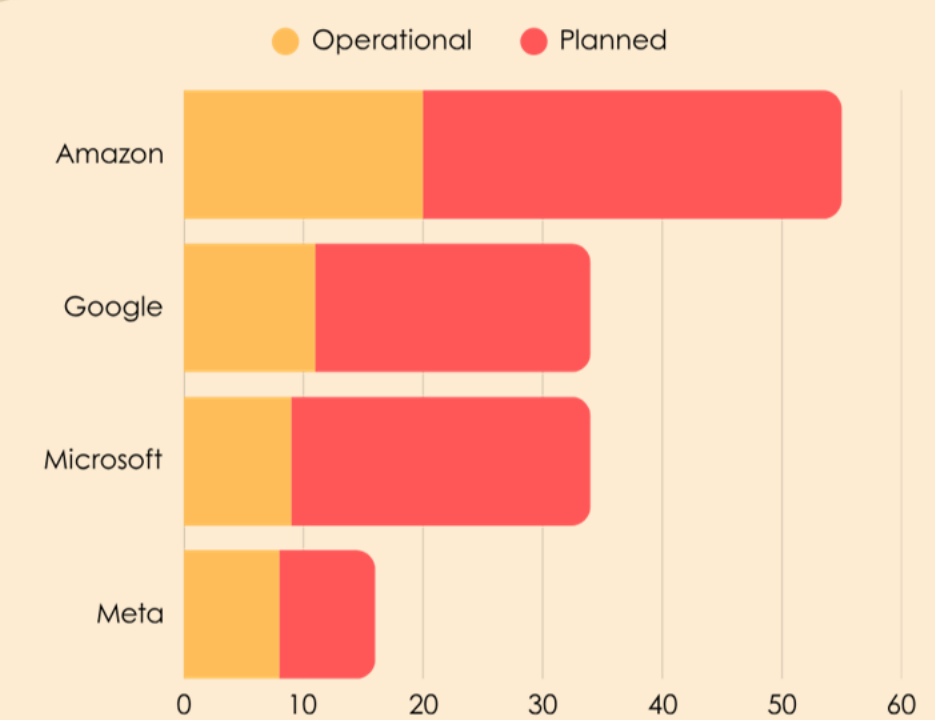


Figure 4: Hyperscaler Exposure to Drought Area (US Specific)

RESULTS

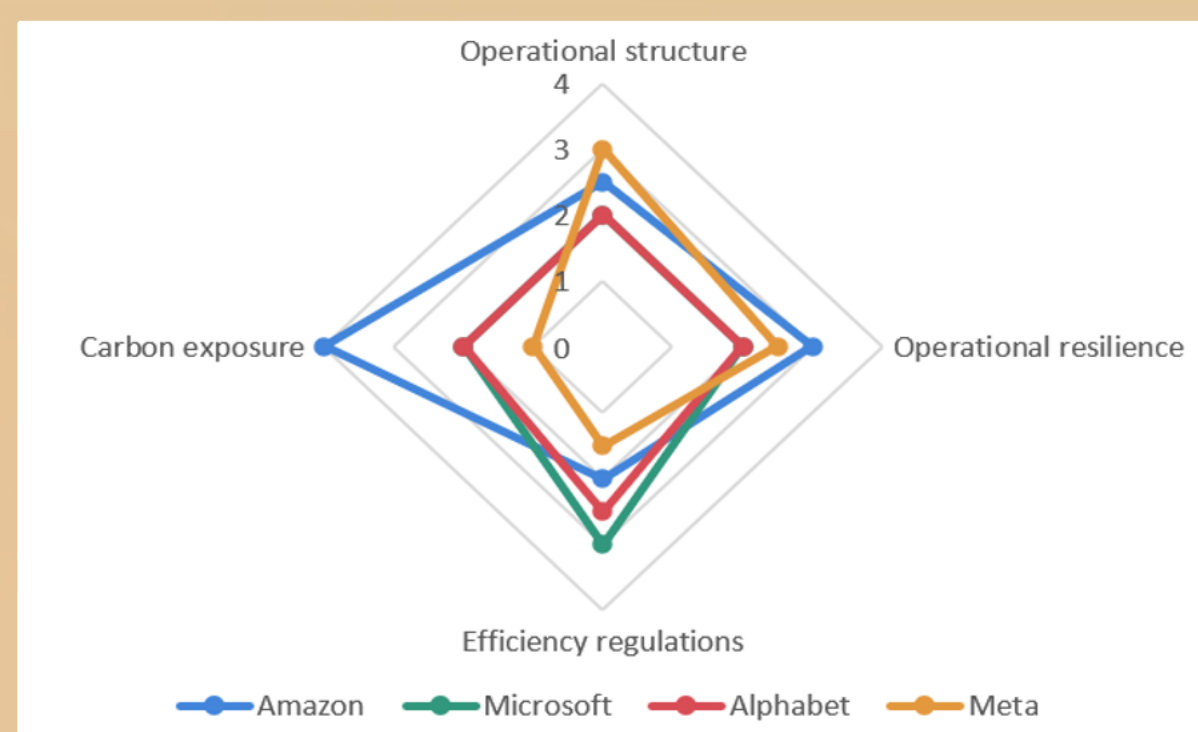


Figure 7: Regulatory Exposure results of Hyperscalers

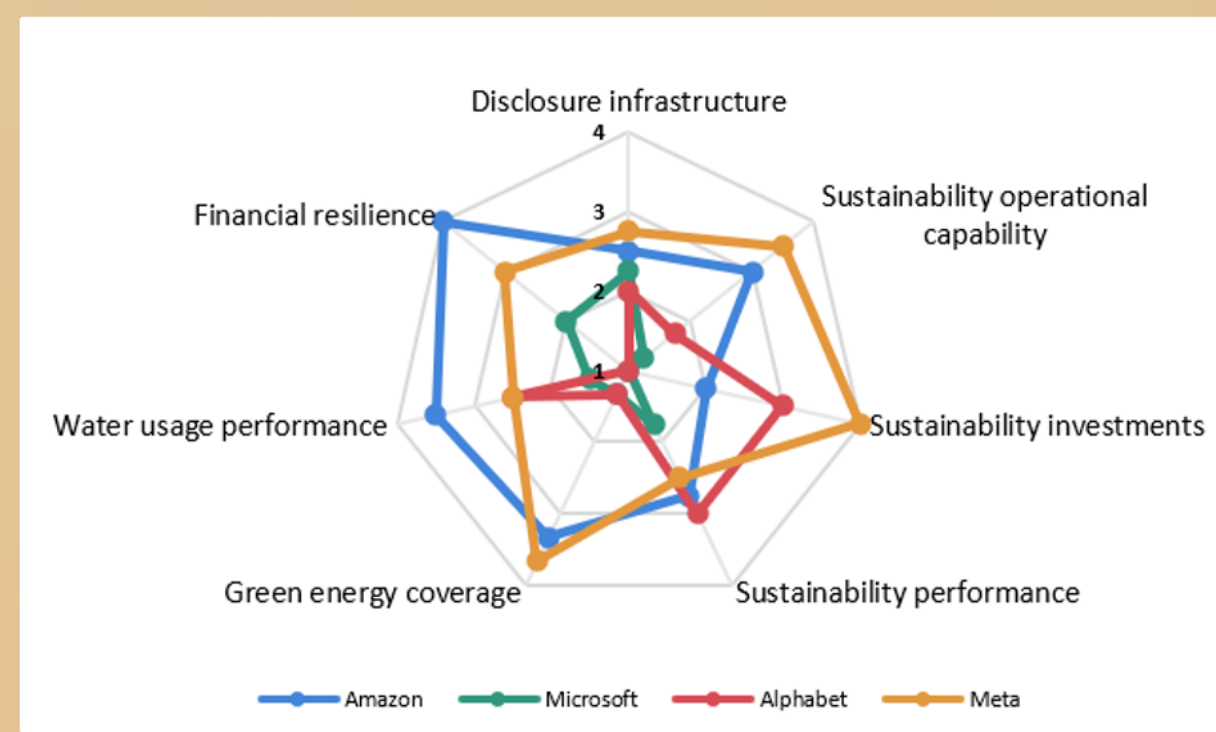


Figure 8: Strategic Preparedness results of Hyperscalers



Figure 9: Matrix Construction of the Four Hyperscalers

CONCLUSION

Leading Position in the Industry

All four aforementioned hyperscalers largely outperform industry standards and remain at the forefront of these shifts today.

Regulatory Exposure & Strategic Preparedness

- In terms of Regulatory Exposure, Meta is the least exposed, while Amazon is the most exposed.
- In terms of Strategic Preparedness, Microsoft is the most prepared, while Meta is the least prepared.
- Combined, **Microsoft appears to be in the strongest position**, with relatively lower exposure and stronger strategic preparedness.
- Amazon may face potentially higher downside risks compared to other hyperscalers**, given the higher regulatory exposure and relatively weaker preparedness, although we highlight that this **might also be attributed to the less detailed and transparent public disclosures** compared to its peers.

DIRECTION FOR FUTURE RESEARCH

Dive into the Growth Paradox

- Dig deeper in the **demand & supply of water and power**, how it affects the company financially.
- Identify **other physical constraints** on which every hyperscaler's expansion ultimately depends.

Balanced Insights for Comparative Analysis

- Publicly disclosed information is finite and uneven, prioritize data points that are found across all the hyperscalers.
- Monitor and calculate **industry benchmarks** for performance indicator under review, Ensure a holistic view.

Price Discovery Process

- Present financial evidence for the **cost and benefit of sustainability practices**. Turn descriptive research into decision-useful analysis.