Neglecting the Sustainability of AI is Fuelling a Global AI Arms Race

Climate- and Resource-Aware Machine Learning

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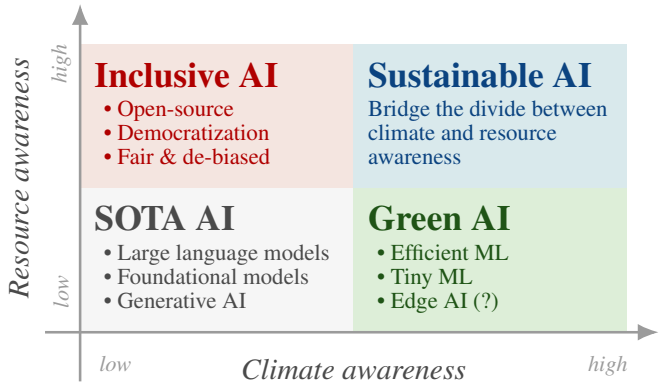
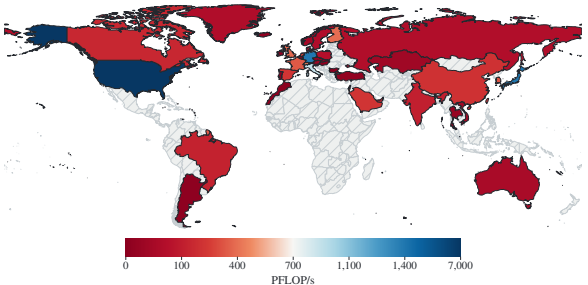
Environmental, Economic, and Social

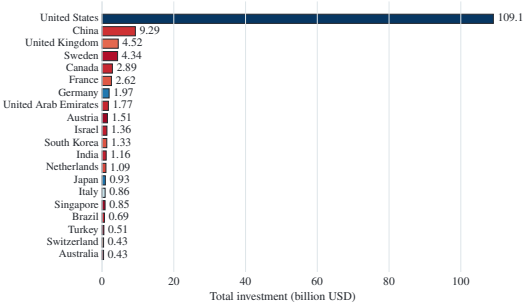


Sustainable AI is often conflated with energy efficiency, carbon efficiency, or environmental sustainability, neglecting access and material resources.

[1] Ahmed & Wahed, 2020. [2] Van Wynsberghe, 2021. [3] Wright, Igel, Samuel & Selvan, 2025.

AI's Compute Divide





6,961
PFLOP/s compute capacity

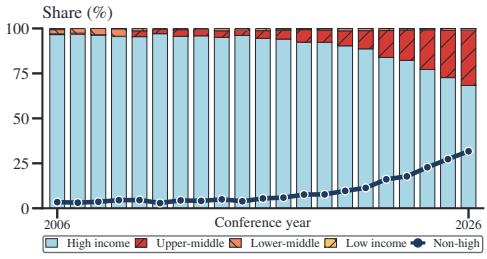
$109B
Private AI capital in 2024

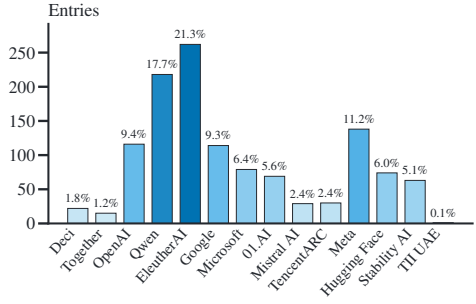
98%
AI capital held by 20 countries

Compute capacity and private AI investment show how frontier AI remains concentrated where infrastructure and capital have already accumulated.

[1] Ahmed & Wahed, 2020. [6] Maslej et al., 2025. [10] TOP500, 2025. [11] World Bank / Our World in Data, 2024.

Research Inequity (Open, But Inaccessible)

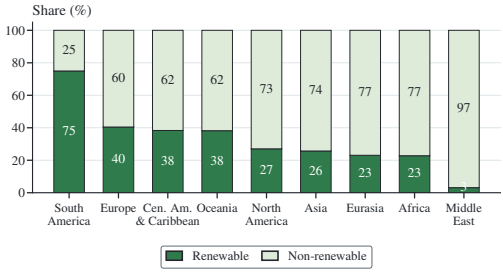


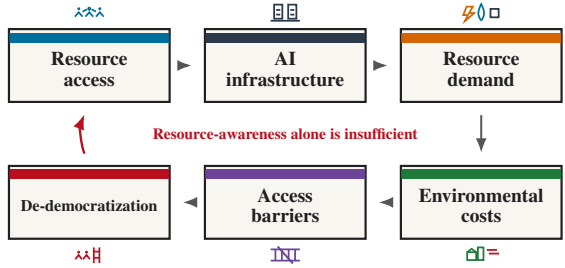


Resource demand shapes who can publish and set the agenda; HIC affiliations dominate conference publications, while many open models are developed by corporations.

[1] Ahmed & Wahed, 2020. [7] Moutawwakil & Pierrard, 2023. [11] World Bank / Our World in Data, 2024.

Conflicting Goals

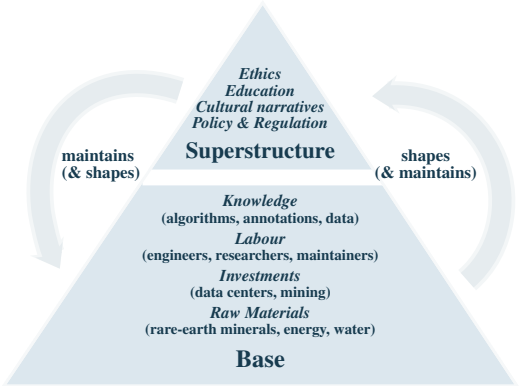


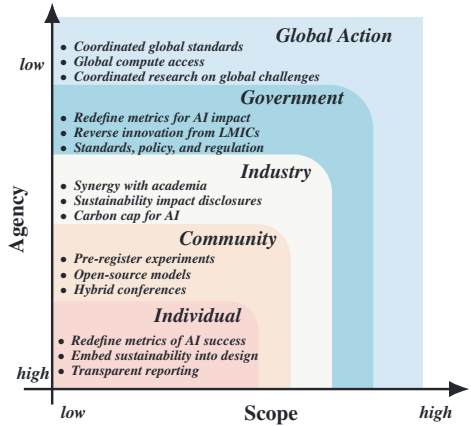


Broader access can increase material and energy demands, while climate constraints can restrict who gets access. Sustainable AI has to reconcile both.

[4] Luccioni, Strubell & Crawford, 2025. [5] International Renewable Energy Agency, 2024.

Base-Superstructure Dynamics & Call To Action





AI's material base shapes its policy, culture, and narratives; CARAML translates this relation into coordinated action across levels.

Open Question

What DO YOU think will be the main risk in future AI developments?

Feel free to reach out and share your thoughts.

Read more in our position paper and poster.

Presented on Thursday, Jul 9, 2026 at 5:00 PM – 6:45 PM KST, Coex: Hall A

References

[1] Ahmed, N., & Wahed, M. (2020). The De-democratization of AI: Deep Learning and the Compute Divide in Artificial Intelligence Research. arXiv preprint arXiv:2010.15581.

[2] Van Wynsberghe, A. (2021). Sustainable AI: AI for sustainability and the sustainability of AI. AI and Ethics, 1(3), 213-218.

[3] Wright, D., Igel, C., Samuel, G., & Selvan, R. (2025). Efficiency Is Not Enough: A Critical Perspective on Environmentally Sustainable AI. Communications of the ACM, 68(7), 62-69.

[4] Luccioni, A. S., Strubell, E., & Crawford, K. (2025, June). From efficiency gains to rebound effects: The problem of jevons' paradox in AI's polarized environmental debate. In Proceedings of the 2025 ACM conference on fairness, accountability, and transparency (pp. 76-88).*FAccT*.

[5] International Renewable Energy Agency (IRENA). (2024). *Renewable energy statistics 2024*.

[6] Maslej, N., Fattorini, L., Perrault, R., Gil, Y., Parli, V., Kariuki, N., ... Oak, S. (2025). Artificial intelligence index report 2025. arXiv preprint arXiv:2504.07139.

[7] Moutawwakil, I., & Pierrard, R. (2023). *LLM-Perf Leaderboard (A10-24GB-150W)*. Hugging Face.

[8] Crawford, K. (2021). *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press.

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[10] TOP500. (2025). *66th TOP500 list*. TOP500.org.

[11] World Bank, processed by Our World in Data Grapher. (2024). *World Bank Income Groups*.