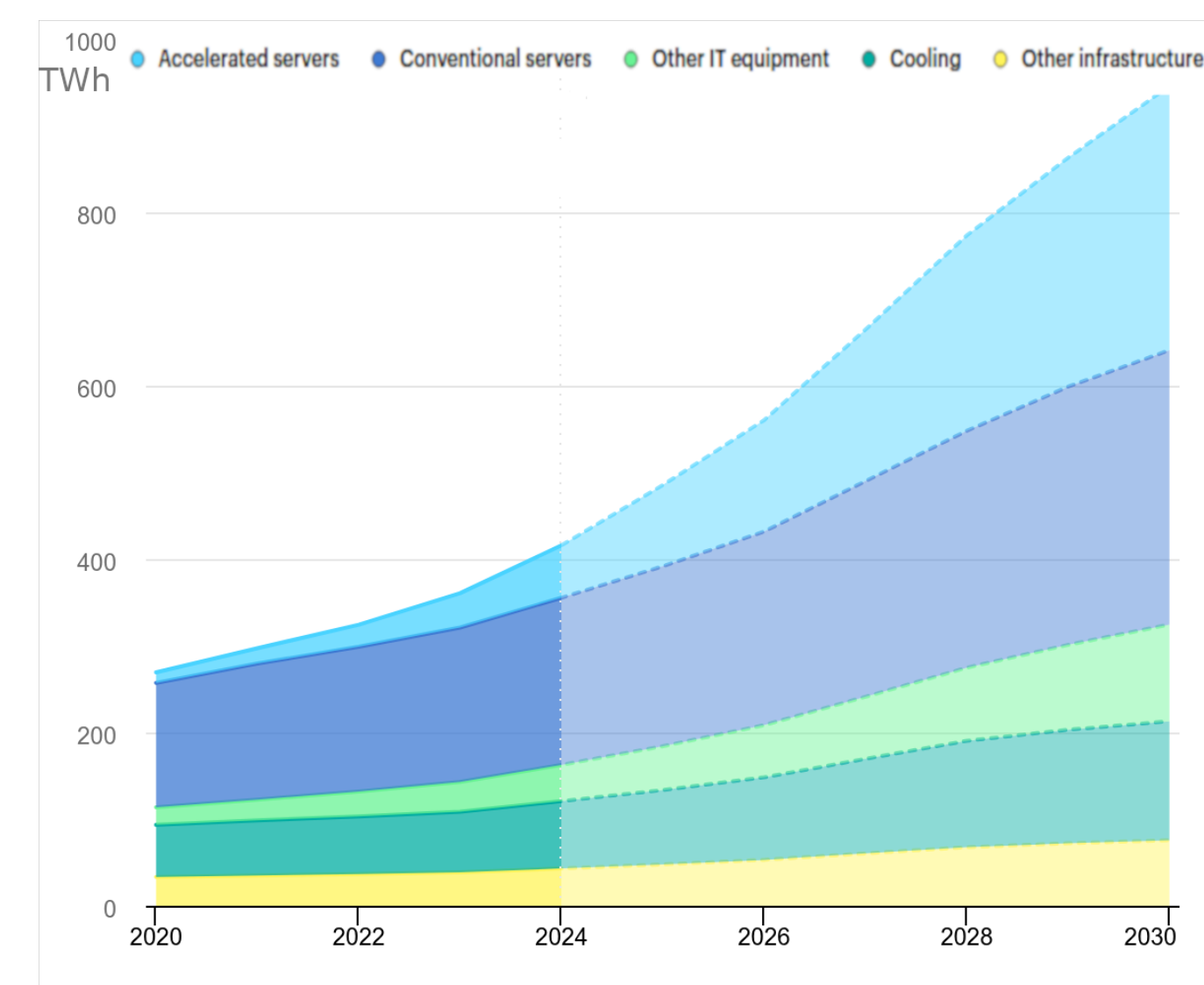
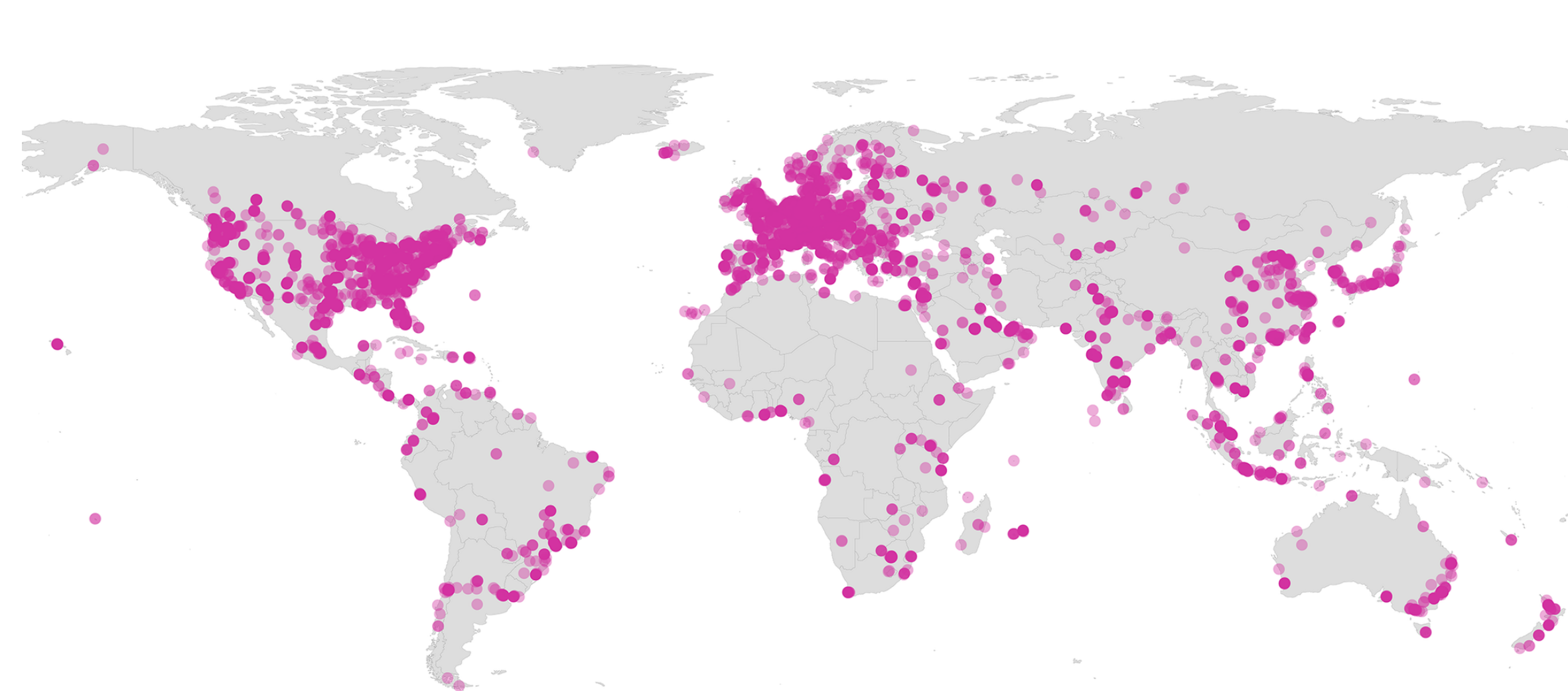


arm From Words to Watts: The Hidden Cost of AI

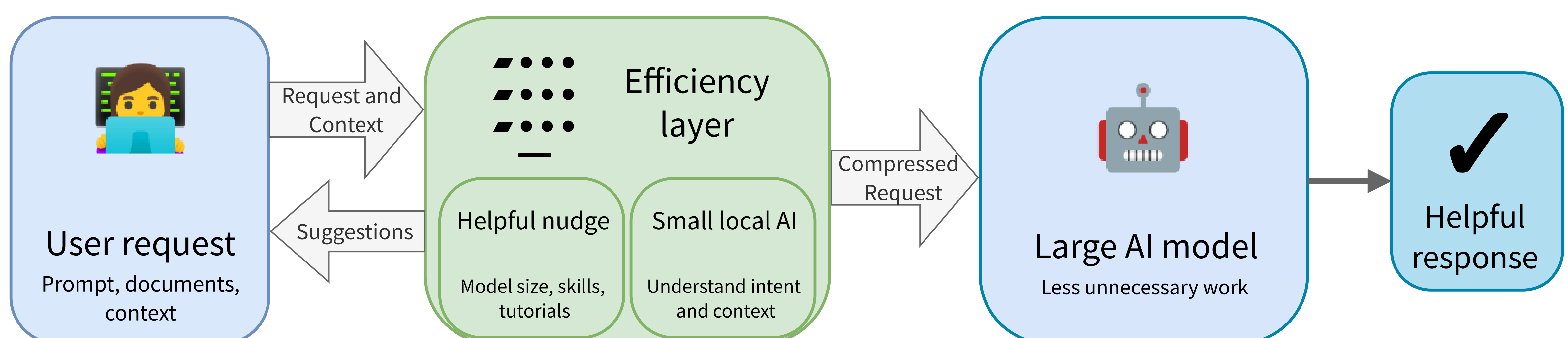
Eashan Wadhwa, Evie Wright, Monisha Manjunath, Máté Stodulka

Problem Statement



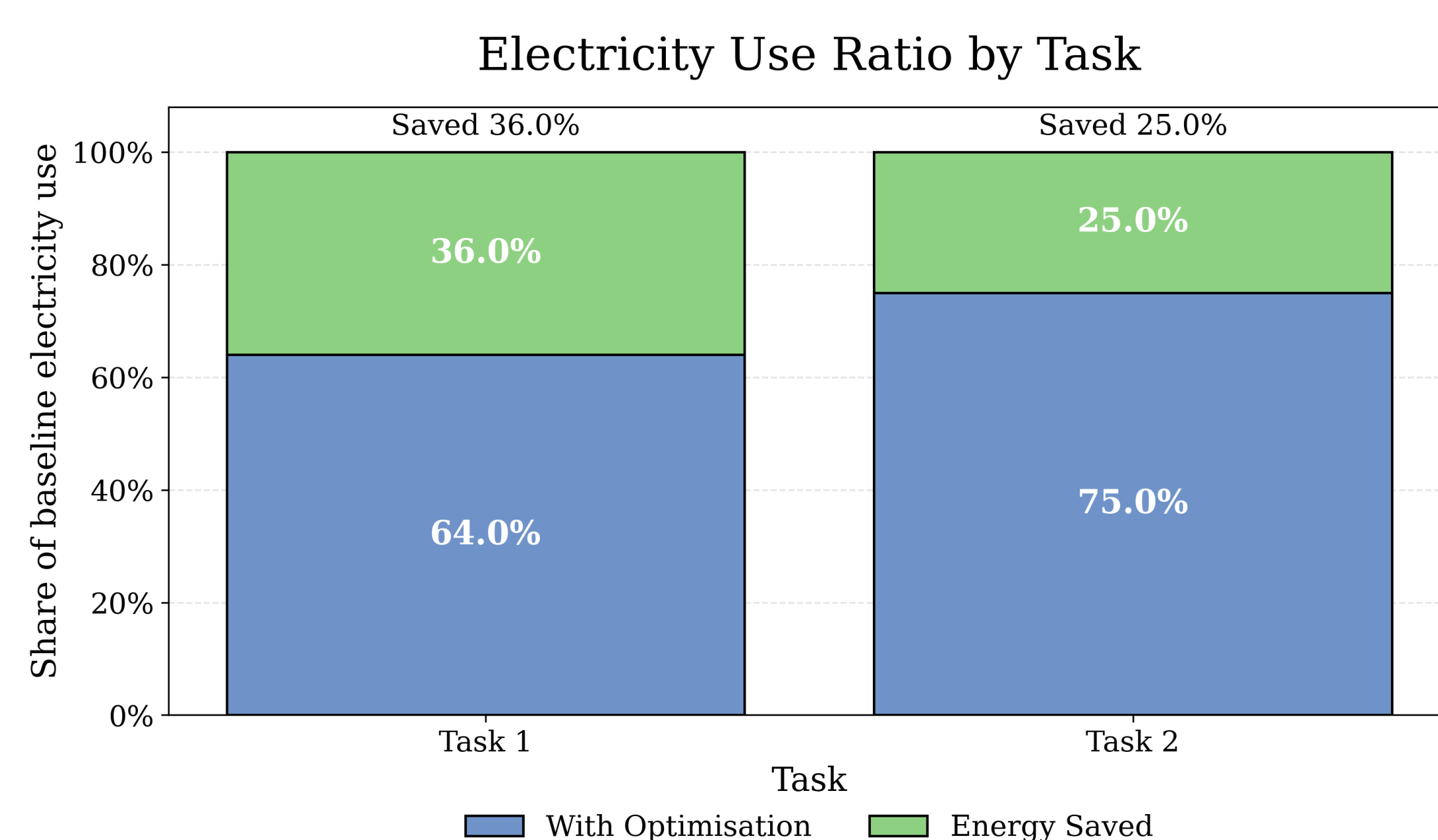
- Rapid growth of AI is increasing demand on data-centres, in regions where grid capacity and local ecosystems are already under pressure. Source: [1]
- Rising electricity use makes model efficiency a climate, infrastructure, and access challenge rather than just a compute-cost problem. Source: [2]

Our Solution

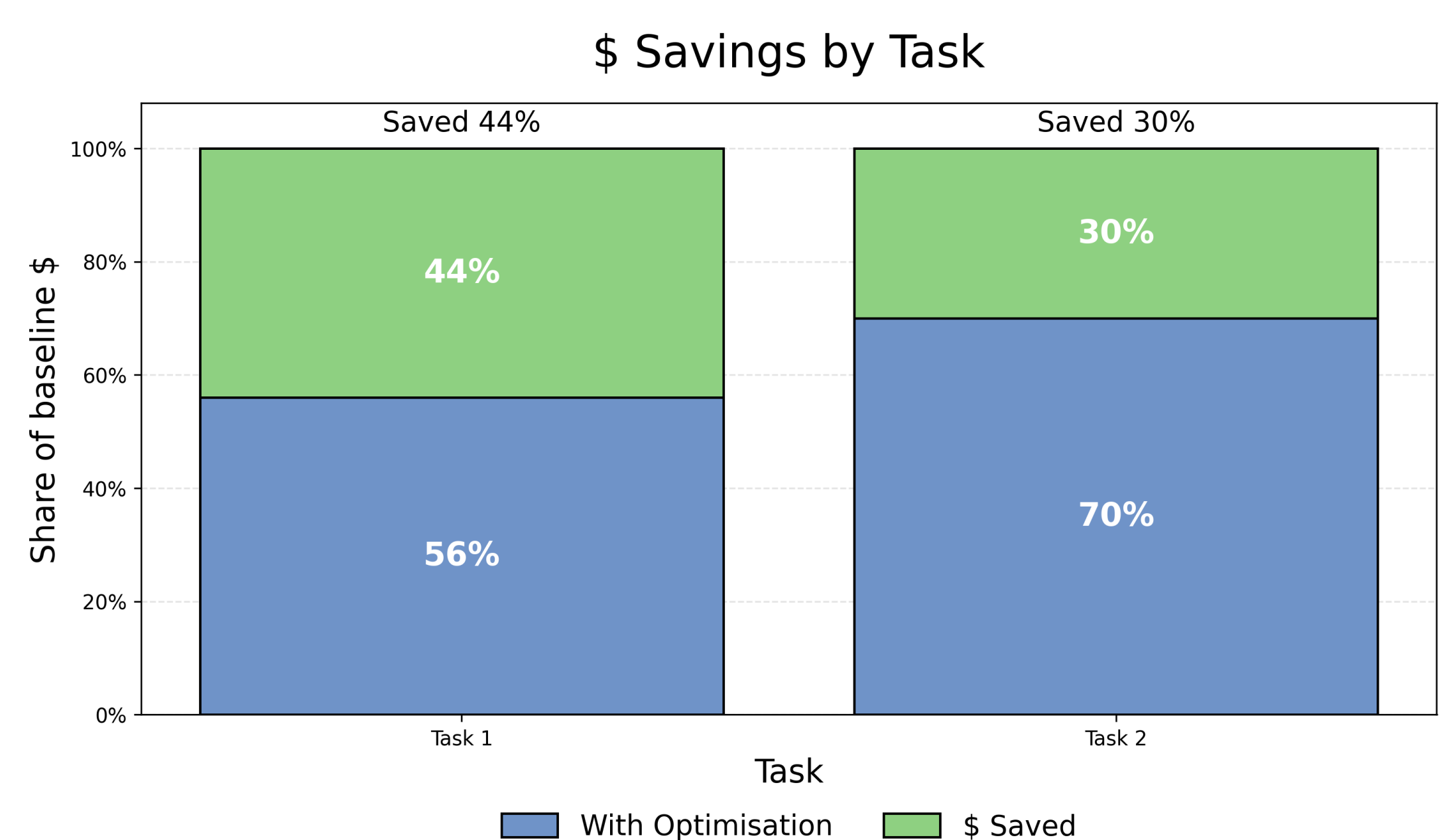


- Track prompt-level energy signals so users can compare responses by usefulness per watt.
- Surface lightweight recommendations that reduce token waste without sacrificing answer quality.

Results



Efficiency-aware usage can lower energy consumption across AI workflows. Source: [3]



Efficiency-aware usage leads to lower operating costs of AI

Sustainable Development Goals



References

- [1] Hazel Gandhi and Rina Chandran. We mapped the world's hottest data centers. Rest of World, December 2025. Available at <https://restofworld.org/2025/data-center-heat-map/>.
- [2] International Energy Agency. Energy demand from ai. Energy and AI, IEA, Paris, 2025. Available at <https://www.iea.org/reports/energy-and-ai/energy-demand-from-ai>.
- [3] Chenxu Niu, Wei Zhang, Jie Li, Yongjian Zhao, Tongyang Wang, Xi Wang, and Yong Chen. Tokenpowerbench: Benchmarking the power consumption of llm inference, 2025.