Provocation Proposal for HCI-TERRA: HCI Towards EnviRonmentally Responsible AI

More Memes, Less Metrics

Satire as Socio-Technical Infrastructure for Environmentally Responsible AI

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ABSTRACT

The sweeping large-scale expansion and rate of adoption of AI have put large pressure on the finite resources we are running on. Current communication design remains abstract, individualised and framed around inevitability, placing a heavy burden on a collective with little power to act. This essay poses provocative open questions on using memes as a complementary tool for sensemaking, emotional regulation, and political critique, to build participatory awareness beyond what dashboards and metrics alone can achieve. Yet memes are not a complete solution. The essay raises the question of what comes after the meme, how the moment of recognition connects to something actionable and collective and whether memetic critique destabilises power or normalises it. We bring these tensions to the workshop as open questions for the community to work through together.

INTRODUCTION

As awareness of AI's environmental costs grows, sustainability often focus on measurement. Dashboards display energy use, and carbon accounting tools quantify emissions, promising greener systems through optimisation. By turning environmental impact into numbers, these tools make harm visible however abstraction can limit impact.

Environmental harm presented as metrics feels distant from everyday experience. Developers may see a carbon footprint but lack influence over the infrastructure that generates it, making sustainability feel like an individual burden. Simultaneously, AI development is framed as inevitable, reinforcing the sense that expansion cannot be questioned.

If sustainable AI requires more than optimisation, then it requires new ways of seeing and talking about harm. We argue that memes offer one kind of possibility. Memes can transform abstract environmental impacts into stories people recognise and relate to. They invite shared reflection and an open space for critique within AI communities. It is important to understand that memes do not replace dashboards or metrics but rather complement them. They simply shift sustainability from a technical task to a collective social conversation.

PROBLEM

The current approaches to AI sustainability often struggle to generate meaningful engagement; one key reason is abstraction. The language of 'the cloud' presents computing as weightless and obscures the physical infrastructure that holds an AI system. These systems depend on data centres that consume high amounts of energy and mineral resources [1].

A second limitation is individualisation. A large majority of eco-feedback tools focus on communicating personal carbon footprints to developers and users [2]. While these approaches may raise awareness, they can risk shifting the responsibility onto individuals without addressing the political and infrastructural forces that shape AI development. When such responsibility is individualised but the power to decide remains to be centralised, engagement may give way to resignation.

Finally, AI is often framed as inevitable. It is positioned as important for innovation and technological progress [3]. This framing limits discussions regarding sustainability to improve efficiency, instead of questioning how much AI we build or why we build it. If the expansion of AI is seen as unavoidable, the topic of sustainability is centered around managing growth rather than deciding whether that growth should occur at all.

Abstraction, individualisation and inevitability fundamentally shape how AI's environmental impacts are understood and acted upon. They hide the physical realities behind AI systems and place responsibility on individuals without changing who hold power and makes it harder to question the system. For this reason, we need different ways of communicating AI's environmental harms that will make it easier to see, talk about, and act together.

THE PROVOCATION

Memes as sensemaking devices

The environmental impacts of AI systems are infrastructural and largely invisible to end users. The term 'the cloud' makes computing seem weightless, which hides the physical infrastructure behind it and makes environmental impacts harder to see and assign responsibility for [4]. Although dashboards and carbon tools show environmental data, they depend on users being able and willing to interpret complex numbers [5].

We argue that memes function as alternative sensemaking infrastructures. Memes transform complex socio-technical systems into simple, recognisable images that circulate quickly through communities. Through the use of humour and exaggeration, they make abstract environmental harm easier to understand. An example is a meme that may show a cheerful chatbot floating in a soft white cloud, only to reveal the cloud is a coal power plant. This challenges the idea that AI is immaterial and reminds viewers that it depends on physical infrastructure. Another meme may show a popular "upgrade" sign where each new AI model is labelled as 'faster, bigger and smarter' while a side panel lists 'more water, more energy, more extraction'. These images may not provide precise data, but they give people a way to grasp the environmental impact of AI in everyday use.

Memes help people make sense of complex systems. They permit communities to understand AI's infrastructure without needing technical knowledge [6]. Rather than asking individuals to interpret abstract metrics, memes make AI's environmental impact visible in ways that invite conversation and reflection.

Memes as emotional regulators

AI sustainability is viewed as an emotional issue in addition to a technical issue. Developers and researchers may feel responsibility for environmental harm but occupy power to make a difference to large systems. This can result in frustration or paralysis as opposed to action. Dashboards and carbon metrics may unintentionally instill guilt in individuals by turning systemic problems into individual scores [5].

Memes have different effects. Irony and humour permit people to recognise these tensions without feeling overwhelmed. For example, a meme that depicts 'green AI' while showing models growing out of control can exemplify the contradiction in a way that feels accessible compared to accusatory. This recognition helps people to view their concerns as collective tensions within the field. Importantly, humour does not make the problem less serious but makes it easier to process. As dashboards assign responsibility through numbers, memes allow people to express frustration and doubt in similar ways. A meme about "just one more training run" can expose the competitive pressures behind AI research, changing individual stress into an open discussion.

In this way, memes reduce shame, create a sense of shared experience, and form an open space for critique that may feel uncomfortable or risky. Sustainable AI depends not only on awareness but also on collective engagement, and memes can help to support both [6].

Memes as political tools

Memes serve as a political tool that can spark discussion around environmental issues, disrupting inevitability narratives — mocking companies that greenwash or highlighting the hypocrisy of AI-driven climate solutions. In this sense, memes can expose superficial sustainability claims, undermine public relations narratives, and make hypocrisy visible at scale [10].

Yet visibility alone does not necessarily translate into structural accountability. A meme may expose a contradiction, generate widespread engagement, and still leave the underlying problems untackled. The nature of critique, when delivered through satire, is its virality and humorous tone, which increases awareness but also risks making it passive and incorporated as a sign of reflexivity rather than a call for structural change [7]. This raises an important question: does memetic critique destabilise power, or normalise it?

Memes as participatory artefacts

Memes are participatory artefacts; they require users to remix, share across contexts, and circulate rapidly as part of ongoing conversations that sustain and reproduce the cultural rules that enable further participation [10]. As AI sustainability is often controlled by big corporations, data centre infrastructure owners, or policy regulators, memes lower the barrier to participation, widen engagement, and facilitate visibility, awareness, and collective recognition. The nature of the meme creates a space that requires no formal authority to participate, supports collective authorship, and democratises sustainability discourse in ways that expert-led tools structurally cannot [6]. A community contesting a data centre development does not need access to emissions of data, lifecycle assessments, or technical legitimacy to produce and circulate memetic critique. This matters because the communities most materially affected by AI infrastructure are often the least represented in formal sustainability discourse [8].

However, participation in discourse is not participation in decision-making. This is where the participatory promise of memes meets its structural limit. Memes do not solve the awareness-action gap; they make participation more enjoyable. It is crucial to ask not just how to make awareness more engaging, but what connects awareness to organised political activity capable of structural change.

IMPLEMENTATION

Design for stakeholder alignment, not just user awareness

In medtech, a product moves from prototype to market when it serves multiple stakeholders simultaneously — patients, clinicians, and commercial actors all have reasons to adopt it. The idea alone is never enough. Execution, funding, and a clear route to the people who need it determine whether an intervention ever leaves the research stage. Memetic sustainability awareness lacks an equivalent alignment of incentives, and, to our knowledge, there is limited documented evidence that memetic AI sustainability tools produce measurable impact beyond academic and activist communities [9]. HCI should ask not just how to design better memes, but what conditions would need to be true for the organisations with the most power and resources to have a genuine stake in their circulation. This is uncomfortable because it risks co-option; a company that profits from being seen to engage with its own environmental critique is not the same as a company being held accountable for it. Without stakeholder alignment, memetic critique remains structurally dependent on the goodwill of the very actors it is designed to challenge, and goodwill is not a funding model.

Acknowledge the economic privilege of caring

Acknowledging the economic privilege: the communities bearing the material costs of AI infrastructure, water withdrawal, grid strain, and displaced resource access are not the same communities with the economic bandwidth to fund awareness tools [8]. In a context where the cost-of-living shapes what problems feel reachable, AI sustainability activism risks being structurally positioned as a concern of the relatively comfortable. Awareness tools designed within academic and activist circles, funded by research grants, and distributed through platforms that require reliable internet access and digital literacy, reproduce this exclusion even when they intend to challenge it [7].

This is not a dismissal of the community work already happening; the workshop's own engagement with frontline communities in Latin America represents a genuine effort to centre those most affected. Yet there remains a productive tension worth mentioning: between researching communities bearing the costs and building tools with and for those

communities under the economic conditions they actually inhabit. Design alone may not resolve this tension, but HCI can begin by questioning whether its participatory tools are being evaluated against an ideal user, one with time, connectivity, and the economic stability to care about problems that feel distant and asking what a sustainability awareness tool designed from within economic constraint, rather than distributed toward it, might look like.

Design the moment after the meme

Consider a common encounter with an AI sustainability meme: a contradiction is made visible, recognition lands briefly, and then the scroll continues. No next step. No felt connection between what was just seen and anything actionable. The awareness arrives and immediately dissipates.

This is not a motivation failure. It is a design failure, and it is one that digital health spent decades learning about the hard way. Behaviour change tools consistently fail when they are designed around the ideal, motivated user rather than the actual, distracted one [11, 5]. The person who stops scrolling because a meme moved them is already more engaged than most. The intervention was never really designed for anyone else. HCI's meme-based sustainability tools are making the same mistake: they are optimised for recognition and sharing, not for what happens in the moment after, the frictionless next step that connects individual awareness to something tangible and collective. What does that moment look like? For most people encountering these memes right now, it is not designed at all. It is just the next post.

DISCUSSION QUESTIONS

1. Does memetic critique destabilise power or normalise it — and how would we know the difference?
2. What would the "moment after the meme" look like in practice, and who is responsible for designing it?
3. What conditions would need to be true for organisations with the most power to have a genuine stake in memetic sustainability critique?

REFERENCES

[1] Unveiling the hidden sustainability costs of artificial intelligence and data centres. *ScienceDirect*, 2025 (AI energy and carbon footprint growth)

[2] Beyond Efficiency: A Systematic Review of Energy Consumption and Carbon Footprint Across the AI Lifecycle. *Sustainability*, 2025 (eco-feedback focus and limitations)

[3] Ethics of artificial intelligence. Wikipedia (summary of AI energy and ethical issues)

[4] T. H. Davenport and R. Ronanki, "Artificial intelligence for the real world," *Harvard Business Review*, vol. 96, no. 1, pp. 108–116, Jan.–Feb. 2018.

[5] E. Froehlich et al., "Energy footprints: combining performance feedback with motivational interventions," *Proc. CHI*, pp. 151–160, 2010.

[6] D. Shifman, *Memes in Digital Culture*, MIT Press, 2013.

[7] Michael Johann, Lukas Höhnle, and Jana Dombrowski. 2023. Fridays for Future and Mondays for Memes: How Climate Crisis Memes Mobilize Social Media Users. *Media and Communication* 11, 3 (May 2023). DOI:https://doi.org/10.17645/mac.v11i3.6658

[8] KATE CRAWFORD. 2021. The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence. *Yale University Press* (April 2021), 1–21. DOI:https://doi.org/10.2307/j.ctv1ghv45t

[9] Tomasz Hollanke and Indira Ganesh. 2024. Easy Wins and Low Hanging Fruit. Blueprints, Toolkits, and Playbooks to Advance Diversity and Inclusion in AI. (2024). DOI:https://doi.org/10.17863/CAM.113869

[10] Bradley E Wiggins and G Bret Bowers. 2014. Memes as genre: A structurational analysis of the memescape. *New Media & Society* 17, 11 (May 2014),

[11] Richard H. Thaler and Cass R. Sunstein. 2008. *Nudge : Improving decisions about health, wealth and happiness*. Penguin, London.