Environment, internet infrastructure, and digital rights

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The open call of the IAB workshop on Environmental Impact of Internet Applications and Systems opens with the statement: internet communications and applications have both environmental costs and benefits. In discussions on the intersection between the environment and the internet benefits are often conceptualized in relation to how it can support carbon reduction in other sectors; for example the role technology plays in the reduction of carbon emissions domains such as transportation, building, manufacturing, agriculture, and energy (Pargman et al. 2020; Rasoldier et al. 2022).

Research on the cost often relates to the environmental impact of internet infrastructure. Ranging from energy consumption and carbon emissions of AI models (Hao 2019; Bender et al. 2021) and streaming services (Makonin et al. 2022), and the estimation of water needs to run data centers (Siddik, Shehabi, and Marston 2021). Another strand of research engages with quantifying the environmental impact in the manufacturing process of end-user devices and internet infrastructures (Williams 2004).

These two approaches give insight into the scale and complexity of understanding and working at the intersection of the internet and the environment. Yet, they also reveal the increased interest in finding solutions to the climate crisis we are all confronted with. As such, we, a loose network of digital rights funders and advocates, believe that there is momentum to work towards climate-neutral or climate-supportive infrastructures.

This loose network of digital rights funders and advocates started the exploration of how to centre the environmental impact of internet infrastructures in our work through a research project. This research highlighted a number of intersections, from the environmental toll of digital infrastructures, increased surveillance of environmental activists and land defenders, to governance as a vehicle for change.

In early October we convened a mix of philanthropic funders, public interest technologies, civil society organizations, policymakers, grassroots organizers, and representatives of indigenous communities to deepen this research on climate justice and digital rights. We explored four topics, advocacy and campaigning, standards and

governance, climate misinformation, and open practices, and began to determine the next steps and impactful shared actions.

Keller Easterling's (2014) observation that changes to the globalising world are no longer being written in the language of law and diplomacy but in the language of infrastructure requires us connect to other communities. It is imperative that these civil society policy discussions do not run in parallel but in connection with the technical community. As it is in the materiality of the internet; its protocols and its architecture that the environmental cost can be reduced.

Therefore, we are interested in listening to the conversation of the IAB community: how are these issues framed, what are the opportunities and challenges the community is confronted with as they navigate this challenging landscape, and see where connections can be made.

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References

Bender, Emily M., Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell. 2021. "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?." In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610–23. Virtual Event Canada: ACM. https://doi.org/10.1145/3442188.3445922.

Easterling, Keller. 2014. *Extrastatecraft: The Power of Infrastructure Space*. London: Verso Books.

Hao, Karen. 2019. "Training a Single AI Model Can Emit as Much Carbon as Five Cars in Their Lifetimes." *MIT Technology Review*. June 6, 2019. https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/.

Makonin, Stephen, Laura U Marks, Radek Przedpełski, Alejandro Rodriguez-Silva, and Ramy ElMallah. 2022. "Calculating the Carbon Footprint of Streaming Media: Beyond the Myth of Efficiency." 8th Workshop on Computing within Limits, 2022, June 21. https://doi.org/10.21428/bf6fb269.7625cc76

Pargman, Daniel, Aksel Biørn-Hansen, Elina Eriksson, Jarmo Laaksolahti, and Markus Robèrt. 2020. "From Moore's Law to the Carbon Law." In *Proceedings of the 7th International Conference on ICT for Sustainability, 285–93*. ICT4S2020. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3401335.3401825.

Rasoldier, Aina, Jacques Combaz, Alain Girault, Kevin Marquet, and Sophie Quinton. 2022. "How Realistic Are Claims about the Benefits of Using Digital Technologies for GHG Emissions Mitigation?" 14. In *8th Workshop on Computing within Limits*, 2022, June 21. https://doi.org/10.21428/bf6fb269.6d7bd21b

Siddik, Md Abu Bakar, Arman Shehabi, and Landon Marston. 2021. "The Environmental Footprint of Data Centers in the United States." *Environmental Research Letters* 16 (6): 064017. https://doi.org/10.1088/1748-9326/abfba1.

Williams, Eric D. 2004. "Environmental Impacts of Microchip Manufacture: Thin Solid Films," *Proceedings of Symposium on Semiconducting Silicides: Science and Future Technology of the 8th IUMRS International Conference on Advanced Materials*, 461 (1): 2–6. https://doi.org/10.1016/j.tsf.2004.02.049.