

Balancing Global Majority AI Ambitions with Environmental Considerations

by Chinasa T. Okolo

Technecultura

Keywords: AI Policy, Sustainable Development Goals, Artificial Intelligence, Environmental Impact

Introduction

The promise of artificial intelligence as a developmental accelerator for Global Majority countries has captured considerable attention in policy circles, with proponents suggesting these technologies could help nations "fast-track" progress toward the Sustainable Development Goals. Yet this optimistic narrative obscures a more complex reality where AI's transformative potential intersects with significant risks already manifesting globally, with notable impacts in Global Majority countries. From exploitative labor practices in data annotation to algorithmic bias that deepens existing inequalities, communities worldwide are confronting the uneven distribution of AI's benefits and harms.

The Environmental Burden of Digital Progress

The ecological footprint of AI development presents one of the most pressing yet underexamined challenges in this landscape. The computational infrastructure underlying modern AI systems demands enormous quantities of natural resources, particularly energy and water for cooling data centers, training large language models, and supporting inference operations. Recent research from UC Riverside and UT Arlington projects that global AI demand could require between 4.2 and 6.6

billion cubic meters of water withdrawal by 2027, which is equivalent to four to six times Denmark's total annual water consumption [1]. While initiatives like the AI Energy Score, a collaborative framework led by Hugging Face and Salesforce, attempt to standardize energy efficiency metrics across AI models, a comprehensive assessment of the environmental impacts of AI systems remains elusive [2]. While insightful, many efforts to measure the natural resource and energy consumption of AI models represent conservative estimates. These efforts are constrained by the opacity that characterizes much of the AI industry's environmental reporting, given the lack of transparency provided by tech companies and other large model developers on the data, computing architecture, and other factors used to train AI systems. Overall, this lack of transparency creates particular challenges for measuring and mitigating AI's environmental impact. However, research on the environmental impact of AI represents a crucial step toward accountability, offering researchers and developers tools to compare energy consumption across different AI architectures and consumers with awareness of how their AI usage consumes precious resources. For Global Majority countries facing electricity limitations and constrained cloud computing infrastructure, such benchmarking



tools could prove especially valuable in optimizing AI workflows within existing resource constraints.

Climate Change and Algorithmic Harm

The environmental costs of AI development compound existing climate vulnerabilities that disproportionately affect Global Majority communities [3]. These populations face heightened exposure to climate-induced extreme weather events, which generate cascading effects including resource conflicts, food insecurity, and forced displacement. The rapid expansion of AI development and increasing investments in AI infrastructure to support AI scaling threaten to intensify these challenges while simultaneously introducing new forms of harm through biased algorithms, discriminatory decision-making systems, and the proliferation of misinformation [4]. The underrepresentation of Global Majority communities in AI training datasets exacerbates these risks [5]. When AI systems are deployed in contexts without being trained on relevant cultural, linguistic, or contextual data, they often perpetuate or amplify existing inequalities. This dynamic is particularly problematic in automated content moderation systems, where the absence of multilingual and culturally nuanced training data can lead to the systematic marginalization of non-English speaking communities [6]. As governments and organizations increasingly turn to automated solutions, and in some cases, abandon human fact-checking for content governance, the risk of scaling these biases across entire information ecosystems becomes acute [7]. These intersecting vulnerabilities underscore the need to adequately address climate change,

necessitating that governments acknowledge the unique challenges faced by Global Majority communities and implement policies that prioritize their specific needs and perspectives. This includes providing financial and technical assistance to help them adapt to climate change, supporting their efforts to develop and adopt sustainable technologies, and addressing the systemic inequalities that exacerbate communities' vulnerability to climate-related impacts.

Bridging Climate Policy and AI Regulation

Despite the interconnected nature of climate and AI challenges, policy frameworks have struggled to comprehensively address their intersection. One hundred ninety-eight countries participate in the United Nations Framework Convention on Climate Change [8], and 196 countries, territories, and multilateral bodies (including the European Union) have drafted or enacted climate legislation, according to the Climate Change Laws of the World database [9]. However, the Climate Action Tracker, an independent scientific project tracking government climate action against goals outlined in the Paris Agreement, indicates that no individual country has enacted policies or made commitments consistent with the Paris Agreement's goal of limiting global warming to 1.5 degrees [10]. This governance gap becomes more pronounced when considering AI's climate impact, which remains largely absent from existing regulatory frameworks. Paradoxically, Global Majority countries demonstrate some of the strongest climate leadership within current international frameworks. Nine of the ten countries rated "Almost Sufficient" by the

Climate Action Tracker—Bhutan, Chile, Costa Rica, Ethiopia, the Gambia, Kenya, Morocco, Nepal, and Nigeria—are in the Global Majority. While there is still much progress to be made towards global climate action, the Climate Action Tracker identifies notable data gaps across Africa, the Caribbean, Central Asia, and Oceania. Nevertheless, Global Majority communities have already demonstrated strong leadership in developing local climate solutions [11]. This leadership suggests significant potential for developing climate-conscious AI solutions that prioritize smaller models optimized for limited internet connectivity, small datasets, and the high mobile penetration rate across these regions.

Balancing Development Imperatives with Responsible AI Innovation

Sufficiently addressing climate concerns related to AI should be a priority for all governments worldwide. However, the tension between development aspirations, climate considerations, and responsible AI deployment creates complex policy challenges for Global Majority governments. Many of these nations prioritize AI adoption as a solution to persistent socioeconomic development problems, which could lead to insufficient attention on longer-term risks and unintended consequences. While a vast number of AI solutions have shown promise in helping to address problems such as flood forecasting [12], humanitarian aid distribution [13], conservation [14], and poverty mapping, many AI tools are being rapidly adopted for more sensitive domains such as asylum application processing [15], refugee management [16], and public surveillance [17]. This nearsighted focus

on AI adoption and rush to implement AI solutions without adequate safeguards risks not only wasting limited resources on ineffective technologies but also causing substantial harm to vulnerable populations. This pattern reflects what scholars have termed "technosolutionism," the tendency to view complex social problems as amenable to technological fixes without addressing underlying structural inequalities, an issue that has been increasingly present in efforts focused on sustainable development [18].

Pathways Towards Robust Climate and AI Governance

Addressing these interconnected challenges requires approaches that center local expertise and context-specific research. The predominant focus of AI fairness, labor implications, and climate impact research on Western, high-income countries creates knowledge gaps that leave Global Majority nations without adequate frameworks for understanding and mitigating risks within their specific contexts. Developing regional research capacity across the Global Majority and supporting locally-led investigations into AI's climate and sociotechnical impacts represents a crucial step toward more robust, equitable, and effective governance. The path forward requires recognizing that climate action and responsible AI development are not competing priorities but interconnected challenges that demand integrated solutions. By leveraging local expertise, supporting context-relevant research, and prioritizing community needs in technology design, countries in the Global Majority can contribute to both climate mitigation and equitable AI governance. This approach offers

the potential to transform constraints into innovations, creating AI systems that serve developmental goals and environmental sustainability while respecting the rights and dignity of all communities.

References

- [1] P. Li, et al. Making AI Less 'Thirsty': Uncovering and Addressing the Secret Water Footprint of AI Models. *Commun. ACM* 68, 7, July 2025, 54–61. <https://doi.org/10.1145/3724499>.
- [2] AI Energy Score. Accessed: Jun. 19, 2025. [Online]. Available: <https://huggingface.co/AIEnergyScore>
- [3] B.S. Levy and J. A. Patz. "Climate change, human rights, and social justice." *Annals of global health* 81.3 (2015): 310-322.
- [4] C. T. Okolo. "African democracy in the era of generative disinformation: Challenges and countermeasures against AI-generated propaganda." arXiv preprint arXiv:2407.07695, 2024.
- [5] "International AI Safety Report." Accessed: Jun. 18, 2025. [Online]. Available: <https://www.gov.uk/government/publications/international-ai-safety-report-2025/international-ai-safety-report-2025>
- [6] M. Elswah, "Moderating Maghrebi Arabic Content on Social Media," Center for Democracy and Technology. Accessed: Jun. 18, 2025. [Online]. Available: <https://cdt.org/insights/moderating-maghrebi-arabic-content-on-social-media/>
- [7] L. McMahon, Z. Kleinman & C. Subramanian, "Facebook and Instagram get rid of fact checkers," Accessed: Jun. 18, 2025. [Online]. Available: <https://www.bbc.com/news/articles/cly74mpy8klo>
- [8] United Nations Climate Change, "Parties to the United Nations Framework Convention on Climate Change." Accessed: Jun. 19, 2025. [Online]. Available: <https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states>
- [9] Climate Change Laws of the World. Accessed: Jun. 18, 2025. [Online]. Available: <https://climate-laws.org/?q=Climate+framework+laws&y=2024&y=2025>
- [10] Climate Action Tracker. Accessed: Jun. 19, 2025. [Online]. Available: <https://climateactiontracker.org/>
- [11] UNDP, "The Global South have mastered locally led climate adaptation solutions. It's time to scale them up." Accessed: Jun. 18, 2025. [Online]. Available: <https://www.adaptation-undp.org/global-south-have-mastered-locally-led-climate-adaptation-solutions-its-time-scale-them>
- [12] G. Nearing, et al. "Global prediction of extreme floods in ungauged watersheds." *Nature* 627.8004 (2024): 559-563.
- [13] E. Aiken, et al. "Machine learning and phone data can improve targeting of humanitarian aid." *Nature* 603.7903, 2022: 864-870.
- [14] L. Xu, et al. "Stay ahead of Poachers: Illegal wildlife poaching prediction and patrol planning under uncertainty with field test evaluations." 2020 IEEE 36th international conference on data engineering (ICDE). IEEE, 2020.
- [15] M. Forster. "Refugee protection in the artificial intelligence era," Chatham House. Accessed: Jun. 19, 2025. [Online]. Available: <https://www.chathamhouse.org/2022/09/refugee-protection-artificial-intelligence-era>
- [16] S. Abboud. "Artificial Humanitarianism—The Data-Driven Future of Refugee Responses," MERIP. Accessed: Jun. 19, 2025. [Online]. Available: <https://merip.org/2025/01/artificial-humanitarianism>
- [17] K. Hao and H. Swart. South Africa's private surveillance machine is fueling a digital apartheid. Accessed: Jun. 19, 2025. [Online]. Available: <https://www.technologyreview.com/2022/04/19/1049996/south-africa-ai-surveillance-digital-apartheid/>
- [18] H.S. Sætra. "Technology and sustainable development: The promise and pitfalls of techno-solutionism." Taylor & Francis, 2023.