The Geopolitics of the Homo Digitalis

https://www.e-ir.info/2025/10/24/the-geopolitics-of-the-homo-digitalis/

AXEL BASTIáN POQUE GONZáLEZ, OCT 24 2025

In the age of Homo digitalis, screens are indispensable; without them, comprehension itself seems impossible. Immediacy defines this new species—patience and waiting have become obsolete. Information must be instantly accessible, as fresh and abundant as the foods once sought in local markets: cheese, fish, vegetables, fruits, and flowers. Yet freshness now applies less to nourishment than to data. What humanity craves is information more perishable than food, more vital than rest. Haste defines this era, and fatigue is its inevitable consequence (González González 2021). As Byung-Chul Han (2022) suggests in *Infocracy*, the digital condition cultivates a subtle *nihilism*: an age of information without truth, where immediacy replaces reflection.

Although it encourages us to consider (incorrectly) a world economy that is not reliant on material resources, with digital activity being akin to an ethereal realm, it is undeniably true that no economy can exist without energy and matter, as key figures in *ecological economics*, such as Georgescu-Roegen (1979), have stated. This perception of immateriality contradicts a fundamental thermodynamic reality. Therefore, despite digital efficiency, meeting the rising demand for digital devices in the age of *Homo digitalis* requires increasing amounts of energy and resources. Thus, understanding how digitalisation influences energy use is crucial in assessing whether it supports or challenges environmental sustainability, especially in the context of climate change (Lange et al. 2020).

Over the past two centuries, human societies have undergone an unprecedented transformation in their energy use. The industrial age of the 19^{th} and 20^{th} centuries, powered first by coal and later by oil and electricity, saw per capita energy use quadruple and total global demand rise roughly twentyfold. A fundamental change in both the type and intensity of energy use emerged with the large-scale extraction and combustion of fossil fuels (Ritchie et al. 2020; Smil 2010). This expansion reshaped not only economies and landscapes but also temporalities and social relations (Urry 2014). Today, as the digital era unfolds, the imperative of sustainability is inextricably linked to it. *Homo digitalis* inherits this energetic legacy: every click, stream, and computation depends on extensive infrastructures of extraction, generation, and data circulation (Lange et al. 2020). The dematerialised appearance of digital life thus conceals an intensified material and energetic metabolism—one that binds the virtual and the geological in a single planetary circuit.

Energy Demand in the Homo Digitalis Age

Global electricity demand is projected to increase at its fastest pace in more than a decade through 2026, with anticipated growth rates of 3.3% in 2025 and 3.7% in 2026. This expansion is primarily driven (among others) by the increasing energy requirements associated with cooling systems, data centres, and the rapid adoption of electric vehicles. Current forecasts exceed the average growth observed between 2015 and 2023, signalling a structural intensification of global electricity consumption. On the supply side, by 2025 or 2026, depending on climatic conditions and fluctuations in fuel prices, renewable energy sources are expected to surpass coal as the leading source of electricity generation worldwide. Concurrently, nuclear power generation is projected to reach record levels, while natural gas continues to displace coal and oil in numerous regions (IEA 2025).

Electricity thus stands as the principal driver of the digital era, deeply intertwined with global efforts to advance sustainability and mitigate the escalating climate and socio-ecological crises. However, the pace of fossil fuel substitution remains insufficient to avert the worsening planetary crisis, revealing a persistent gap between the ambition of decarbonisation and the realities of material transformation. To date, the global energy transition has not replaced fossil fuels in absolute terms; instead, renewables have been added to the existing mix to meet ever-growing demand (York and Bell 2019; Thompson 2023).

Paradoxically, *Homo digitalis* remains largely oblivious to the energy that fuels its hyperconnected life, activating its digital devices without perceiving the invisible material flows that make such immediacy possible. As if that were not enough, as Bibri and Allam (2022) state, digital societies are rapidly adopting various invasive technologies, which have both immediate and long-term effects related to *surveillance capitalism*, often resulting in collective disadvantages.

The energetic dependence of *Homo digitalis* thus transcends the individual sphere, revealing a broader geopolitical condition. Behind the apparent autonomy of digital life lies a vast geography of extraction, production, and technological control. Servers, satellites, chips, and batteries are not only technical artefacts but strategic nodes in a global struggle for energy and technological sovereignty. As the 21st century unfolds, power no longer resides solely in the possession of fossil resources but increasingly in the capacity to command renewable technologies, data infrastructures, and the critical minerals that sustain them. In this sense, the digital age reconfigures the old energy order, as it can intensify economic dependencies while redefining who holds the levers of power in a world still materially and energetically bound to the Earth.

Inequalities in the Energy Revolution and the Homo Digitalis Age

Historically, the development of electricity and electronics has undergone significant evolution, primarily since the 20th century. Most individuals aged between thirty and eighty years, residing in urban environments today, have observed the evolution of cities from the use of public telephones to the adoption of modern smartphones. All of this occurred over just a small portion of decades! From a long-term historical perspective, electricity has been widely utilised for barely a century and a half. In other words, for more than 99% of human history, life unfolded entirely without it—a reminder of how recent, and yet how profoundly transformative, electrification has been for our species (Smil 2018).

Today, as access to electricity remains marked by global inequalities, the digital era could advance unevenly, distributing economic gains and ecological burdens asymmetrically across regions and societies. In many parts of the Global South, reliable access to electricity remains a significant challenge. Across African countries, for instance, a strong correlation exists between per capita income and electricity access: nations with lower incomes typically reach only about 12% of their populations (Roser 2020).

Conversely, wealthier populations in industrialised nations are significantly more energy-intensive, generating higher emissions and contributing disproportionately to the global climate and socio-ecological crisis. As Roser (2020) notes, the average U.S. resident emits more carbon dioxide in five days than an average resident of countries such as Ethiopia, Uganda, or Malawi does in an entire year. These disparities underscore the ongoing importance of access to energy and technology as a key driver of global inequality. In this sense, the *Homo digitalis* era could inherit and amplify the uneven geographies of electrification, where the capacity to participate in the digital world depends fundamentally on unequal material foundations.

The New Geopolitical Metabolism

2025 has marked a pivotal phase in global disputes over the development and deployment of technology. Artificial Intelligence exemplifies how the rivalry between the People's Republic of China and the United States has transcended purely technical domains, extending into broader geopolitical struggles over the control of critical minerals and the governance of their global supply chains.

As documented by the Council on Foreign Relations (2025), two months into his second term, President Trump reignites the China trade war, imposing extensive tariff hikes—the largest since the 1930 Smoot-Hawley Act —to achieve greater economic self-sufficiency. After market declines, he pauses tariffs for most countries but not China, prompting retaliation. By April 11, U.S. tariffs on Chinese goods reach 145%, while China imposes 125% on U.S. goods and additional levies on energy, oil, machinery, and agriculture. However, as advertised by China Briefing (2025), after negotiations, the extreme highs (125%–145%) have been scaled back under the current truce.

The Chinese side exercises dominant control over key raw materials for tech production, such as rare earths that the U.S. desires, which constitutes a considerable advantage in this race. Meanwhile, pivotal companies, such as NVIDIA and AMD, have needed special treatment to maintain their operations (China Briefing 2025). The critical challenge of energy sovereignty has progressively expanded into a broader concern over technological sovereignty. As fossil fuel production and distribution chains cease to be the exclusive foundation of national development, digital and renewable energy technologies have emerged as equally decisive arenas of power. Mastery over these technologies now constitutes a strategic advantage, shaping not only energy security but also the geopolitical hierarchies of the emerging low-carbon world.

In this context, China's expanding partnerships across the developing world—most notably through initiatives such as the BRICS framework—are shaping an emerging geopolitical pole through South-South collaboration (Vivoda et al. 2024). This new alignment is often viewed as a source of renewed hope, promoting industrial and technological advancement in economies that have either not yet achieved full industrialisation or have been historically marginalised by the Western, Global North–led model of development. Nonetheless, it is also seen as a double-edged sword, as Chinese dependence appears to be a new form of Sino-centric dependence.

Redistributing Benefits and Burdens

Data centres have become one of the most well-known pieces of infrastructure supporting the modern life of Homo digitalis. Data centres act as central hubs for the internet, cloud computing, and artificial intelligence, covering extensive areas. Inside, they feature corridors lined with uniform rows of computer servers arranged systematically—known as a 'cold aisle' where cool air is drawn in, and a 'hot aisle' where exhaust air is expelled. Heat poses a significant threat to data operations, as it can diminish efficiency or cause systems to fail. To keep servers cool, various technologies are employed, with one, evaporative cooling, demanding significant amounts of water and energy (Barringer 2025).

As of March 2024, the U.S. hosted 5,381 of the world's data centres, followed by Germany (521), the United Kingdom (514), China (449), and Canada (336). By continent, North America (mainly the U.S. plus Canada), Europe, Asia, and Oceania dominate this infrastructure, with South America emerging primarily through Brazil (163) (Lu 2025). These patterns illustrate how the digitalised economy concentrates energy-intensive infrastructure in certain regions. In the U.S. alone, data centres consumed 4.4 per cent of national electricity in 2022, with projections reaching 6.7–12 per cent by 2028 (Barringer 2025).

On the other hand, the primary inputs for digital and renewable technologies—commonly referred to as critical minerals—are predominantly sourced from regions in the Global South (Poque González 2025). In fact, the current production of many energy transition minerals is more geographically concentrated than that of oil or natural gas. Over 40% of global copper production occurs in Chile and Peru, more than 40% of nickel is concentrated in Indonesia and the Philippines, and over 60% of cobalt is sourced from the Democratic Republic of Congo (IEA 2022). This concentration could highlight a significant emerging global asymmetry: while high-income regions benefit from advanced digital and renewable technologies, the environmental and social burdens of extracting these critical resources could disproportionately be borne by countries in the Global South.

Conclusion

Upon concluding my reflections, I recall an episode from *Brave New World*, where Bernard Marx and Lenina Crowne visit the 'Savage Reservation'. In this secluded enclave, people live according to traditional, pre-industrial customs, largely untouched by the hyper-controlled, technologically advanced World State. There, ageing, illness, religion, familial bonds, and rituals shape life—elements absent or suppressed in the World State, where humans are conditioned from birth to prioritise stability, consumption, and pleasure.

This contrast mirrors, in an allegorical way, our contemporary world—though with a crucial difference. Unlike Huxley's neatly divided societies, humanity shares a single planet, tightly interconnected through flows of energy and materials. Overconsumption in some regions drives ecological crises that ripple globally, while those with the fewest resources to adapt bear the harshest consequences. In this sense, our world resembles a single 'planetary reservation', where inequalities in wealth, energy access, and technological power determine who suffers most from the very systems that others exploit in the name of development.

The pursuit of more equitable societies is crucial in a world grappling with climate change, as energy systems and technological development are fundamentally intertwined with material flows within a unique global economic system. The *Homo digitalis* is a new face of a long-standing structure. The digital anxiety of *Homo digitalis*, rather than liberating humanity, risks deepening its entanglement with extractive material systems — unless equity, not efficiency, becomes the guiding principle of the energy-digital nexus.

References

Barringer, Felicity. 2025. 'Thirsty for Power and Water, AI-Crunching Data Centers Sprout across the West'. Stanford.edu. Economic Development & the West. *& the West*, April 8. https://andthewest.stanford.edu/2025/thirsty-for-power-and-water-ai-crunching-data-centers-sprout-across-the-west/.

Bibri, Simon Elias, and Zaheer Allam. 2022. 'The Metaverse as a Virtual Form of Data-Driven Smart Urbanism: On Post-Pandemic Governance through the Prism of the Logic of Surveillance Capitalism'. *Smart Cities* 5 (2): 715–27. https://doi.org/10.3390/smartcities5020037.

China Briefing. 2025. 'US-China Relations in the Trump 2.0 Era: A Timeline – China Briefing'. *China Briefing News*, September 30. https://www.china-briefing.com/news/us-china-relations-in-the-trump-2-0-implications/.

Editors, C. F. R. 2025. 'Timeline: U.S.-China Relations'. Cfr.org. Council on Foregin Relations. https://www.cfr.org/timeline/us-china-relations.

Georgescu-Roegen, Nicholas. 1979. 'Myth about Energy and Matter'. *Growth and Change* 10 (1): 16–23. https://doi.org/10.1111/j.1468-2257.1979.tb00819.x.

González González, Miguel Alberto. 2021. 'Homo Digitalis'. *Plumilla Educativa* 27 (1): 9–13. https://doi.org/10.30554/pe.1.4196.2021.

Han, Byung-Chul. 2022. *Infocracy: Digitization and the Crisis of Democracy*. 1st edn. Polity. https://www.amazon.com/Infocracy-Digitization-Democracy-Byung-Chul-Han/dp/1509552987.

IEA. 2022. *The Role of Critical Minerals in Clean Energy Transitions*. International Energy Agency.

IEA. 2025. 'Electricity Mid-Year Update 2025 – Analysis'. Iea.Org, July 30. https://www.iea.org/reports/electricity-mid-year-update-2025.

Lange, Steffen, Johanna Pohl, and Tilman Santarius. 2020. 'Digitalization and Energy Consumption. Does ICT Reduce Energy Demand?' *Ecological Economics* 176 (October): 106760. https://doi.org/10.1016/j.ecolecon.2020.106760.

Lu, Marcus. 2025. 'Ranked: The Top 25 Countries With the Most Data Centers'. *Visual Capitalist*, January 21. https://www.visualcapitalist.com/ranked-the-top-25-countries-with-the-most-data-centers/.

Poque González, Axel Bastián. 2025. 'Claves para entender el rol geopolítico de América Latina en la transición energética global. Una aproximación desde la teoría de la dependencia'. In *Prefigurar el futuro. Dinámicas extractivas y energéticas en clave latinoamericana.*, 1st edn. Miradas Latinoamericanas. CLACSO. https://www.res earchgate.net/publication/392097400_Olmedo_Neri_R_A_Rivero_Corona_M_y_Gomez_Bonilla_A_Coords_2025_Prefigurar_el_futuro_Dinamicas_extractivas_y_energeticas_en_clave_latinoamericana_CLACSO.

Ritchie, Hannah, Pablo Rosado, and Max Roser. 2020. 'Energy Production and Consumption'. Our World in Data. *Our World in Data*. https://ourworldindata.org/energy-production-consumption.

Roser, Max. 2020. 'The World's Energy Problem'. *Our World in Data*, December 10. https://ourworldindata.org/worlds-energy-problem.

Smil, Vaclav. 2010. 'Science, Energy, Ethics, and Civilization'. In *Visions of Discovery: New Light on Physics, Cosmology, and Consciousness*, edited by Raymond Y. Chiao, Marvin L. Cohen, Anthony J. Leggett, William D. Phillips, and Charles L. Harper, Jr. Cambridge University Press. https://vaclavsmil.com/wp-content/uploads/2024/10/smil-articles-science-energy-ethics-civilization.pdf.

Smil, Vaclav. 2018. *Energy and Civilization: A History*. MIT Press.

Thompson, Shirley. 2023. 'Strategic Analysis of the Renewable Electricity Transition: Power to the World without Carbon Emissions?' *Energies* 16 (17): 6183. https://doi.org/10.3390/en16176183.

Urry, John. 2014. 'The Problem of Energy'. *Theory, Culture & Society* 31 (5): 3–20. https://doi.org/10.1177/0263276414536747.

Vivoda, Vlado, Ron Matthews, and Neil McGregor. 2024. 'A Critical Minerals Perspective on the Emergence of Geopolitical Trade Blocs'. *Resources Policy* 89 (February): 104587. https://doi.org/10.1016/j.resourpol.2023.104587.

York, Richard, and Shannon Elizabeth Bell. 2019. 'Energy Transitions or Additions?' *Energy Research & Social Science* 51 (May): 40–43. https://doi.org/10.1016/j.erss.2019.01.008.

About the author:

Axel Poque González is a postdoctoral researcher at the Pontificia Universidad Católica de Valparaíso, Chile. He holds a Doctorate in Environment and Society from the Universidade Estadual de Campinas. Additionally, he holds a master's degree in engineering. An Electrical Engineer by training, his research explores the intersection of energy transition, environmental issues and societal dynamics.