AI Hub in Latin America Skyrockets Water Crises

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The Artificial Intelligence revolution is turning its attention toward Latin America. The region features an extraordinary abundance of natural resources paired with a strategic location for the industry, a relatively stable political context, and high demand for investment. This new AI hub could serve as a key factor for geopolitical balance, countering China's influential investments in infrastructure. Latin American countries also have a unique advantage: they can host the entire AI development, including natural resource extraction, chip manufacturing, data centers, and e-waste facilities. Yet, the environmental impact of unsustainable AI can hinder fragile energy and water public services, quickly leaving multiple communities without basic access. Finding proactive mitigation policies and leveraging local expertise will be key to a long-term realization.

Keywords: Artificial Intelligence (AI), AI technology, water resources, Latin American politics, China investment

La revolución de la Inteligencia Artificial está fijando su atención en América Latina. La región presenta una extraordinaria abundancia de recursos naturales, junto con una ubicación estratégica para la industria, un contexto político relativamente estable y una alta demanda de inversión. Este nuevo centro de IA podría servir como un factor clave para el equilibrio geopolítico, contrarrestando las influyentes inversiones de China en infraestructura. Los países latinoamericanos también tienen una ventaja única: pueden albergar todo el desarrollo de la IA, desde la extracción de recursos naturales y la fabricación de chips hasta los centros de datos y las instalaciones de desechos electrónicos. Sin embargo, el impacto medioambiental de la IA insostenible puede amenazar la fragilidad de los servicios públicos de energía y agua, dejando pronto a múltiples comunidades sin el acceso básico. Encontrar políticas de mitigación proactivas y aprovechar la experiencia local será clave para una realización a largo plazo.

Palabras clave: Inteligencia Artificial (IA), tecnología de IA, recursos hídricos, política latinoamericana, inversión de China

Latin America is exceptionally rich in natural resources. South America alone holds 40% of the world's biodiversity. However, there is a pressing concern: water quality and access (Harrison and Arndt 2023). Despite the abundance of freshwater resources, more than 50% of residual waters remains improperly treated. This deficiency impacts local communities, particularly in certain cities where access to safe drinking water is limited

or nonexistent. In addition, the meteoric rise of data centers and chip manufacturing in the region is rapidly consuming large amounts of water and energy, thereby hindering the already frail infrastructure (McGovern and Branford 2024).

While cyclic discussions are being held at global conventions about climate change and environmentally unsustainable industrial production, Artificial Intelligence (AI) companies and local government partners are running fast behind the scenes. Little is said about the AI revolution in Latin America and its gigantic consumption of natural supplies, although Big Tech's destination countries such as Costa Rica, Brazil, Chile, Colombia, Argentina, Uruguay, and Peru compete for investment.

From a US geopolitical standpoint, AI in Latin America can pose many advantages. For instance, it could gradually replace the chip manufacturing currently outsourced to politically exposed countries like Taiwan which is vulnerable to China's potential invasion. The region is relatively stable in that sense, despite unprecedented levels of organized crime. Also, the abundance of natural resources and demand for investment, paired with lax regulations, poverty and unemployment, have been a good incentive for a market that requires high consumption of resources, fewer state regulations, and a large amount of low-priced labor.

From a different standpoint, this can be seen as a new phase in US-Latin American relations after lost decades of little interest in the region. During that time, China saw a long-term return on investment and guaranteed its political influence by heavily investing in infrastructure. In the last two decades, China and Latin America increased their trade from $14bn in 2000 to $495bn in 2022 (Stott 2024). Chinese priority areas are telecommunications, fintech, and energy transition, while the region's exports continue to be raw materials and food. The Chinese control of national infrastructures has concerned some leaders in Latin America and the US. For example, Peru has outsourced most of its energy production in the capital, Lima, to Chinese companies (Stott and Daniels 2023). In addition, China's state-owned shipping and logistics company is building a deep-water port 70km north of Lima that can control maritime traffic from Chile, Ecuador, and Colombia's ports.

The dependence on Chinese goods and investment is a political turning point on American soil as well, since a significant number of chips the US Department of Defense uses for weapons systems and infrastructure are from Chinese suppliers. In this context, countries like Costa Rica, a new hub for microchips and data centers, could become vital for the global balance of power (Stockman 2024).

AI is more than data management and machine learning: it comprises natural resource extractivism, chip manufacturing, data centers, and e-waste (McGovern and Branford

2024). In all four phases, Latin American nations play a protagonist role: Argentina and Chile have important reserves of lithium (Rosales et al. 2022), and countries with less land resources but more favorable federal regulations and political stability, like Uruguay, have become high-tech hubs for data centers. Brazil alone (especially São Paulo) has the highest number of IT services, as its stock market is the wealthiest in Latin America.

The environmental impacts of AI are profound and multiple. For example, ChatGPT already uses the energy equivalent to 33,000 homes. In generative AI systems, huge amounts of water are needed to cool processors and generate electricity (Crawford 2024). In West Des Moines, Iowa, the data center that operates this chatbot consumed 6% of the district's water in a single month (Criddle and Bryan 2024). On top of that, AI requires intense mining of rare metals, and that process leaves a weighty carbon footprint. For example, the cloud infrastructure for AI models has a larger carbon footprint than the entire airline industry (Gonzalez Monserrate 2022).

Therefore, if this giant demand meets underlying infrastructure problems, the results could be the formation of a wasteland. Among others, that could be the case of Peru, which is in the initial phase of transformation to renewable energy where 50% of the region lacks access to electricity (Sierra Praeli 2024).

E-waste is another major issue as chip manufacturing contains chemicals that will not degrade for thousands of years. The environmental risk is probably as equally harmful as the unsustainable mining in Andean countries, currently discussed in international security forums. AI pollution concerns were so relevant from the beginning that Silicon Valley's Big Tech giants soon will have moved chip manufacturing to developing countries (McGovern and Branford 2024). With that, it seems that the problem is now exported to Latin America.

On the bright side, a combination of local know-how and AI can somewhat mitigate its effects with coordination between companies and governments (Victor 2019). Some initiatives like the Argentine startup Waterplan apply AI and remote sensing to lessen water disasters, decrease water pollution, and prioritize water conservation (Wright 2023), while Kilimo uses data tools for more efficient water use in farming (World Economic Forum 2023).

The AI revolution is here to stay. Those opposed to it have lost sight of how the market will develop, whereas anticipating environmental, societal, and political consequences to find mitigation policies can be the right answer to prevent deep environmental damage, especially new water crises. If technology serves the right purpose, the megarise of AI could benefit Latin America's future instead of hampering it. Machine learning systems can improve the efficiency of extraction and manufacturing and lower the effects of e-

waste. In terms of mapping climate-related crises, machine feedback can offer new frontiers in climate change adaptation, making real-time adjustments that could be used at a national level to prevent new crises, mass migration, and violence. Water management tools for efficient disposal can work similarly. The key is a political commitment from governments to truly consider social organizations' concerns and guarantee that companies invest in adaptive technologies.

Big Tech's relocation to Latin America does not have to automatically export water crises if companies and governments can work collaboratively with a long-term vision. However, after decades of multiple social conflicts and violence that emerged from unsustainable extractive industries—among other economic activities related to primary goods—and endemic corruption, such a partnership seems far from a reality. Yet, the first step is to present the issue for further discussion.

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