

# Powering the Future: Inside the AI Supply Chain

Realizing the transformative potential of AI hinges not just on innovation, but also on navigating the complex realities of the AI supply chain. This infographic examines the journey of AI, from the ethical sourcing of critical minerals to the environmental impact of its production and the well-being of workers across the globe.

## The Multi-Trillion Dollar Potential

The transformative potential of AI is staggering, with estimates suggesting it could contribute up to **\$15.7 trillion** to the global economy by 2030—exceeding the combined GDP of China and India.<sup>1</sup>

## From Mine to Market: The Odyssey of an AI Chip

The journey of a single high-performance AI chip can span **over 25,000 miles**, encompassing a complex supply chain from raw material extraction to final product delivery.

## China's Rare Earth Metal Monopoly

China currently dominates the market for rare earth metals, supplying approximately **90%** of the materials used in high-tech industries, including AI hardware, creating a **critical dependency** in the global supply chain.

## The Global Race for AI Hardware

The explosive growth of AI has turned AI chips into one of the most sought-after commodities, resulting in **soaring demand**, **increased supply chain complexity**, and **prolonged lead times** that contribute to a global shortage and skyrocketing prices.<sup>2</sup>

## The Energy Cost of GenAI

According to Goldman Sachs, processing a ChatGPT query requires almost **10 times** more energy than a Google search.<sup>3</sup>

## The Dark Side of Rare Earth Mining

Mining for rare earth metals can generate **2,000 tons** of **toxic waste** for every ton of rare earth elements produced, highlighting the significant environmental challenges associated with AI's raw materials.<sup>4</sup>

## A Deep Dive into Sustainability

An innovative underwater data center in China is projected to conserve **68,000 square meters of land**, save **122 million kilowatt-hours** of electricity, and preserve **105,000 tons** of freshwater annually.<sup>5</sup>

## AI's Self-Healing Power

Google and DeepMind have effectively utilized AI to tackle its own energy consumption challenges, achieving up to a **40% reduction** in data center cooling energy usage.<sup>6</sup>

## Augmenting Intelligence: The Essential Partnership Between Humans and AI

While fears about AI displacing human jobs persist, it is essential to recognize that AI is designed to augment human capabilities, and **without human input, AI technologies would not exist**.

## Behind the Screens: The Human Cost of the AI Boom

Despite the rapid growth of the AI industry, many workers face challenges such as low pay, job insecurity, and monotonous tasks. Companies must prioritize **fair compensation**, **humane working conditions**, and **job security** for these essential workers.

**AI's story is still being written.** By understanding its complexities and addressing its challenges, we can shape a future where AI empowers humanity and safeguards our planet. AI's future depends on resilient, responsible supply chains. Discover the strategies shaping high-tech supply chains in the age of AI.

[Learn more](#)

1: <https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html>  
2: The big bottleneck for AI: a shortage of powerful chips | CNN Business  
3: <https://www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand>  
4: <https://hlr.harvard.edu/not-so-green-technology-the-complicated-legacy-of-rare-earth-mining/>  
5: China deploys 1,400-ton commercial underwater data center - DCD (datacenterdynamics.com)  
6: DeepMind AI Reduces Google Data Centre Cooling Bill by 40% - Google DeepMind