
Magnifica Humanitas and Integral Ecology

“Current AI systems require enormous amounts of energy and water, significantly influencing carbon dioxide emissions, and place heavy demands on natural resources... For this reason, it is essential to develop more sustainable technological solutions that reduce environmental impact and help protect our common home.”

- Pope Leo XIV, *Magnifica humanitas*, no. 101

Pope Leo’s first encyclical, *Magnifica humanitas*, reminds us that we must not shrink from the complexities of today, but engage them, bringing to bear the light of the Gospel. Just as we safeguard our humanity in a world of growing technology which seeks to replicate it, we also defend our common home, which supports all life and cannot ever be recreated.

Environmental Impacts

While AI might serve the common good and assist us to care for our common home in some significant ways such as forecasting extreme weather events, improving efficient use of fertilizers and other agricultural inputs, and mobilizing disaster preparedness and response, it often comes at a substantial cost. Every AI query depends on high computational power housed in data centers with effects that can harm people in and around the adjacent ecosystems. Pope Leo points out, “Nothing in the world of AI is immaterial or magical. Every seemingly immediate and flawless response is the result of a long chain of mediation, involving vast networks of natural resources, energy infrastructure and, above all, people” (no. 173). Three things to know about AI and the environment:

- Data centers can drain resources. Data centers produce significant carbon emissions and require a lot of land, energy, and water. In the U.S., two-thirds of data centers are in water-stressed locations impactingⁱ water costs, quantity, and quality for households and ecosystems.
- Natural resource depletion has economic impacts. Increased energy usage strains the electric grid, changes projected energy needs, and raises utility bills for everyone.
- Emissions from massive data centers further contribute to climate change and environmental degradation. Some companies solve excessive burdens on the energy grid by using onsite gas turbines and backup diesel generators to meet power demand. This causes hazardous climate and air pollution that affects the health of nearby communities and ecosystems.

The Human Impact of AI Development

A vast number of computers and computing power are required for use of AI systems. The digital economy “relies on the silent work of millions of people engaged in essential yet largely unseen activities” (no. 173). This includes extraction and processing of critical mineralsⁱⁱ used for the computing chips required by AI. In addition to the environmental impacts, Pope Leo XIV highlights the dangerous working conditions of extracting and processing minerals, including by children, pointing out that “the bodies of these people are scarred, injured and worn down so that computational flow may continue uninterruptedly” (Ibid).

Hyperscale Data Centers

- Take up ten thousand - 4.5 million square feet, or hundreds of football fields.
- House more than five thousand computer servers.
- Use up to five million gallons of water per day for cooling and consume up to 33 billion gallons per year by 2028.ⁱⁱⁱ
- Use as much energy as a mid-sized city.^{iv}
- Concrete and steel construction contribute significant carbon emissions.^v
- By the end of 2030, energy demand on the grid may increase by 32%^{vi} with data centers accounting for 50% of increased demand.

Community Impacts

Among these other challenges, we must acknowledge that our current society does not equitably distribute resources among people. Too often the costs of technological development, such as chemical production or fossil fuels, have been borne by low-income communities, especially communities of color, without tangible community benefits. In Memphis, for example, a historic African American community already burdened by industrial pollution, is now contending with hazardous air pollution from unpermitted methane gas turbines that powers an AI data center.^{vii} Unless we heed the call of the Holy Father, we are in danger of seeing history repeat itself where vulnerable communities will again see more polluted air and water, constant noise, higher cost energy, and lower housing values due to the placement of data centers and infrastructure that support AI.

As Pope Leo says, “True progress is not what increases the wellbeing of some by degrading ecosystems, shifting costs onto the most disadvantaged communities, or compromising the living conditions of those who will follow us” (no. 84). Instead, we must approach this dilemma with the lens of integral human development, which requires justice toward people and the care of our common home.

Where Can We Find Hope?

Pope Leo calls us all to honest discernment of standards that translate to responsible planning practices. He says we need to assess social and environmental impacts, include the voices of vulnerable communities in decision making, and guide research and industry towards justice and peace (no. 14). Amid the challenges are signs of hope. There are early innovations which are the direct result of people witnessing fast-paced development, recognizing the potential for harm, and deciding to act.

The Holy Father calls us to be “weavers of hope” in our world (no. 245). As Catholics we can and must further these signs of hope by raising our voices and sharing our perspective. We can insist our lawmakers, industry leaders, and other groups harness this new technology to serve people and the common good.

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ⁱ April Higa, “[Data Centers, Water, and the Strain on Local Resources](#),” National Wildlife Federation, May 4, 2026.

ⁱⁱ Alex Leader, Andrew Doris, Angeli Juani, and Allison Carlson, “[Artificial Intelligence and the Critical Minerals Crunch: Strategies for resilient supply chains](#),” Foreign Policy, October 2025.

ⁱⁱⁱ Taylor Mills, “[Re-Architecting the AI Server: The Hidden Water Cost of Data Centers \(Part II\)](#),” Harvard Science Review, February 28, 2026.

^{iv} International Energy Agency, Energy and AI: [World Energy Report Special Edition](#), 2025

^v Olivia Raimonde, “[The U.S. Data Center Buildout Has a Hidden Source of Carbon Emissions](#),” Bloomberg News, January 29, 2026.

^{vi} John D. Wilson, Sophie Meyer, Zach Zimmerman, and Rob Gramlich, “[Power Demand Forecasts Revised Up for Third Year Running, Led by Data Centers](#),” Grid Alternatives, November 2025.

^{vii} Andrew R. Chow, “[‘We Are the Last of the Forgotten’: Inside the Memphis Community Battling Elon Musk’s AI](#),” TIME, August 13, 2025.