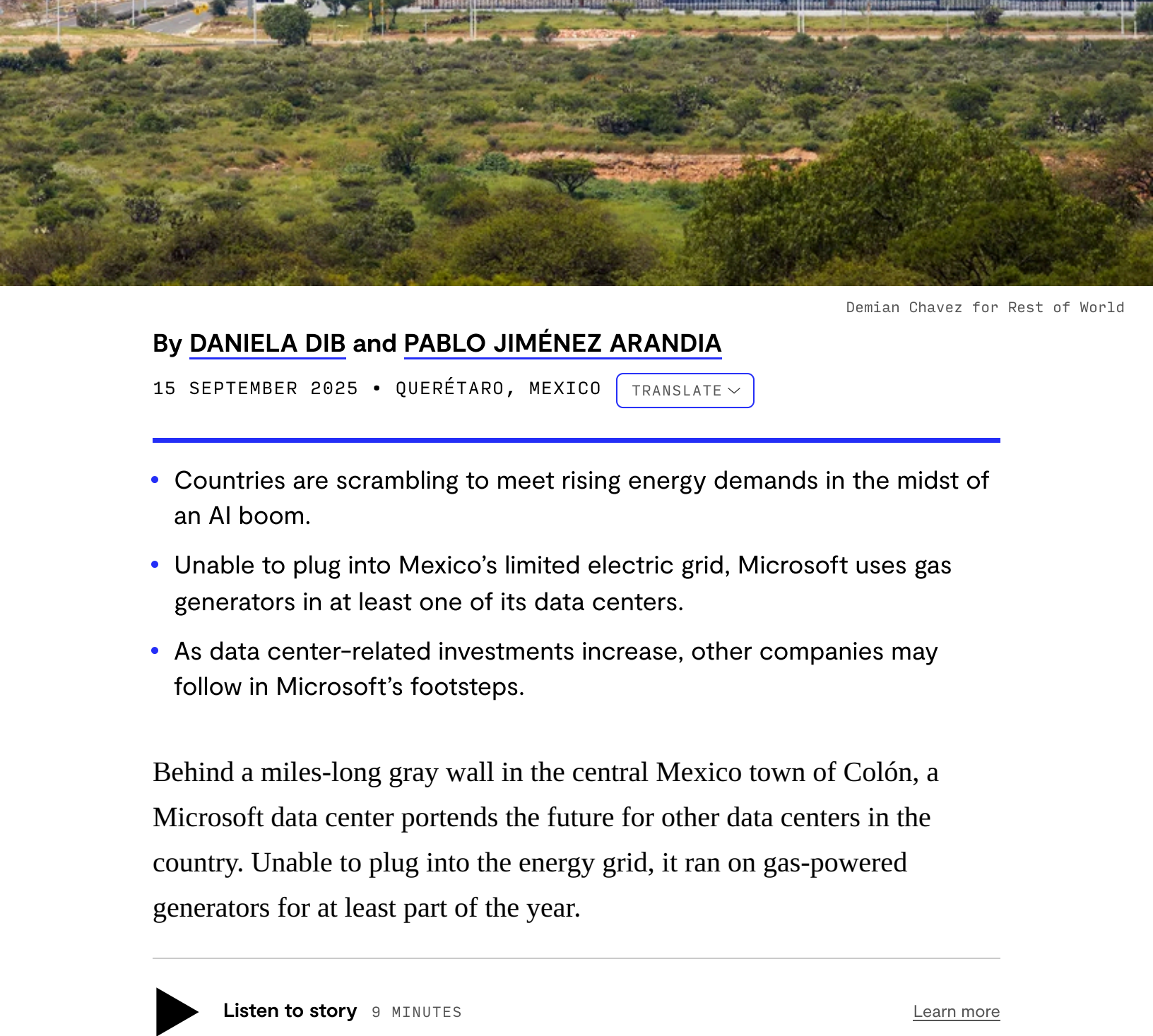


TECH GIANTS

Countries are struggling to meet the rising energy demands of data centers

Mexico’s lagging energy grid is forcing companies, including Microsoft, to use generators.



Demian Chavez for Rest of World

By **DANIELA DIB** and **PABLO JIMÉNEZ ARANDIA**

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TRANSLATE

- Countries are scrambling to meet rising energy demands in the midst of an AI boom.
- Unable to plug into Mexico's limited electric grid, Microsoft uses gas generators in at least one of its data centers.
- As data center-related investments increase, other companies may follow in Microsoft's footsteps.

Behind a miles-long gray wall in the central Mexico town of Colón, a Microsoft data center portends the future for other data centers in the country. Unable to plug into the energy grid, it ran on gas-powered generators for at least part of the year.

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That Mexico’s electric grid is struggling does not bode well for a country trying to position itself as a data center hub, and which is already home to 150 data centers, including from Microsoft, Amazon Web Services, and Google. Together, they have invested over \$7 billion in the country since 2020.

Like Mexico, countries around the world are scrambling to meet the [rising energy demands](#) of data centers, spurred by a boom in artificial intelligence and cloud computing. Like Microsoft, some companies have tapped alternative — and sometimes more polluting — energy sources. Mexico’s power grid faces a [deficit](#) of 48,000 megawatt-hours by 2030, which is more than half the country’s output in 2023, according to the Mexican Institute For Competitiveness, a research center. As the country lures more data center-related investments, more companies may follow in Microsoft’s footsteps.

“This case is part of a broader global pattern, particularly in areas where the rapid deployment of digital infrastructure is outpacing the energy grid’s capacity,” Marina Otero Verzier, a visiting professor at Columbia University who researches data centers, told *Rest of World*. “In some cases, corporations frame fossil-fueled generators as temporary solutions, which, over time, become normalized.”

Microsoft set up its data center last year in Colón, an industrial hub with a population of over 67,000 people, but was unable to plug into the country’s energy grid, which is itself largely powered by fossil fuels. In documents filed to Mexico’s environmental secretariat in 2023, Microsoft said the grid would not be fully operative to the company until mid-2027 due to “long construction times required in [Microsoft’s] contract with CFE,” referring to the Federal Electricity Commission. The following year, the secretariat approved Microsoft’s request to use seven generators to temporarily power its data center.

A spokesperson for Microsoft declined to comment on how the company is powering its data centers in Mexico now, and whether it will continue using generators.

Worldwide, [nearly 60%](#) of the electricity used by data centers comes from fossil fuels including natural gas. Renewables including solar and wind meet more than a quarter of the demand, according to the International Energy Agency. But while the share of renewable energy is increasing, the rapid growth in the demand for data centers is outpacing the expansion of renewable energy infrastructure, posing a challenge to the climate goals of countries and tech companies alike.

The Ascenty complex near Arkansas State University in the state of Querétaro, Mexico. Demian Chavez for Rest of World

In Nigeria, for example, data centers have become [heavily reliant](#) on diesel- and gas-powered generators. [In Ireland](#), one of the world’s major data center hubs, operators are turning to fossil fuels after [maxing out the](#) national electricity grid. In the U.S. state of Tennessee, gas turbines power Elon Musk’s massive [xAI data center](#).

According to documents filed by Microsoft to federal environmental authorities, the generators would provide 70% of the data center’s energy requirement for 12 hours per day between February and July 2025, and produce annual CO2 levels equal to those of about 54,000 average households. The data center began operating in early 2024. It is not clear how it was powered prior to that period or after, or what its expected capacity is.

Microsoft’s use of generators goes against the company’s own commitment, announced in 2020, to be “carbon negative, water positive, and zero waste, all while protecting ecosystems,” according to its [chief sustainability officer](#).

“If they [Microsoft] want to be net zero, they would have to substitute natural gas for other energy sources in the long term,” Víctor Ramírez, partner at P21 Energía, an energy consultancy in Mexico, told *Rest of World*.

Mexico has been luring Big Tech for years, with its close proximity to the U.S. and the promise of state-of-the-art fiber optic infrastructure. The state of Querétaro, in particular, has drawn major players seeking to set up hyperscale data centers. Unlike smaller data centres, hyperscalers are designed to progressively increase their computing power based on market demand and therefore their energy requirement.

Global data center electricity consumption, by equipment, 2020–2030. Credit: IEA.org

Typically, this kind of infrastructure requires close to 100 megawatts annually to operate at maximum capacity, [equivalent](#) to the annual electricity consumption of 350,000 electric cars. Mexico plans to have 22 hyperscalers, according to [estimates](#) by DCD Intelligence, which researches the data center industry.

There are 15 data centers of varying capacities operating in Querétaro today, with an energy requirement of 200MW — about 80% of the total requirement of data centers in the country. It is not clear which other data centers depend largely on generators to power their operations now. A Google spokesperson told *Rest of World* the company uses generators exclusively for emergencies. AWS did not respond to a request for comment from *Rest of World* regarding the company’s use of generators in Mexico.

CFE did not respond to a request for comment on when the infrastructure for Querétaro will be ready.

The Mexican Association of Data Centers estimates that over 70 additional data centers will be built in the country over the next five years. Over half will likely be in Querétaro, representing more than \$18 billion in investment. Data centers in the country will require 1.5 gigawatts by 2030 — approximately what is needed to power more than 800,000 average [households](#) in the U.S.

The Microsoft data center in Querétaro, Mexico. Demian Chavez for Rest of World

A highway that leads to the complex housing the Microsoft data center in Colón, in the state of Querétaro. Demian Chavez for Rest of World

CFE, which has a monopoly on the country’s power infrastructure, including distribution, will struggle to keep up. Mexico generates plenty of energy and could generate more, “but the transmission and distribution element worries us because it’s deficient,” Adriana Rivera Cerecedo, executive director of the Mexican Association of Data Centers, told *Rest of World*.

In August, the Mexican government announced an [investment](#) of over \$8 billion in transmission infrastructure, aimed to be completed by 2030. The updated infrastructure will focus on energy supply for households, not industries.

Energy generation has picked up since 2018, but CFE has lagged in building the necessary infrastructure to have that energy reach industries and homes, according to Rafael Scott, a partner at McKinsey & Company Mexico.

“There are several well-identified areas that have become energy bottlenecks due to a lack of resources,” Scott told *Rest of World*. Querétaro is one of the areas. The country’s transmission infrastructure has not kept pace with energy generation, he said.

[Investment](#) in energy transmission and distribution fell by 17% and 37%, respectively, between 2018 and late 2024, according to Mexico Evalua, a nonprofit that monitors the government. Although Querétaro has positioned itself as a data center hub due to its strategic location, weather, and business-friendly policies, its local government can only do so much to guarantee energy supply from CFE.

“The state [of Querétaro] doesn’t create, transmit, or distribute energy. It’s CFE that satisfies those needs,” Marco del Prete, Queretaro’s secretary of sustainable development, told *Rest of World*.

Using fossil fuels as a continuous source of power for a data center “could create significant air quality or public health [concerns](#), especially for those individuals with respiratory conditions,” Shaolei Ren, an associate professor of electrical and computer engineering at the University of California, told *Rest of World*.

Some data centers have invested in transmission and distribution networks, at times increasing their investment by over 35% to connect to the grid. Still, concerns about the energy deficit and the impacts of fossil fuels haven’t affected new investments, Rivera Cerecedo said.

“We aren’t seeing a slowdown in the industry,” she said. “The effort that companies developing data centers are making to stay in Mexico is big.”

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