Morgan Stanley
INVESTMENT MANAGEMENT

The Atomic Steppe

TALES FROM THE EMERGING WORLD | EMERGING MARKETS EQUITY TEAM | September 2026

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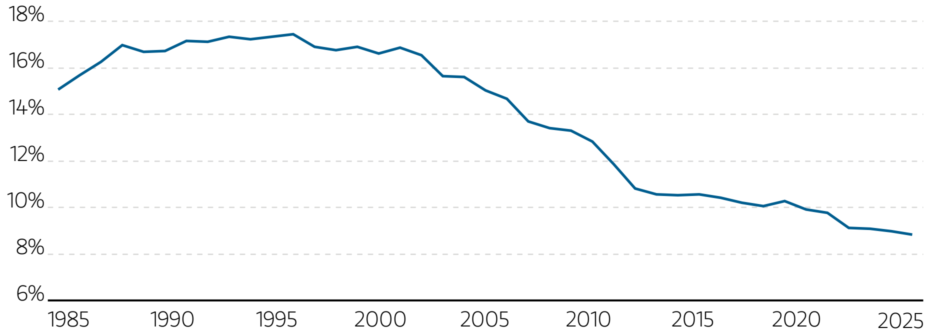
Nuclear power was a growing source of energy in the United States and globally through the 1960s and 1970s. However, given rising upfront costs and safety concerns, including the 1979 Three Mile Island accident and 1986 Chernobyl disaster, nuclear fell out of favor. From the mid-1980s to 2025, the share of global electricity production from nuclear dropped from 16% to 9% (Display 1).

DISPLAY 1

Electricity Has Been Less Reliant on Nuclear Power

Nuclear share of total electricity globally



Source: Our World in Data. As of June 30, 2026.

Nuclear power is experiencing a renaissance driven by two key factors:

1. An increased demand for electricity to power artificial intelligence (AI).
2. A renewed focus on energy security and governmental support.

Approximately 100 new nuclear plants are currently planned worldwide, nearly matching the total number built over the last 20 years.

We believe Kazakhstan will be one of the largest beneficiaries of the apparent revival of nuclear energy. The country is the world's largest uranium producer, supported by abundant reserves, low-cost, efficient mining techniques and geopolitical neutrality. Rising demand for nuclear should support the price of uranium and production volumes. In fact, Kazakhstan currently controls roughly 40% of the world's uranium production, greater than OPEC's share of the global oil supply.

The Atom Behind the Algorithm

AI has dramatically changed the power debate. In September 2024, Constellation Energy, a large U.S. producer of clean energy, signed a 20-year power purchase agreement with Microsoft to restart the Three Mile Island Unit 1. The symbolism was hard to miss. The old reactor, shut down in 2019 due to unprofitability, was revived to meet data center demand. AI has shifted the debate, because training and running inference on massive models requires an incredible amount of reliable energy.

Last year, a single ChatGPT query consumed approximately 0.3 watt-hours per message.[1] A billion of these queries everyday annually means 109 gigawatt-hours, or enough power for 10,400 U.S. homes.[2] Models are increasingly incorporating images and videos which require even more energy per query. Additionally, heavier reasoning capabilities and the advent of AI agents will be a further multiplier on memory, computing and power demands. Estimates vary, but heavier reasoning tasks could consume around 43 times more energy than simple tasks.[3] All of these developments point to more compute (i.e., resources for training and deploying AI) and therefore, more power.

Data centers already account for half of the electricity demand growth in the U.S.[4] For hyperscalers, the issue is not only the quantity of electricity, but also its quality. Data centers require stable baseload energy to keep high performance equipment running without interruption as AI workloads expand. Nuclear plants operate at a 93% utilization rate, easily ahead of natural gas (57%), coal (40%), wind (35%) and solar (25%). That makes nuclear the most reliable low-carbon energy option to power the AI revolution.

Old objections still matter. Nuclear power requires significant upfront capital, but its economics become stronger once energy density, storage and transmission costs are considered. Efficiency measures that compare energy supplied with energy used, rank nuclear ahead of coal, natural gas, wind and solar.[5]

Energy Nationalism

For much of the past decade, the case for energy transition rested on the desire to minimize emissions. Now, there is a shift in priorities: the focus is moving from decarbonization toward an emphasis on resilience, security and sovereignty. Countries want clean power, but they also want to be less exposed to volatile hydrocarbon markets. Conflicts in Ukraine and the Middle East have highlighted the need for energy systems without dependency on strategic rivals and geopolitically volatile regions.

Unlike wind and solar, nuclear is the only source of clean power that does not depend on weather conditions; it also has a long refueling cycle, typically around 18 months, and is in line with nearshoring industrial policies. In essence, nuclear gives governments something more important than costs: *control*. A nuclear-powered country is not beholden to weather, sudden market fluctuations or energy boycotts initiated by rivals.

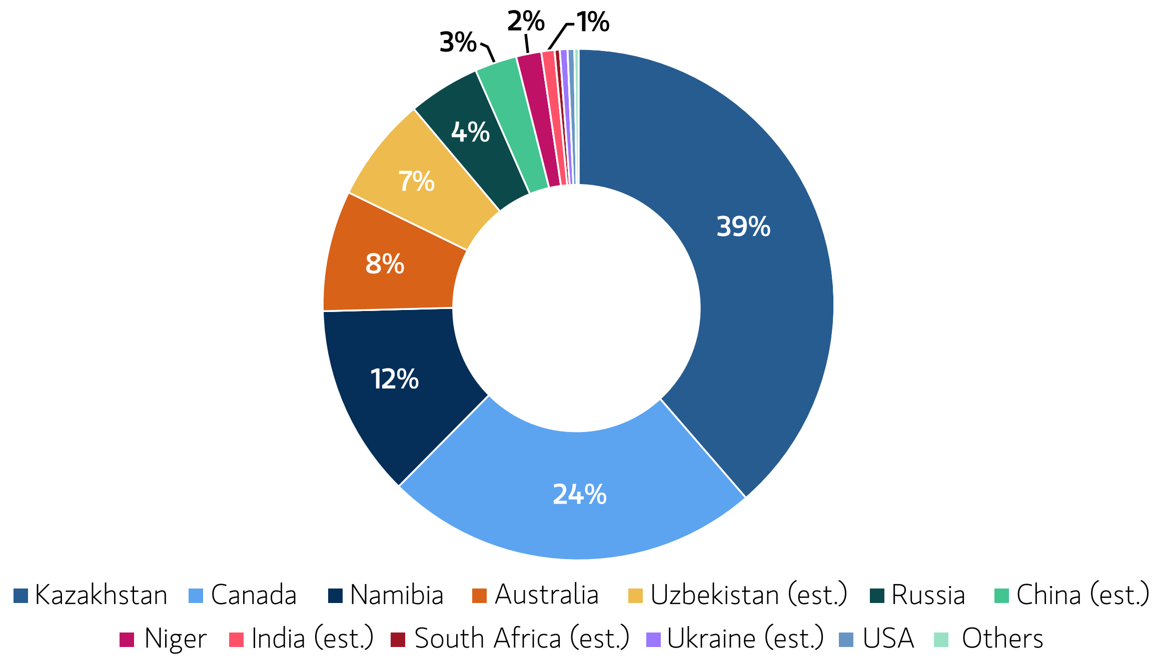
As of mid-2026, China has almost 40 reactors under construction.[6] The program is as much about energy security as it is about emissions and reducing its reliance on fossil fuels.[7] In the U.S., nuclear is now seen as a key pillar of national security. The Trump administration has offered $17.5 billion in low interest loans to speed up construction of 10 reactors. According to U.S. Energy Secretary Chris Wright, the loans are intended to "unleash the next American nuclear renaissance."

[1] *We did the math on AI's energy footprint. Here's the story you haven't heard.* MIT Technology Review, May 20, 2025
[2] *We did the math on AI's energy footprint. Here's the story you haven't heard.* MIT Technology Review, May 20, 2025
[3] *We did the math on AI's energy footprint. Here's the story you haven't heard.* MIT Technology Review, May 20, 2025
[4] *Global Energy Review*, International Energy Agency, 2026
[5] *I've Got the Power! Nuclear Energy Primer.* Tran et al, BofA Thematic Research, 2026
[6] *Plans for New Reactors Worldwide.* World Nuclear Association, August 5, 2026
[7] *China's Nuclear Energy Priorities Under Its 15th Five-Year Plan.* Center for Strategic and International Studies, May 11, 2026

DISPLAY 2

Kazakhstan Is the Leader in Global Uranium Production

In 2024, Kazakhstan accounted for 39% of uranium production globally



Source: World-nuclear.org. As of March 31, 2026. Forecasts/estimates are based on current market conditions, subject to change and may not necessarily come to pass.

An Emerging Nuclear Power

Who stands to benefit from this return to nuclear power? It may surprise investors that the most compelling opportunity lies not in developed or even emerging markets. Instead, we see Kazakhstan, an overlooked frontier market, as a major beneficiary of rising nuclear demand.

Today, the central Asian republic produces approximately 39% of global uranium supply (Display 2) from just 15% of global reserves.[8]

Kazakhstan's dominance rests on its accessible reserves and low-cost mining methods. The country's uranium deposits are ideal for in-situ recovery, a process where liquid solutions are injected into the ore body for extraction. That cost advantage has turned Kazakhstan into a key supplier for global uranium ambitions. Its strong position has led to an accumulation of investment and trade from China, the U.S., Russia, India and recently Japan.[9] China is especially dependent, where roughly two-thirds of its imported natural uranium comes from Kazakhstan.[10] Even the U.S. imports 35% of its uranium from Kazakhstan.[11] Astana, the country's capital, has clearly benefited from the security interests of larger powers, positioning itself as a neutral supplier to multiple countries rather than a satellite of any one bloc.

Kazakhstan is not without risk. Uranium logistics have historically depended on routes through Russia. Investors need to account for production guidance, joint-venture structures, tax policy and the country's geopolitical balancing act.

We believe those risks do not fully warrant the degree of discount today. Kazakhstan's scale, cost advantage and strategic neutrality make it difficult to ignore. The markets have aggressively priced in a favorable outlook in nuclear-related names in Canada and the U.S., while Kazakhstan remains an overlooked beneficiary of the nuclear investment case.

The world needs more electricity at a time when energy generation and supply are becoming national security issues. Climate goals require low-carbon energy while data centers require a stable baseload power. Nuclear sits at the intersection of all these needs, and Kazakhstan is ready to reap the benefits.

[8] World-nuclear.org. As of March 31, 2026.

[9] *Kazakh-Japanese nuclear cooperation highlighted during presidential visit.* World Nuclear News, December 23, 2025

[10] *To Secure Kazakhstan's Uranium, Chinese Players Were Compelled to Accommodate Local Partners.* Carnegie Endowment for International Peace, March 26, 2024.

[11] *I've Got the Power! Nuclear Energy Primer.* Tran et al, BofA Thematic Research, 2026

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