| **QM AFF V1 [ENERGY]** |
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**Carrollton affirms, Contention One is Hegemony,**

**American adversaries dominate nuclear energy, Cohen 24 finds,**

**Cohen 24**, Ariel Cohen, 06/07/ 2024, “China And Russia Now Dominate The Global Nuclear Trade” Forbes,<https://www.forbes.com/sites/arielcohen/2024/06/07/china-and-russia-now-dominate-the-global-nuclear-trade/>]

Russia is not alone in surpassing the US. **China is** also **far ahead of the US in** the **nuclear energy** industry. China’s nuclear power industry has retained its domestic focus, **with** [**twenty-three power plants**](https://www.worldnuclearreport.org/IMG/pdf/wnisr2023-table02-reactors_under_construction.pdf) **under construction** in China as of July 2023. This is due to [increasing energy demand](https://www.iaea.org/bulletin/how-china-has-become-the-worlds-fastest-expanding-nuclear-power-producer), as China continues to develop its economy. The United States is constructing a [single nuclear power plant](https://www.statista.com/statistics/513671/number-of-under-construction-nuclear-reactors-worldwide/). While China has refined its nuclear power production process, the last plant built in the [US arrived 7 years late and 17 billion dollars over budget](https://apnews.com/article/georgia-nuclear-power-plant-vogtle-rates-costs-75c7a413cda3935dd551be9115e88a64), as a testament to America’s byzantine permitting and environmental review system. **China has built upon this expertise** also **to begin supplying reactors abroad.** The China National Nuclear Corporation and China General Nuclear Power Group have [developed](https://www.cipe.org/wp-content/uploads/2021/05/Nuclear-Dragon-Goes-Abroad.pdf) a third-generation reactor called Hualong One. This new reactor began operations in [2021](https://apnews.com/article/china-nuclear-power-7996f4ec51f0a70716da779eb8ff237f) in Fuqing. In 2023, [China began construction](https://www.voanews.com/a/china-begins-construction-of-pakistan-s-largest-nuclear-power-plant-/7181016.html) on the Chashma-5 nuclear power plant in Pakistan, which will use Hualong One reactors. Such actions contribute to China’s capacity to construct infrastructure abroad and expand its influence. The American nuclear power industry was once the world's envy, peaking with [112 operational reactors](https://www.statista.com/statistics/184981/number-of-nuclear-power-plants-in-the-us/) in 1990, with America on a path to carbon neutrality much earlier than current predictions. 34 years later, **the U**nited **S**tates **has lost nearly a third of its operational nuclear reactors,** has **built almost no new ones, and its average reactor age is decades old**. If nothing is done to rectify this, in the next 10-15 years, scores of nuclear reactors will have to be retired as their operational lifecycles end, and as a result, America will have to contend with [nearly 20% of its electricity capacity](https://www.energy.gov/nuclear) evaporating.

**Moreover, Cohen 24 furthers,**

Cohen 24, Ariel Cohen, 06/07/ 2024, “China And Russia Now Dominate The Global Nuclear Trade” Forbes,<https://www.forbes.com/sites/arielcohen/2024/06/07/china-and-russia-now-dominate-the-global-nuclear-trade/>]

Through Rosatom, Russia remains the global leader in nuclear reactor construction. According to the World Nuclear Strategy Report, as of July 2023, Russia had [twenty-four](https://www.worldnuclearreport.org/IMG/pdf/wnisr2023-table02-reactors_under_construction.pdf). Nuclear reactors under [construction](https://www.worldnuclearreport.org/IMG/pdf/wnisr2023-table02-reactors_under_construction.pdf) in seven countries: China, India, Turkey, Egypt, Bangladesh, Iran, and Slovakia. For comparison, the US was constructing zero. Russia dominates the nuclear industry in more areas than just reactors. They also have the [largest](https://www.rferl.org/a/russia-nuclear-power-industry-graphics/32014247.html) uranium conversion and enrichment industries in the world, at 38% and 46% of international capacity, respectively, in 2020. This makes it a major fuel exporter as well. **Russia exported** [**over $1 billion**](https://static.rusi.org/RUSI-Russian-Exports-final-web_0.pdf#:~:text=Russian%20customs%20data%2C%20sourced%20though%20a%20third-party%20commercial,exports%20to%20members%20of%20NATO%20and%20the%20EU.) **worth of nuclear energy**-related products from February 2022-2024. **Two of the countries** in which Russia is constructing nuclear power plants, Turkey and Slovakia, **are NATO members**. They are not alone amongst the collective West in enabling Russia’s nuclear dominance while ostensibly being committed to containing the Kremlin. As my colleague Wesley A. Hill wrote, Russian-enabled [geopolitical turmoil in Africa](https://nationalinterest.org/feature/russia%E2%80%99s-kitchen-chaos-west-africa-206681), which Russia is using to [try to acquire formerly French uranium assets](https://www.msn.com/en-us/news/world/russian-federation-wants-to-acquire-uranium-assets-in-niger-isw/ar-BB1nAkmN), helped force Europe to [double its import](https://bellona.org/news/nuclear-issues/2024-03-europe-russian-nuclear-fuel) of Russian uranium in 2023. The US was no better, remaining [dependent on Russian nuclear exports](https://www.ft.com/content/2c9c325e-e734-4a9f-b089-2f64deebc658) even after the war in Ukraine restarted in 2022. The US [imported Russian nuclear fuel](https://www.reuters.com/business/energy/ban-russian-uranium-aims-revive-american-supply-2024-06-04/) until May 14th, 2024, over two years after Russia’s invasion of Ukraine began, from the same entities that the White House sanctioned.

**And, America is losing influence, Policy Circle 24 warrants,**

**Policy Circle 24,** 12/27/ 2024 “End of American hegemony: Can the superpower reinvent power for the 21st century” Policy Circle,<https://www.policycircle.org/world/end-of-american-hegemony/>]

In 2010, a [historian](https://www.fairobserver.com/author/alfred-w-mccoy/) predicted that the **American hegemony might end by 2025** — not with a bang but with a whimper — as domestic divisions deepened and rival powers rose to challenge its authority. Today, that prediction appears prophetic as America faces increasing pressures from within and outside. Even as the US retains military dominance and an economy capable of immense influence, the structural underpinnings of its global power are eroding. This decline, though not necessarily terminal, signals a transition away from the so-called American Century. Historically, the US leveraged its unmatched economic strength, technological innovation, and cultural influence to dominate the post-World War II global order. However, the foundations of the American hegemony are crumbling. The US share of global GDP has steadily declined, falling from 50% in the mid-20th century to approximately 15% today when adjusted for purchasing power parity. The globalisation, initially championed by the US, has redistributed industrial power, with China emerging as a key beneficiary. **China’s rise has reoriented global economic networks, particularly in the Global South.** In contrast to America’s interventionist foreign policy, China has cultivated influence through infrastructure investments, soft power campaigns, and state-sponsored media. The United States, while still a major player, has failed to present an alternative vision that resonates with developing nations, where perceptions of Chinese leadership are increasingly favourable.

**Domestic production is critical to hegemony, Hiltibran 24 explains,**

**Hiltibran et al 24,** Christel Hiltibran, 01/31/2025, “Trump Has Been a China Hawk on Nuclear Energy. But Congress Could Compromise That During Reconciliation,” Third Way,<https://www.thirdway.org/memo/trump-has-been-a-china-hawk-on-nuclear-energy-but-congress-could-compromise-that-during-reconciliation#:~:text=A%20strong%20US%20nuclear%20energy,valuable%20hundred%2Dyear%20geopolitical%20relationships>]

President Trump has long considered himself a China hawk, stoking a trade war with the country, supporting ever-increasing tariffs on its goods, and using aggressive rhetoric to combat its growing global influence. But his approach has a blind spot, failing to mitigate China’s increasing dominance in the energy sector, especially in nuclear energy development and deployment. Until we confront China’s rising role in global energy markets, the US will continue to cede market share and lose geopolitical influence, threatening national security both in the US and among our allied nations. The US needs a synchronized foreign policy to counter Chinese attacks on American hegemony. But since the election, the incoming administration and Congress have signaled misaligned approaches to foreign energy policy. The Trump Administration’s [Day 1 executive orders](https://time.com/7208691/trump-day-one-presidential-actions-executive-orders-memorandum-proclamation-explainer/) reaffirmed the President’s commitment to domestic energy production—now it’s up to Congress to ensure legislation is going to support energy goals. Nuclear Energy Must Be a Foreign Policy Priority Beyond bilateral trade barriers, the US must also dominate critical global industries to remain competitive. There is broad consensus that investments in national defense, space, artificial intelligence, and quantum computing will help make America more secure and more prosperous. The same is true of [investments in nuclear energy](https://www.thirdway.org/memo/the-global-race-for-advanced-nuclear-is-on). A robust domestic nuclear supply chain has corollary benefits, including reliable energy supply, that are foundational to our [defense](https://www.thirdway.org/memo/nuclear-fuel-is-a-national-security-imperative) and [technology sectors](https://www.thirdway.org/blog/dawn-of-a-nuclear-era). Moreover, the strength of our nuclear industry directly supports our competitiveness abroad, which in turn affects [our ability to uphold the highest global norms in nuclear security and nonproliferation](https://nationalinterest.org/feature/why-nuclear-fuel-vital-us-national-security-interests-ukraine-and-middle-east-207782). **Failure to compete overseas will enable China, Russia,** and other rivals **to** [**erode our influence** on these international standards](https://www.defensenews.com/opinion/commentary/2023/03/29/the-global-nuclear-energy-market-is-a-geopolitical-battleground/) and cement [century-long geostrategic partnerships](https://www.thirdway.org/memo/2023-map-the-world-wants-nuclear-energy-china-and-russia-are-racing-ahead) around the world. [Putting the US at the forefront of global civil nuclear markets will make us stronger, more secure, and more influential on the global stage](https://www.thirdway.org/report/nuclear-export-financing-today-and-tomorrow?utm_source=Pardot&utm_medium=email). Our adversaries understand the stakes. **China and Russia have state-owned**, heavily subsidized **nuclear industries that are a key part of their efforts to gain allies and influence** throughout the developing world. China and Russia view nuclear exports as a way to develop century long partnerships in Africa, Asia, and Eastern Europe. Their interest in advanced nuclear power is less about economics, and more about influence. The competition is well underway and the United States is losing. According to the International Atomic Energy Agency, [85% of all new reactors](https://pris.iaea.org/PRIS/worldstatistics/UnderConstructionReactorsByCountry.aspx) currently under construction in 2024 are Russian or PRC designs; 0% are US designs. This year, President Trump and the new Republican Congress have an opportunity to do just that—through budget reconciliation.  Trump Could Cede Critical Geopolitical “Energy Dominance” to China in His First 100 Days by Compromising America’s Nuclear Industry—But It’s Not Too Late Put simply, if we want to outcompete China, Congress needs to continue to prioritize clean energy.  The incoming Trump administration has made no secret of its hostility to the Inflation Reduction Act (IRA) and its clean energy provisions, especially its investments in wind and solar. But despite recent bipartisan alignment in support of nuclear energy, Trump’s agenda not only targets renewables but may also incidentally deal a significant blow to programs supporting nuclear development and demonstration in the US.  During the 117th Congress, IRA and the Bipartisan Infrastructure Law (BIL) created tax credits, grants, and loan programs to finance the research, development, demonstration, and even the deployment of emerging clean energy technologies, including nuclear. In a flurry of signals issued during the lame-duck period, the incoming administration and Republican Congressional leadership have made clear that many of these programs are on the chopping block in the first 100 days of the second Trump administration. In competition with state-backed civil nuclear programs such as China, the US needs to bolster its federal government funding for nuclear, not decrease it.  China is churning out large reactors at home, demonstrating (i.e., [building and operating](https://www.thirdway.org/memo/the-global-race-for-advanced-nuclear-is-on)) advanced reactor technologies, and marketing advanced reactors cheaply along its “Belt and Road.” To stay relevant in this race for international market share, **the US must rapidly finance** the demonstration and subsequent commercialization of **US nuclear** small modular **reactors** (SMRs) and advanced nuclear reactors. The time is now, in the 2025 reconciliation process, to save this critical sector from opening its global market to China. Why? The decisions the US government makes this year will dictate whether US nuclear developers have the resources they need to keep pace and ground test these technologies. In the interest of national security and to ensure US competitiveness, Congress must robustly appropriate funding for advanced nuclear demonstrations and maintain federal programs critical to the scale-up of these technologies. The following programs are all essential to preserve or expand during budget reconciliation.

**Affirming enables exports, Bowen 20,**

**Bowen et al 20** (Matt Bowen, 10/7/20, “Strengthening cooperation with allies could help the United States lead in exporting carbon-free nuclear energy”, The Atlantic Council,<https://www.atlanticcouncil.org/blogs/energysource/strengthening-cooperation-with-allies-could-help-the-united-states-lead-in-exporting-carbon-free-nuclear-energy/>]

First, the federal government should establish a more comprehensive and coordinated interagency system focused on the development and deployment of civilian nuclear technologies, which would support bringing advanced nuclear power to the global market. This would involve establishing a collaborative network of nuclear-specific staff positions embedded in the collection of government agencies that play a meaningful role in safely and securely developing, deploying, and exporting US energy technologies. Similar to the “Team USA” whole-of-government approach first initiated under the Obama Administration, a network of nuclear-specific staff positions could be located across different US agencies including: the Department of Energy, Department of State, Nuclear Regulatory Commission (NRC), White House Office of Science and Technology Policy, National Security Council (NSC), Department of Commerce, and any future Climate Office. While the Obama Administration created an NSC role to coordinate interagency nuclear policy, and the DOE report released earlier this year, [Restoring America’s Competitive Nuclear Advantage](https://www.energy.gov/sites/prod/files/2020/04/f74/Restoring%20America%27s%20Competitive%20Nuclear%20Advantage_1.pdf), recommended reinstating that role, there is currently no high-level mechanism for interagency coordination on US nuclear exports. And, **since it is difficult to export a product that lacks a domestic market,** continued **policy support for** constructing **advanced reactors** here **in the United States is imperative.**

**Exports secure positive global relationships, Graham 19,**

**Graham 19,** Thomas Graham, 5/29/19, “National security stakes of US nuclear energy” The Hill,<https://thehill.com/opinion/national-security/445550-national-security-stakes-of-us-nuclear-energy/>]

We have dedicated our careers to controlling the destructive potential of nuclear weapons. But since the Atoms for Peace era, U.S. leadership in supplying peaceful nuclear energy technology, equipment, and fuel to the world has been important for world development and therefore critical for the United States to establish and enforce standards for nuclear safety, security and nonproliferation. But in recent decades, the U.S. share of international commercial nuclear energy markets has diminished, and so with it has the United States’ ability to influence global standards in peaceful nuclear energy. The critical moment for U.S. leadership in nuclear energy is when a country is developing nuclear energy for the first time. **The supplier country and the developing country typically forge a relationship that endures** for the 80- to 100-year life of the nuclear program. Unlike a coal or gas plant, nuclear reactors need specialized fuel and maintenance. Once established, the bilateral commercial relationship is not easily dislodged by a rival nation, providing the supplier profound and lasting influence on the partner’s nuclear policies and practices. **Russia and China have identified nuclear energy as a strategic export**, to be leveraged for geopolitical influence as well as for economic gain. According to a recent analysis, Russia is the supplier of more nuclear technology than the next four largest suppliers combined, and China is quickly emerging as a rival. **If the U**nited **S**tates **fails to compete in commercial markets, it will cede leadership** to these countries on nuclear safety, security and nonproliferation, as well as foreign policy influence. As the competition intensifies to deliver the next generation of nuclear power technologies, U.S. nuclear leadership is approaching a watershed opportunity. Simpler, scalable, and less expensive, small and advanced reactors are commercially attractive to an expanded range of markets — particularly in Africa, Asia and the Middle East. The United States has the world’s best training and development programs, unmatched regulatory experience, and multiple small and advanced reactor designs; we should be the easy choice for the next generation of nuclear technology. But early U.S. engagement in these important geopolitical regions is critical. Without it, Russia and China will lock up future nuclear markets through MOUs and other bilateral agreements. And for addressing the national security risks of climate change, nuclear energy is not just an option but a necessity. Developing nations that are planning to meet power and water needs for large and growing populations must have reliable, demonstrated, zero-emission nuclear power in order to meet global climate goals as well. Advanced reactors are integral to these goals. In the United States, nuclear energy is responsible for a fifth of the United States’ total electricity and more than 55 percent of our emissions-free energy, but the pace of domestic construction of new natural gas plants far exceeds the few nuclear plants under development, and the existing fleet is retiring prematurely at an alarming rate. Which brings us back to the domestic nuclear industry. **U.S. global competitiveness and leadership are inextricably linked to a strong domestic nuclear program**. Without a healthy domestic fleet of plants, the U.S. supply chain will weaken against international rivals. Russia has brought six new plants online in the past five years and has six more plants currently under construction. In the same period, China has brought 28 new plants online and has 11 others under construction. These domestic projects provide Russia and China with a robust supply chain, an experienced workforce, and economies of scale that make them more competitive in bidding on international projects. Unless we continue to innovate and build new plants, we will cease to be relevant elsewhere. Even our own domestic energy security is supported by nuclear power. The nuclear plants operating today are the most robust elements of U.S. critical infrastructure, offering a level of protection against natural and adversarial threats that is unmatched by other plants. Because the nation’s grid supplies power to 99 percent of U.S. military installations, large scale disruptions affect the nation’s ability to defend itself. We can regain U.S. leadership in nuclear energy. The key steps are to maintain the domestic reactor fleet, with its reservoir of know-how, and to assist American entrepreneurs in developing the next generation of the technology.

**US hegemony deters multiple revisionists, Ignatieff 24 finds,**

**Ignatieff 24,** Michael Ignatieff, 3/15/2024, “The Threat to American Hegemony is Real,” <https://www.project-syndicate.org/commentary/us-western-hegemony-vulnerable-to-russian-chinese-coordinated-challenge-by-michael-ignatieff-2024-03>]

The post-1945 world order – written into international law, ratified by the United Nations, and kept in place by the balance of nuclear terror among major powers – is hanging by a thread. The United States is divided against itself and stretched to the limits of its capabilities. Europe is waking up to the possibility that, come November, America may no longer fulfill its collective-defense obligations under Article 5 of the NATO treaty. Faced with this new uncertainty, Europe is cranking up its defense production, and European politicians are screwing up the courage to persuade their electorates that they will need to ante up 2% of their GDP to guarantee their own safety. The Western alliance doesn’t just face the challenge of doubling down on defense while maintaining unity across the Atlantic. It also now faces an “axis of resistance” that might be tempted to threaten Western hegemony with a simultaneous, coordinated challenge. The lynchpin of this axis is the Russia-China “no-limits” partnership. While the Chinese supply the Russians with advanced circuitry for their weapons systems, Russian President Vladimir Putin ships them cheap oil. Together they have imposed autocratic rule over most of Eurasia. If Ukraine’s exhausted defenders are forced to concede Russian sovereignty over Crimea and the Donbas region, the Eurasian axis of dictators will have succeeded in changing a European land frontier by force. Achieving this will threaten every state on the edge of Eurasia: Taiwan, the Baltic countries, and even Poland. Both dictatorial regimes will use their vetoes on the UN Security Council to ratify conquest, effectively consigning the UN Charter to history’s dustbin. This partnership of dictators works in tandem with a cluster of rights-abusing renegades, led by Iran and North Korea. The **North Korea**ns provide Putin with artillery shells while plotting to invade the rest of their peninsula. The Iranians manufacture the drones that terrorize Ukrainians in their trenches. Meanwhile, **Iran**’s proxies – Hamas, Hezbollah, and the Houthis – are helping **Russia and China** by tying down America and Israel. Unless the US can force Israel into a long-term ceasefire, it will find itself struggling to control conflicts on three fronts (Asia, Europe, and the Middle East). Not even a country that outspends its rivals on defense by two to one can maintain a war footing simultaneously across so many theaters. The idea that democracies around the world will join up with America and Europe against the authoritarian threat seems like an illusion. Instead of joining with the embattled democracies of the Global North, the rising democracies of the Global South – Brazil, India, and South Africa – seem unembarrassed to be aligning with regimes that rely on mass repression, the cantonment of entire populations (the Uighurs in China), and shameless murder (Navalny being only the most recent example). To be sure, the authoritarian axis currently is united only by what it opposes: American power. It is otherwise divided by its ultimate interests. The Chinese, for example, cannot be overjoyed that the Houthis are blocking freight traffic through the Red Sea. The world’s second most powerful economy doesn’t have all that much in common with an impoverished Muslim resistance army or with theocratic Iran. Moreover, both Russia and China remain parasitic beneficiaries of a global economy that is sustained by US alliances and deterrence. That is why they still hesitate to challenge the hegemon too directly. However, like sharks, they smell blood in the water. They have not only survived US sanctions but continued to prosper, replacing their dependence on embargoed markets with new markets in Latin America, Asia, and India. Both Russia and China have discovered that American control of the global economy is not what it once was. This discovery of American weakness **might** tempt them to **risk a joint military challenge**. As matters stand, US diplomacy and **deterrence have** successfully **kept the axis divided**. CIA Director William Burns and National Security Adviser Jake Sullivan are keeping the channels open to China. Blowback American strikes against Iran have apparently convinced the theocrats to rein in Hezbollah and the militias in Iraq – though not the Houthis, whom nobody seems able to control. It doesn’t take strategic genius to see the opportunity China and Russia might be contemplating. If they decided to mount an overt challenge to the American order – for example, with a coordinated, simultaneous offensive against Ukraine and Taiwan – the US would struggle to rush weapons and technology into the breach. Nuclear weapons would not necessarily deter China and Russia from risking a coordinated attempt to take Taiwan and the rest of Ukraine. All parties would pay a horrendous price, but Russia has shown what it is willing to expend in Ukraine, and **both China and Russia** may **believe that there will never be a more opportune moment to overthrow American hegemony**. If they were to combine forces, we would face the most serious challenge to the global economic and strategic order since 1945. Nobody has any idea what the world would be like on the other side of such a confrontation. We cannot even assume, as we have always done, that America would prevail if faced with a simultaneous challenge from two formidable powers. If a pessimist is someone who imagines the worst in order to forestall it, we should all be pessimists. Keeping the authoritarian axis from becoming a full-fledged alliance should be America’s first-order priority.

**Great power war would be detrimental**

**Clare 21,** Stephen Clare, 11/2021, “Great Power Conflict,”Founders Pledge [[https://dkqj4hmn5mktp.cloudfront.net/Great\_Power\_Conflict\_report\_Founders\_Pledge\_e4124df2ac.pdf](https://dkqj4hmn5mktp.cloudfront.net/Great_Power_Conflict_report_Founders_Pledge_e4124df2ac.pdf)]

This report explores issues at the intersection of international relations, conflict studies, and longtermism.l In it, we draw extensively on the mainstream international relations literature but focus specifically on understanding the potential effects of war on the long-term future. Taking a lng-term view focuses our attention on the risk a Great Power war poses to humanity's future potential. Extinction, an unrecoverable collapse of civilization, or a permanent end to humanity's growth and progress would all destroy the long-term potential of our species. We call events that could lead to one of these scenarios existential risks .2 Such an event, if it occurred, would be unprecedented in human history. It would cause unimaginable suffering for everyone alive today and extinguish any possibility for trillions of our would-be descendants to live happy lives. Some of these global catastrophic risks, like an asteroid impact, are direct risks. By contrast, **Great Power conflict is a risk factor**: it is connected to multiple other risks, and raising or lowering the amount of conflict affects the seriousness of the threats we face in these other areas. In section 4 of this report we consider several concrete pathways through which Great Power conflict poses a global catastrophic risk. We will sort these pathways into three broad categories. First, we consider ways in which Great Power conflict poses a risk even without a full-blown war breaking out. For example, a new Cold War could hasten the development of dangerous technologies or cause a **breakdown in cooperation** that precludes international agreements to mitigate other existential risks. Second, a Great Power war could itself be a global catastrophic risk. In an all-out war between Great Power nations, **weapons with the potential to kill everyone** on earth or irreparably damage civilization **could be used**. Or, in the aftermath of a major war, the victorious side could emerge as a global hegemon that is able to use advanced technologies to lock in its sub-optimal values. 3 Third, a Great Power war could weaken humanity and leave us more vulnerable to subsequent disasters, like a serious pandemic.

**Contention Two is AI**

**The US is losing the AI race**

**Zulhusni 25,** Muhammad Zulhusni, 03/24/2025 “[Is the US losing its edge in AI?](https://techwireasia.com/2025/03/is-the-us-losing-its-edge-in-ai/)” TechWire Asia,<https://techwireasia.com/2025/03/is-the-us-losing-its-edge-in-ai/#:~:text=Major%20US%20artificial%20intelligence%20companies,DeepSeek%20R1%20become%20more%20advanced>]

**Major US a**rtificial **i**ntelligence **companies**, like OpenAI, Anthropic, and Google, **have expressed concern over China’s** increasing abilities in **AI development.** In submissions to the US government, the companies have warned **America’s edge in AI is dwindling**, as **Chinese models like DeepSeek R1 become more advanced.** The submissions were filed in response to a government request for input on an [AI Action Plan](https://www.whitehouse.gov/briefings-statements/2025/02/public-comment-invited-on-artificial-intelligence-action-plan/), and were made in March 2025. China’s growing AI presence DeepSeek R1, the AI model from China, has drawn attention from US developers. OpenAI described DeepSeek as evidence that the technological gap between the US and China is closing. The corporation described DeepSeek as “state-subsidised, state-controlled, and freely available,” and expressed concerns about China’s ability to influence global AI development. OpenAI compared DeepSeek to Chinese telecommunications company Huawei, warning that Chinese regulations could allow the government to compel DeepSeek to compromise sensitive systems or important infrastructure. OpenAI also expressed worries about data privacy, pointing out that DeepSeek’s requirements for data-sharing with the Chinese government could strengthen the state’s surveillance abilities. Anthropic’s submission focused on biosecurity, noting that DeepSeek R1 “complied with answering most biological weaponisation questions, even when formulated with a clearly malicious intent.” The willingness to generate possibly [dangerous information](https://www.unite.ai/deepseek-r1-red-teaming-report-alarming-security-and-ethical-risks-uncovered/) contrasts with the safety protocols the submissions describe as implemented in US-developed models. Competition goes beyond DeepSeek. Baidu, China’s largest search engine, recently launched Ernie X1 and Ernie 4.5, two new AI models designed to compete with leading Western systems. Ernie X1, a reasoning model, is said to match DeepSeek R1’s performance at half the cost. Meanwhile, Ernie 4.5 is priced at 1% of OpenAI’s GPT-4.5 and has outperformed it on certain benchmarks, according to Baidu. Both OpenAI and Anthropic framed the competition as ideological, describing it as a contest between “democratic AI” developed under Western principles and “authoritarian AI” shaped by state control. However, the recent success of Baidu and DeepSeek suggests that cost and accessibility may have a greater impact on global adoption than ideology. US AI security and infrastructure concerns The US companies’ submissions also raised their concerns about security and infrastructure challenges linked to the technology development. OpenAI’s submission focused on the dangers of Chinese state influence over AI models like DeepSeek, while Anthropic’s submission its emphasised biosecurity concerns tied to AI capabilities. The company disclosed that its own Claude 3.7 Sonnet model demonstrated improvements in biological weapon development, highlighting the dual-use nature of advanced AI systems. Anthropic also pointed to gaps in US export controls.

**Additionally,**

**Data center demand is skyrocketing**

**Nordquist 24,** DJ Nordquist, 11/01/2024, “Embracing an All-of-the-Above Strategy for Energy and Economic Development”, Carnegie Endowment for International Peace,<https://carnegieendowment.org/research/2024/10/nuclear-power-united-states-energy?lang=en>]

In 2023, global energy consumption increased 2.2 percent, a significantly faster rate than its average of 1.5 percent per year in the decade of 2010–2019.1 The BRICS+ countries were a large part of that change, growing at double the average rate (5.1 percent); they represented a full 42 percent of global energy consumption. In more developed Organization for Economic Co-operation and Development (OECD) countries, with slower GDP growth and diminished industrial production, consumption declined for the second year in a row (although U.S. demand has been flat).2 However, **with the increasing importance of energy-intensive** artificial intelligence (**AI**) as a productivity-enhancing game-changer, **the power needs of the** developed world, particularly the **U**nited **S**tates given its lead in the AI field, **will** likely **grow**—perhaps exponentially. Goldman Sachs forecasts a 15 percent growth rate for data centers (which includes AI) and that they will increase from 3 percent of total U.S. power consumption in 2022 to 8 percent by 2030.3 Other new-tech industries such as electric vehicles (EVs) will also contribute to increased demands on the grid. One tech leader, Bill Gates, clearly believes that increasing energy needs will increase the importance of baseload power; he has invested $1 billion of his own money in advanced nuclear energy (and raised nearly the same amount) via the firm TerraPower in hopes of making nuclear energy more abundant and less expensive.4 In fact, tech companies are starting to contract directly with power stations for their energy needs. For example, Amazon recently bought a nuclear-powered data center in Pennsylvania, and is also trying to close on a deal with Constellation Energy to buy energy directly from one of its nuclear plants.5 Amazon has also signed a deal with Dominion Energy to develop a small modular reactor (SMR) in Virginia.6 Google reached a 2024 deal with California-based Kairos Power to build a series of SMRs to help power its burgeoning AI needs. Supply and demand are of course playing a role.7 With U.S. plant retirements and demand increasing, prices are expected to surge, especially for reliable power. 8 So as discussion continues in the West about an energy transition, it is worth remembering that the world simply needs more energy—whether clean or traditional—even with improved energy efficiency. The point was made a decade ago by former U.S. president Barack Obama’s administration, which noted that the United States needed an “aggressive All-of-the-Above strategy on energy” in order to “build on . . . progress, to foster economic growth, and to protect the planet for future generations.”9 One clean source that is getting increasing attention is nuclear energy, whether produced by fission now or fusion in the future. Nuclear produces power while emitting essentially zero greenhouse gases, similar to solar, wind, and hydroelectric energy. Nuclear is already a clean energy workhorse in the United States, generating about half of U.S. carbon-free energy while operating without intermittency—instead of being at the whim of nature like renewables.10 It is also a safe and proven technology, with newer versions of advanced nuclear (SMRs and micro-reactors) continuing to show promise.

**But, shortages are restricting data centers**

**Patel 25,** Sonal Patel, 03/03/2025, "The SMR Gamble: Betting on Nuclear to Fuel the Data Center Boom", POWER Magazine,<https://www.powermag.com/the-smr-gamble-betting-on-nuclear-to-fuel-the-data-center-boom/>]

That has dramatically raised the stakes, igniting a desperate frenzy across both the power industry—which must generate and deliver reliable electricity for a variety of emerging large load consumers—and **the data center industry**, which **is scrambling to procure** firm **scalable energy to sustain its explosive growth**, now and well into the future. The stakes are fueled by real fear. In [November, research firm Gartner](https://www.gartner.com/en/newsroom/press-releases/2024-11-12-gartner-predicts-power-shortages-will-restrict-40-percent-of-ai-data-centers-by-20270) projected that power required for AI data centers could reach 500 TWh per year by 2027, a 2.6x increase from 2023 levels. It warned that **power shortages could restrict 40% of AI data centers** by 2027 and drive up energy costs. The upfront cost of power is no longer the deciding factor for data centers, speakers at the [Sustainable Data Centers Summit in Dallas, Texas,](https://future-bridge.us/data-centers-usa/) suggested in early February. “It’s crazy because we look at like the state of Oregon is about 6 GW, and you have these large hyperscalers [asking] ‘Can I get 6 GW too?’ ” said Mohammed Hassan, senior technical program manager for Amazon Web Services (AWS) Sustainability. Hassan suggested the industry has had to rethink how it approaches energy planning and procurement completely to align with incentives, address regulatory hurdles, and secure long-term reliability. “Solar and wind has taken off in the lead. But if you look at the needs of 2045, in trying to meet the Paris Agreement, solar and wind won’t be enough, so you have to look at what’s the next step.” At the conference, speakers pointed to potential alternatives that could perform over the short term: natural gas as a “bridge fuel,” carbon capture as a potential future solution, energy storage solutions for flexibility and to promote grid resilience, and renewable diesel as a cleaner backup power option. But to meet long-term goals, the industry is willing to bet on nuclear power for its many benefits—despite the significant challenges that remain.

**Small modular reactors would meet demand**

**Obando 24,** Sebastian Obando, 11/25/24, “Data center boom fuels demand for nuclear projects”, Utility Dive,<https://www.utilitydive.com/news/data-center-boom-fuels-nuclear-construction-projects/733603/>]

Tech giants are increasingly turning to nuclear power to meet the growing energy demands of the [data center boom](https://www.constructiondive.com/news/data-center-demand-supply-bottlenecks/720141/). For example, recent projects include Amazon’s funding of four small modular reactors in Washington state, Google’s agreement with Kairos Power to develop small modular reactors by 2030 and Microsoft’s power purchase agreement to restart Three Mile Island Unit 1, a nuclear power reactor near Harrisburg, Pennsylvania, that was shut down in 2019. That connection between data centers and nuclear power plants should continue to strengthen, said Gordon Dolven, director of data center research at CBRE, a Dallas-based commercial real estate services firm. “This role is expected to grow, especially with advancements like small modular reactors,” said Dolven. “[These] offer scalable and flexible solutions to support future energy needs.” Integration of nuclear energy into tech companies’ operations offers [new opportunities for contractors](https://www.constructiondive.com/news/fluor-profits-fall-data-center-nuclear/732436/) with specialized experience, said Fluor CEO David Constable during the firm’s third quarter earnings call. Constable recently identified small modular reactors as a key growth area, saying “there’s a strong appetite for nuclear energy to meet incredible demand for power globally.” He noted that “interest has never been greater.” **SMRs offer** [**significant advantages for contractors**](https://www.aboutamazon.com/news/sustainability/amazon-nuclear-small-modular-reactor-net-carbon-zero) during the construction phase. Their modular design **simplifies construction, reduces timelines and requires less land** compared to traditional reactors, according to an Amazon news release. This makes SMRs particularly **well-suited for powering data center[s]** operations, which demand reliable, around-the-clock energy to support artificial intelligence, said Dolven. “There is growing interest in placing data centers near nuclear facilities. This is driven by the need for a reliable, 24/7 power source to support the growing demand for data centers, especially with the rise of AI workloads,” said Dolven. “Nuclear power offers consistent energy with zero carbon emissions, aligning with both operational and sustainability goals.” Although expensive to build, nuclear power plants also offer relatively low operating costs for data center operators, according to the [U.S. Energy Information Administration](https://www.eia.gov/todayinenergy/detail.php?id=63304). That makes them an attractive option for tech companies aiming to power energy-intensive data centers while meeting emission reduction targets. Upcoming projects Amazon agreed in October to [fund four SMR construction projects](https://www.energy-northwest.com/whoweare/news-and-info/Pages/Amazon-and-Energy-Northwest-announce-plans-to-develop--advanced-nuclear-technology-in-Washington.aspx) in Washington state in partnership with Energy Northwest. The plant will generate 320 MW in its first phase. “It’s an important area of investment for Amazon,” said Matt Garman, CEO of Amazon Web Services, in a news release. “Our agreements will encourage the construction of new nuclear technologies that will generate energy for decades to come.” Similarly, Kairos Power, a nuclear technology, engineering and manufacturing company, will develop, construct and operate a series of advanced reactor plants as [part of its agreement with Google](https://kairospower.com/external_updates/google-and-kairos-power-partner-to-deploy-500-mw-of-clean-electricity-generation/). The first SMR is set to be deployed by 2030, with plants strategically located near Google’s data centers, according to Kairos. In Pennsylvania, Microsoft also entered into a [20-year agreement](https://www.constellationenergy.com/newsroom/2024/Constellation-to-Launch-Crane-Clean-Energy-Center-Restoring-Jobs-and-Carbon-Free-Power-to-The-Grid.html) with Constellation Energy to purchase power generated by the Crane Clean Energy Center, formerly known as Three Mile Island Unit 1. The deal will supply Microsoft’s data centers in the region, and includes significant investments to restore the plant, such as the turbine, generator, main power transformer and cooling and control systems. These projects, however, are still awaiting final regulatory approval, and contractors for the construction phases have not yet been announced. Nevertheless, the recent deals continue to showcase tech giants’ focus on nuclear energy to meet their power needs, said Dolven. “Nuclear energy is playing a significant role in meeting the energy demands of data centers and AI technologies,” said Dolven. “Its ability to provide consistent, carbon-free power makes it an ideal solution as AI workloads drive unprecedented increases in energy consumption.”

**Government support is needed**

**Patel 25,** Sonal Patel, 03/03/2025, "The SMR Gamble: Betting on Nuclear to Fuel the Data Center Boom", POWER Magazine,<https://www.powermag.com/the-smr-gamble-betting-on-nuclear-to-fuel-the-data-center-boom/>]

From an [operational standpoint](https://www.powermag.com/how-nuclear-om-is-evolving-for-the-emerging-power-paradigm/), co-located facilities can pose new risks, as Nina Sadighi, professional engineer and founder of Eradeh Power Consulting told POWER. “Who’s going to insure these plants?” she asked. “That’s a huge unknown. Right now, **insurance providers are hesitant** because of the regulatory and operational complexity. The traditional nuclear liability structures are built around large reactors with established operational histories, and when you introduce something novel like SMRs or microreactors, you’re dealing with a very different risk profile.” Sadighi, though generally optimistic about nuclear’s suitability for data centers, also pointed to potential workforce-related challenges that hinge on timely deployment. “If we train nuclear workers now, but deployment gets delayed, those workers won’t wait around,” she said. “The nuclear workforce pipeline is not like a tech workforce, where people can pivot between roles quickly. These are specialized skills that require years of training, and if there’s uncertainty about job stability, we risk losing them to other industries entirely,” she said. Sadighi also raised concerns about the stringent operational protocols that add to labor inefficiencies. Finally, while the data center industry isn’t solely bent on economics—and told POWER sustainability with a long-term vision is a bigger priority—scaling up will require significant investment. That has sparked all kinds of debate. [Lux Research estimates](https://luxresearchinc.com/resources/utilities/assessing-the-economic-promise-of-small-modular-nuclear-reactors/) first-of-a-kind (FOAK) SMRs could cost nearly three times more than natural gas ($331/MWh versus $124/MWh) and more than 10 times more when factoring in cost overruns and delays. The firm projects SMRs won’t be cost-competitive before 2035. “Cheap nuclear just isn’t in the cards in the next two decades,” it says. However, a recent [Idaho National Laboratory study](https://inldigitallibrary.inl.gov/sites/STI/STI/Sort_129993.pdf) suggests costs could decline as SMRs move to Nth-of-a-Kind (NOAK) production. It suggests modular construction, factory fabrication, and standardized deployment could drive efficiencies, potentially reducing costs as more units are built. Notably, the study describes an “economies-of-scale penalty crossover point” where SMRs achieve cost parity with large reactors if enough units are deployed. Deploying four 300-MW SMRs could drop costs by 20% compared to a single 1,200-MW reactor, it suggests. For now, the first real-world test of this cost curve will be [Ontario Power Generation’s BWRX-300 SMR fleet](https://www.powermag.com/nuclear-supply-chain-for-the-bwrx-300-smr-takes-shape/), which is expected to start operating by 2029. The fundamental debate is rooted in several uncertainties—which is not uncommon for emerging sectors, experts also generally pointed out. “**Tax credits**—especially the clean electricity production tax credits and investment tax credits—will be vital to the commercial viability of these projects, especially considering the FOAK risk,” said Teplinsky. “DOE [U.S. Department of Energy] **loan guarantees and direct financing** from the Federal Financing Bank at low rates **are** also **essential to companies’ ability to secure debt and reduce cost of capital**. Grant funding to support commercial demonstrations and high-assay low-enriched uranium support are also key.” However, Teplinsky cautioned that these incentives were in place before AI-driven data demand soared. “[T]hey will need to remain in place in order for data center-driven advanced reactor projects to be viable,” she said. “In fact, these **incentives need to expand** and address some of the key issues still inhibiting large-scale advanced reactor deployment despite data center demand, such as FOAK deployment and cost overrun concerns.”

**Shortages will kill the AI race**

**Li 25,** Fengrong Li, 02/27/2025, "The Powerful Duo of Nuclear and Data Centers", FTI,<https://www.fticonsulting.com/insights/articles/powerful-duo-nuclear-data-centers>]

Acute **power shortages** and mounting resource adequacy challenges **have emerged as existential threats to the AI race.** Hyperscale and colocation **data centers** — among the most energy- intensive digital infrastructures — depend on reliable, 24/7 electricity to **sustain AI workloads** and cloud computing. However, intermittent, non-dispatchable generation resources dominate the interconnection queues; power constraints stall data center deployment. Nuclear power, with its carbon-free, high-energy output, presents a compelling solution to alleviate the bottleneck. Large tech players and the nuclear industry have forged strategic alliances to move new nuclear projects forward. These partnerships represent a crucial down payment on building sustainable energy infrastructures capable of supporting AI growth. Experts at FTI Consulting have evaluated the collaboration models between these two sectors, including co-location strategies, which have gained momentum despite encountering pushbacks from market participants and regulatory bodies.

**Domestic development is necessary for the US to beat China**

**Allison & Schmidt 20,** Graham Allison & Eric Schmidt, 08/2020, “Is China Beating the U.S. to AI Supremacy?” Belfer Center [<https://www.belfercenter.org/publication/china-beating-us-ai-supremacy>]

Combining decades of experience advancing frontier technologies, on the one hand, and analyzing national security decisionmaking, on the other, we have been collaborating over the past year in an effort to understand the national security implications of China’s great leap forward in artificial intelligence (AI). Our purpose in this essay is to sound an alarm over China’s rapid progress and the current prospect of it overtaking the United States in applying AI in the decade ahead; to explain why **AI is** for the autocracy led by the Chinese Communist Party (hereafter, the “Party”) **an existential priority**; to identify key unanswered questions about the dangers of an unconstrained AI arms race between the two digital superpowers; and to point to the reasons why we believe that this is a race **the U**nited **S**tates **can and must win**. We begin with four key points. First, most Americans believe that U.S. leadership in advanced technologies is so entrenched that it is unassailable. Likewise, many in the American national security community insist that in the AI arena China can never be more than a “near-peer competitor.” Both are wrong. In fact, China stands today as a full-spectrum peer competitor of the United States in commercial and national security applications of AI. Beijing is not just trying to master AI—it is succeeding. Because AI will have as transformative an impact on commerce and national security over the next two decades as semiconductors, computers and the web have had over the past quarter century, this should be recognized as a matter of grave national concern.[1](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-057),[2](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-056),[3](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-055) Second, China’s zeal to master AI goes far beyond its recognition that this suite of technologies promises to be the biggest driver of economic advances in the next quarter century. For the Party, AI is mission critical. The command of 1.4 billion citizens by a Party-controlled authoritarian government is a herculean challenge. Since the fall of the Soviet Union, Americans have been confident that authoritarian governments are doomed to fail—eventually. But AI offers a realistic possibility of upending this proposition. AI could give the Party not just an escape hatch from the “end of history,”[4](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-054) but a claim to advance a model of governance—a national operating system—superior to today’s dysfunctional democracies. As one former Democratic presidential candidate put it: “**China is using technology to perfect dictatorship**.”[5](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-053) It’s a value proposition that resonates with many leaders around the world. As former Google ceo Eric Schmidt has argued: “if the Soviet Union had been able to leverage the kind of sophisticated data observation, collection and analytics employed by the leaders of Amazon today, it might well have won the Cold War.” Third, while we share the general enthusiasm about AI’s potential to make huge improvements in human wellbeing, the development of machines with intelligence vastly superior to humans will pose special, perhaps even unique risks. In 1946, Albert Einstein warned, “the unleashed power of the atom has changed everything save our modes of thinking, and thus we drift towards unparalleled catastrophe.” We believe the same could be said of AI. Henry Kissinger has identified these risks in what we call “Kissinger’s Specter.” In his words, AI threatens an unpredictable revolution in our consciousness and our thinking, and an “inevitable evolution in our understanding of truth and reality.”[6](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-052) In response to Einstein’s insight, the technologists and strategists who had built and used the bomb to end World War II joined forces to find ways to prevent a nuclear World War III. Meeting the challenges posed by AI will require nothing less. Fourth, **China**’s advantages in size, data collection and national determination have allowed it over the past decade to close the gap with American leaders of this industry. It **is** currently **on a trajectory to overtake the U**nited **S**tates **in the decade ahead.** Nonetheless, if the United States will awake to the challenge and mobilize a national effort, we believe that it can develop and execute a winning strategy. For many readers, AI is just the latest bright, shiny object on the technology horizon. A brief explainer to provide some further context may be helpful. AI encompasses big data, machine learning and multiple related technologies that allow machines to act in ways humans describe as “intelligent” when we do the same thing.[7](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-051) For example, consider gps navigation app Waze locating the best route through heavy traffic; Amazon’s eerily relevant product suggestions; or the programmed machines that now regularly defeat world masters in chess. Today’s leading information technology companies—including the faangs (Facebook, Amazon, Apple, Netflix and Google) and bats (Baidu, Alibaba and Tencent)—are betting their r&d budgets on the AI revolution. As Amazon’s Jeff Bezos said this year, “We’re at the beginning of a golden age of AI.”[8](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-050) China’s AI Surge Though still in their infancy, **AI technologies will be drivers of future economic growth and national security.** From facial recognition and fintech to drones and 5g, China is not just catching up. In many cases, it has already overtaken the United States to become the world’s undisputed No. 1. In some arenas, because of constitutional constraints and different values, the United States willfully forfeits the race. In others, China is simply more determined to win. China’s AI surge is so recent that anyone not watching closely has likely missed it. As late as 2015, when assessing its international competition, American industry leaders—Google, Microsoft, Facebook and Amazon—saw Chinese companies in their rearview mirrors alongside German or French firms in the third tier. But this changed four years ago—in 2016—when leading AI application company DeepMind fielded a machine that defeated world champion Lee Sedol in the world’s most complex board game, Go.[9](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-049) Even after several American companies’ machines had bested the chess masters of the universe[10](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-048), most Chinese remained confident that machines could never beat Go champions, since Go is ten thousand times more complex than chess. Thus, DeepMind’s decisive victory became for China a “Sputnik moment”[11](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-047)—a jolt as dramatic as the Soviet Union’s launch of the first satellite into space that sparked America’s whole-of nation surge in math and science, nasa’s creation and the original “moon shot.” Kai-Fu Lee’s book AI Superpowers offers an insightful summary of China’s engagement in the field. It began with President Xi Jinping’s personal reaction to the defeat of the world’s Go champion. Declaring that this was a technology in which China had to lead, he set specific targets for 2020 and 2025 that put China on a path to dominance over AI technology and related applications by 2030.[12](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-046) Recognizing that this would have to be led by entrepreneurial companies rather than agencies of government, he designated five companies to become China’s national champions: Baidu, Alibaba, Tencent, iFlytek and SenseTime.[13](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-045) Twelve months after Xi’s directive, investments in Chinese AI startups had topped investments in American AI startups.[14](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-044) By 2018, China filed 2.5 times more patents in AI technologies than the United States.[15](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-043) And this year China is graduating three times as many computer scientists as the United States. In contrast to nuclear weapons—where governments led in discovery, development and deployment—AI and related technologies have been created and are being advanced by private firms and university researchers. The military establishments in Washington and Beijing are essentially playing catch-up, adopting and adapting private-sector products. Where do these two competitors stand in the AI race today? Consider leading indicators under six key headings: product market tests, financial market tests, research publications and patents, results in international competitions, talent and national operating environments. Consumers’ choices of products in markets speak for themselves. In fintech, China stands alone. Tencent’s WeChat Pay has nine hundred million Chinese users,[16](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-042) while Apple Pay only has 22 million in the United States.[17](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-041) And when it comes to capability, WeChat Pay can do much more than Apple Pay. Chinese consumers use their app to buy coffee at Starbucks and new products from Alibaba, pay bills, transfer money, take out loans, make investments, donate to charity and manage their bank accounts. In doing so, they generate a treasure trove of granular data about individual consumer behavior that AI systems use to make better assessments of individuals’ credit-worthiness, interest in products, capacity to pay for them and other behavior. In mobile payments, Chinese spend $50 for every dollar Americans spend, in total, $19 trillion in 2018.[18](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-040) U.S. mobile payments have yet to reach $1 trillion. Credit cards are as old-fashioned to Chinese millennials as handwritten checks are to their American counterparts. Mark Zuckerberg has noticed: Facebook’s major moves last year into digital payments,[19](https://www.belfercenter.org/publication/china-beating-us-ai-supremacy#footnote-039) including the recent introduction of Facebook Pay, are copying Tencent, rather than the other way around.

**Kroenig 21 furthers,**

**Kroenig 21,** Matthew Kroenig, 2021, “Will Emerging Technology Cause Nuclear War?” Strategic Studies Quarterly, <https://www.jstor.org/stable/pdf/48638052.pdf>]

How will states use such a newfound advantage? Technology rarely fundamentally changes the nature or objectives of states. More often, states use technology to advance preexisting geopolitical aims. Moreover, enhanced power can result in greater ambition. Given the geopolitical landscape deof the international system will behave differently with new military technologies than will revisionist powers, such as Russia and China. The spread of **new tech**nology **to the U**nited **S**tates and its Allies and partners **would** likely serve, on balance, to **reinforce** the existing sources of **stability** in the prevailing international system. At the end of the Cold War, the United States and its Allies and partners achieved a technological military advantage over its great power rivals, with the US using its unipolar position to deepen and expand a rules-based system. They also employed their military dominance to counter perceived threats from rogue states and terrorist networks. The United States, its Allies, and partners did not, however, engage in military aggression against great power, nuclear-armed rivals or their allies. In the future, these status quo powers are apt to use military advantages to reinforce their position in the international system and to deter attacks against Allies and partners in Europe and the Indo-Pacific. These states might also employ military power to deal with threats posed by terrorist networks or by regional revisionist powers such as Iran and North Korea. But it is extremely difficult to imagine scenarios in which Washington or its Allies or partners would use newfound military advantages provided by emerging technology to conduct an armed attack against Russia or China. Similarly, Moscow and Beijing would likely use any newfound military strength to advance their preexisting geopolitical aims. Given their very different positions in the international system, however, these states are likely to employ new military technologies in ways that are destabilizing. These states have made clear their dissatisfaction with the existing international system and their desire to revise it. Both countries have ongoing border disputes with multiple neighboring countries. If Moscow developed new military technologies and operational concepts that shifted the balance of power in its favor, it would likely use this advantage to pursue revisionist aims. If Moscow acquired a newfound ability to more easily invade and occupy territory in Eastern Europe, for example (or if Putin believed Russia had such a capability), it is more likely Russia would be tempted to engage in aggression. Likewise, **if China acquired an enhanced ability through new technology** to invade and occupy Taiwan or contested islands in the East or South China Seas, Beijing’s leaders might also find this opportunity tempting. If new technology enhances either power’s anti-access, area-denial network, then **it**s leaders **may be more confident in their ability to achieve a** fait accompli **attack against a neighbor and then block a US-led liberation**. These are precisely the types of **shifts in the balance of power** that can **lead to war**. As mentioned previously, the predominant scholarly theory on the causes of war—the bargaining model—maintains that imperfect information on the balance of power and the balance of resolve and credible commitment problems result in international conflict.52 New technology can exacerbate these causal mechanisms by increasing uncertainty about, or causing rapid shifts in, the balance of power. Indeed as noted above, new military technology and the development of new operational concepts have shifted the balance of power and resulted in military conflict throughout history. Some may argue emerging military technology is more likely to result in a new tech arms race than in conflict. This is possible. But Moscow and Beijing may come to believe (correctly or not) that new technology provides them a usable military advantage over the United States and its Allies and partners. In so doing, they may underestimate Washington. If Moscow or Beijing attacked a vulnerable US Ally or partner in their near abroad, therefore, there would be a risk of major war with the potential for nuclear escalation. The United States has formal treaty commitments with several frontline states as well as an ambiguous defense obligation to Taiwan. If Russia or China were to attack these states, it is likely, or at least possible, that the United States would come to the defense of the victims. While many question the wisdom or credibility of America’s global commitments, it would be difficult for the United States to simply back down. Abandoning a treaty ally could cause fears that America’s global commitments would unravel. Any US president, therefore, would feel great pressure to come to an Ally’s defense and expel Russian or Chinese forces. Once the United States and Russia or China are at war, **there would be** a risk of **nuclear escalation**. As noted previously, experts assess the greatest risk of nuclear war today does not come from a bolt-out-of-the-blue strike but from nuclear escalation in a regional, conventional conflict.53 Russian leaders may believe it is in their interest to use nuclear weapons early in a conflict with the United States and NATO.54 Russia possesses a large and diverse arsenal, including thousands of nonstrategic nuclear weapons, to support this nuclear strategy. In the 2018 Nuclear Posture Review, Washington indicates it could retaliate against any Russian nuclear “de-escalation” strikes with limited nuclear strikes of its own using low-yield nuclear weapons.55 The purpose of US strategy is to deter Russian strikes. If deterrence fails, however, there is a clear pathway to nuclear war between the United States and Russia. As Henry Kissinger pointed out decades ago, there is no guarantee that, once begun, a limited nuclear war stays limited.56 There are similar risks of nuclear escalation in the event of a US-China conflict. China has traditionally possessed a relaxed nuclear posture with a small “lean and effective” deterrent and a formal “no first use” policy. But China is relying more on its strategic forces. It is projected to double—if not triple or quadruple—the size of its nuclear arsenal in the coming decade.57 Chinese experts have acknowledged there is a narrow range of contingencies in which China might use nuclear weapons first.58 As in the case of Russia,the US Nuclear Posture Review recognizes the possibility of limited Chinese nuclear attacks and also holds out the potential of a limited US reprisal with low-yield nuclear weapons as a deterrent.59 If the nuclear threshold is breached in a conflict between the United States and China, the risk of nuclear exchange is real. In short, if a coming revolution in military affairs provides a real or perceived battlefield advantage for Russia or China, such a development raises the likelihood of armed aggression against US regional allies, major power war, and an increased risk of nuclear escalation.

**Nuclear war causes extinction,**

**Starr 14,** Steven Starr, 5/30/14, “The Lethality of Nuclear Weapons: Nuclear War has No Winner”, Centre for Research on Globalization,<http://www.globalresearch.ca/the-lethality-of-nuclear-weapons-nuclear-war-has-no-winner/5385611>]

Paul Craig Roberts held top security clearances. He has repeatedly warned that a US-Russian nuclear war would wipe out the human race, along with all other complex forms of life. As a scientist with expert knowledge, I wish to echo and explain his warning.//// Nuclear war has no winner. Beginning in 2006, several of the world’s leading climatologists (at Rutgers, UCLA, John Hopkins University, and the University of Colorado-Boulder) published a series of studies that evaluated the long-term environmental consequences of a nuclear war, including baseline scenarios fought with merely 1% of the explosive power in the US and/or Russian launch-ready nuclear arsenals. They concluded that the consequences of **even a “small” nuclear war would include catastrophic disruptions of global climate[i] and massive destruction of** Earth’s protective **ozone** layer[ii]. These and more recent studies predict that global agriculture would be so negatively affected by such a war, **a global famine would result**, which would cause up to 2 billion people to starve to death. [iii]//// These peer-reviewed studies – which were analyzed by the best scientists in the world and found to be without error – also predict that **a war fought with less than half of US** or Russian strategic **nuclear weapons would destroy the human race**.[iv] In other words, a US-Russian nuclear war would create such extreme long-term damage to the global environment that it would leave the Earth uninhabitable for humans and most animal forms of life.//// A recent article in the Bulletin of the Atomic Scientists, “Self-assured destruction: The climate impacts of nuclear war”,[v] begins by stating://// “A nuclear war between Russia and the United States, even after the arsenal reductions planned under New START, could produce a nuclear winter. Hence, an attack by either side could be suicidal, resulting in self-assured destruction.” In 2009, I wrote an article[vi] for the International Commission on Nuclear Non-proliferation and Disarmament that summarizes the findings of these studies. It explains that nuclear firestorms would produce millions of tons of smoke, which would rise above cloud level and form a global stratospheric smoke layer that would rapidly encircle the Earth. The smoke layer would remain for at least a decade, and it would act to destroy the protective ozone layer (vastly increasing the UV-B reaching Earth[vii]) as well as block warming sunlight, thus creating Ice Age weather conditions that would last 10 years or longer.//// Following a US-Russian nuclear war, temperatures in the central US and Eurasia would fall below freezing every day for one to three years; the intense cold would completely eliminate growing seasons for a decade or longer. No crops could be grown, leading to a famine that would kill most humans and large animal populations.//// Electromagnetic pulse from high-altitude nuclear detonations would destroy the integrated circuits in all modern electronic devices[viii], including those in commercial nuclear power plants. Every nuclear reactor would almost instantly meltdown; every nuclear spent fuel pool (which contain many times more radioactivity than found in the reactors) would boil-off, releasing vast amounts of long-lived radioactivity. The fallout would make most of the US and Europe uninhabitable. Of course, the survivors of the nuclear war would be starving to death anyway.

**Thus, we affirm.**