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Resolved: The United States federal government should substantially increase its investment in domestic nuclear energy.

We affirm

Contention one is U.S. hegemony

American adversaries dominate nuclear energy

Cohen 24 (Dr. Ariel Cohen, Ph.D. is a Senior Fellow at the Atlantic Council and the Founding Principal of International Market Analysis, a Washington, D.C.-based global risk advisory boutique. He is also Managing Director of the Energy, Growth, and Security Program (EGS) and a Senior Fellow with the International Tax and Investment Center (ITIC). 7 June 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/, DOA: 3/5/25) LLO

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 Nuclear reactors under construction 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 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 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, which Russia is using to try to acquire formerly French uranium assets, helped force Europe to double its import of Russian uranium in 2023. The US was no better, remaining dependent on Russian nuclear exports even after the war in Ukraine restarted in 2022. The US imported Russian nuclear fuel until May 14th, 2024, over two years after Russia's invasion of Ukraine began, from the same entities that the White House sanctioned.

Cohen continues (Dr. Ariel Cohen, Ph.D. is a Senior Fellow at the Atlantic Council and the Founding Principal of International Market Analysis, a Washington, D.C.-based global risk advisory boutique. He is also Managing Director of the Energy, Growth, and Security Program (EGS) and a Senior Fellow with the International Tax and Investment Center (ITIC). 7 June 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/, DOA: 3/5/25) LLO

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 under construction in China as of July 2023.** This is due to increasing energy demand, as China continues to develop its economy. The United States is constructing a single nuclear power plant. **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, 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 a third-generation reactor called Hualong One.** This new reactor began operations in 2021 in Fuqing**. In 2023, China began construction 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 in 1990, with America on a path to carbon neutrality much earlier than current predictions. **34 years later, the United States 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 evaporating.**

And, America is losing influence

Policy Circle 24 (Policy Circle is a digital platform that offers in-depth coverage of public policy issues in governance, environment, and society. It was launched in 2020 by a group of policy experts who share a vision of promoting evidence-based policymaking and constructive policy dialogue. It also organises summits, roundtables, and online discussions to bring together policymakers, researchers, corporate executives, professionals, and other stakeholders to deliberate on policy issues. December 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/, DOA: 3/28/25) LLO

In 2010, a historian 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.

The US can still catch up but time is of the essence

Nordquist 24 (DJ Nordquist, advisory board member at ClearPath and a senior advisor at the Center for Strategic and International Studies. She previously served as the executive director representing the United States on the Board of Directors of the World Bank Group and chief of staff at the Council of Economic Advisers in the White House. DJ is a member of Carnegie's taskforce on U.S. Foreign Policy for Clean Energy Supply Chains. 1 November 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, DOA 3/1/2025) ESR

China dominates global supply chains for renewable energy and batteries and is now setting its sights on becoming a superpower in nuclear energy.11 China understands the simultaneous need for clean baseload power in the form of nuclear (despite China's current heavy reliance on coal) in addition to intermittent renewable energies. Over the past several decades, **as the West has grown increasingly cautious about nuclear, China has forged ahead and is now building twenty-five reactors, more than the next six countries combined.**12 In fact, it has more nuclear reactors under construction than any other nation in the world, and approved ten new reactors in each of the past two years.13 **The country is expected to surpass** France **and the United States to become the world's leading atomic power generator by 2030**, according to BloombergNEF.14 **It** also **is responsible for a new** breakthrough: a **meltdown-proof nuclear reactor**, which has been a goal for several U.S. companies like X-energy and Kairos, as well as the U.S. Department of Defense, but which China is building faster.15 **China's new nuclear dominance would be added to its control of solar, wind, and EVs** (through the magnetic motor and lithium-ion battery supply chain).16 It already processes 90 percent of rare earth elements and 60 to 70 percent of lithium and cobalt (which China manufactures with very low environmental and labor standards).17 Overall, **the United States is reliant on other countries for its critical minerals, needing to import more than half its supply** of thirty-one out of the thirty-five minerals defined as critical by the government in 2018; the country also has no domestic production at all for fourteen of those minerals.18 **The United States must double-track its energy efforts just as China has: work to increase nuclear power as a workhorse that can ensure the United States has reliable electricity, while also (re)establishing domestic renewable supply chains and manufacturing.** In other words, America needs to build—and lead—in multiple forms of energy. Unfortunately, it seems the United States cannot get out of its own way. According to a 2022 International Energy Agency (IEA) analysis that describes the path to reach net zero by 2050, the world would need to double its nuclear energy capacity even with the assumed exponential growth in solar and wind.19 The IEA's model assumes an average of 30 gigawatts of new nuclear capacity coming online every year starting in the 2030s and staying on that track for another two decades, until 2050. The math then becomes clear: **the world needs to build and turn on the equivalent of 180 more 1,000-megawatt reactors, or twenty-five more new reactors per year, by 2030, with further growth afterward in order to hit the 2050 target**.20 **If all of those reactors are built by China and Russia, not just for their domestic use but also for export, other countries will be locked into their tech and supply chains for decades. Russia supplies more than 40 percent of the world's enriched uranium, including about 20 percent of what the United States uses**, which means one in twenty American households were powered by Russian-enriched nuclear fuel in 2022.21 Fortunately, **lawmakers passed the Prohibiting Russian Uranium Imports Act, signed by President Joe Biden in May 2024, which bans unirradiated low-enriched uranium from Russia or Russian firms from being imported into the United States, with the goal of increasing U.S. production**.22 The law includes nearly $3 billion in federal funding to expand the domestic uranium industry in hopes of building demand, and will also help build new low-enriched uranium supply (which is what current reactors use as fuel) as well as create capacity to produce high-assay low-enriched uranium (HALEU, which is what advanced and next-generation reactors use as fuel). **Adding Russia and China together, these two U.S.**

adversaries control nearly 60 percent of the world's supply of enrichment needed to fuel the next generation of reactors.23 **China also intends to build a total of 150 new nuclear reactors between 2020 and 2035, which includes a target of selling thirty nuclear reactors via its Belt and Road Initiative to** states it considers its **vassals**.24 And **thanks to its massive state support system, China can build a lot cheaper**: it has already bid to build Saudi Arabia's first nuclear plant at a price at least 20 percent lower than competing bidders.25 **China now seems to be at least a decade ahead of the United States in nuclear power**, specifically **because of its ability to field fourth-generation reactors**; is poised to build six to eight new nuclear power plants each year; and is expected to surpass the United States in nuclear-generated electricity by 2030.26 China is expected to finish its first commercially operating SMR by 2026, while leading U.S. advanced nuclear firm TerraPower is expected to be online by 2030.27 In addition, **the current U.S. nuclear fleet is aging. The vast majority of American nuclear capacity was built between 1970 and 1990**, with the country's newest plant (Plant Vogtle's AP1000 reactor in Georgia) completed in 2024.28 The United States should not wait decades to commission its next nuclear power plant; it is down from its peak of 112 reactors in 1990 to ninety-four operating today.29 Moreover, **now is the time to double down on U.S. nuclear development and leverage a domestic workforce that has recently absorbed the know-how of nuclear reactor construction from Vogtle**—what economists call diffusion of knowledge, which is essential for economic dynamism and innovation.30 **The longer the United States waits to construct a reactor, the more it risks a brain drain of the first batch of expertise gained in decades**: some 14,000 workers (including engineers, welders, masons, electricians, mechanics, and support staff) helped to construct the Vogtle plant and could be deployed to build another AP1000 as quickly as possible to keep domestic know-how alive and to maintain nuclear power momentum.31 Meanwhile, **China is taking the same approach with nuclear that it took with other forms of green energy: establish and subsidize domestic capacity as a foundation for competitive reactor exports**. Beijing's "dual circulation" strategy to keep its economy from being reliant on imports, particularly from the West, was even enshrined in its constitution.32 It has successfully created Chinese dominance in mineral processing and overcapacity in clean tech, which are killing many domestic producers, not just those in the United States.33 China also got a great deal of help from the United States: one of the main U.S. nuclear firms, Westinghouse, agreed to license its tech to China over several years, even agreeing to allow China to export its technology—which seems like unwise policy in retrospect.34 Beyond that voluntary tech transfer, China's military also hacked Westinghouse and stole its "confidential and proprietary technical and design specifications for pipes, pipe supports, and pipe routing within the AP1000 plant buildings," as well as sensitive emails, according to the U.S. Department of Justice indictment.35 (Russia has also been charged with hacking Westinghouse in an effort to steal the company's IP.)36 **If the United States aims to avoid falling behind China on nuclear power, it will have to make producing energy within its own borders easier**. That starts with making it easier to mine and build.

Domestic production is critical to heg

Hiltibran et al 24 (Christel Hiltibran, Director of International Policy, Climate and Energy Program, Rowen Price, Policy Advisor for Nuclear Energy, Ryan Norman, Senior Policy Advisor for Clean Energy Finance, Climate and Energy Program, Alan Ahn, Deputy Director for Nuclear, 31 January 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., DOA 3/1/2025) ESR

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 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. A robust domestic nuclear supply chain has corollary benefits, including reliable energy supply, that are foundational to our defense and technology sectors**. 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. Failure to compete overseas will enable China, Russia, and other rivals to erode our influence on these international standards and cement century-long geostrategic partnerships 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**. 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 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) **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.

Baker et al 17 (Suzanne Hobbs Baker: Former Visiting Fellow for Nuclear Security. Ryan Fitzpatrick: Senior Director of Domestic Policy, Climate and Energy Program. Matt Goldberg: Fellow, Clean Energy Program. 1/10/17, "Getting Back in the Game: A Strategy to Boost American Nuclear Exports", Third Way, https://www.thirdway.org/report/getting-back-in-the-game-a-strategy-to-boost-american-nuclear-exports //. DOA: 3/16/25)JDE

BACKGROUND Competing in the global civilian nuclear energy market should be a top economic priority for the U.S. **The Department of Commerce predicts that global demand for nuclear energy technology will total $500-$740 billion over the next decade**.1 And that's just the beginning. Leading authorities including the International Energy Agency **expect the world's nuclear capacity to double by 2050**,2 as developing economies try to keep pace with growing energy demand and most nations turn increasingly to low-carbon sources to meet emissions targets.3 **Capturing even a portion of a market this size would produce enormous rewards for American businesses and workers.** Also of interest for the United States, **nuclear deals create strong geopolitical ties between the selling country and the host country—a commitment lasting as long as the life of the project (between 50 and 100 years).** In essence, where you have civilian nuclear power deals, you have **long-term partnerships and greater chances for international cooperation. The U.S. was the dominant force in the global civilian nuclear trade for decades, enjoying both the rewards and responsibilities that come along with that**. As pioneers in nuclear energy innovation, the U.S. was able to develop world-class products and establish a successful export regime in the 1970's and 1980's. We are still making profits off of some of those earliest deals. Today, America has a multi-billion dollar nuclear energy industry that employs a domestic workforce of more than 100,000 people.4 At the same time, the U.S. has used its commercial leadership to establish global security standards. We have long been the largest contributor to the International Atomic Energy Agency, the United Nations' nuclear non-proliferation watchdog.5 The U.S. government also helps other nations with regulatory, safety, security, and innovation needs—even when there is no commercial benefit involved. We consistently put the safety and security interests of the global community first. This is what being a responsible world leader looks like. **In recent decades, however, the U.S. has lost its edge as a global exporter. Our products have a harder time competing with all-inclusive deals offered by Russia's state-supported industry and may soon face additional challenges like lower-cost Chinese reproductions.**6 **Losing this market** share hurts more than just the bottom line for our producers and workers. It **limits our ability to influence global standards. It also allows our competitors to lock-in long term, influential alliances with countries that are important to American foreign policy strategy.** To help our domestic industry adapt to the realities of today's market and regain global leadership, the U.S. needs a new policy strategy.

Affirming enables exports

Bowen et al 20 (Matt Bowen is a research scholar at the Center on Global Energy Policy at Columbia University School of International Public Affairs and a senior fellow at the Atlantic Council Global Energy Center. Jackie (Kempfer) Siebens is a senior policy adviser for the energy and climate program at Third Way and a senior fellow at the Atlantic Council Global Energy Center. Jennifer T. Gordon is the managing editor and senior fellow for nuclear energy at the Atlantic Council Global Energy Center. 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/ //. DOA: 3/3/25)JDE

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, 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 (Thomas Graham is a retired diplomat who helped negotiate every international arms control and nonproliferation agreement from 1970 to 1977, co-chair of the Nuclear Energy and National Security Coalition, 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/, DOA: 3/4/25) ST

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 United States 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**.

Nuclear energy dictates global influence

Henderson 20 (Eric A Henderson is a Dedicated student with a passion for historical and current research with in-depth knowledge of government, international affairs, and national security. Analytical individual working in government administration at Federal Law Enforcement Agencies. I am interested in developing a career in national security while maintaining my interest in intelligence and energy security, 2020, "RESTORING AMERICAN LEADERSHIP IN THE GLOBAL NUCLEAR ENERGY MARKET" Johns Hopkings University, https://jscholarship.library.jhu.edu/server/api/core/bitstreams/2d0e3990-1779-4371-b015-79c9794875d0/content, DOA: 3/7/25) ST

Once China has fully satisfied its domestic priorities as set by its national policy, its ability and desire to export nuclear technology will continue to increase. **China has expressed openness to a number of different operating models including everything from engineering and procurement to owning and operating foreign reactors. The push to export their technology has steadily increased over the last decade** reaching a peak in 2015 with the new incentives to finance nuclear projects following $103 billion outboard trade and investments in 2014 and again in **2017 with the formal launch of their Belt and Road Initiative (BRI)**.10 Although gaining access to established nuclear markets such as the US, Japan, or Russia is highly unlikely, the United Kingdom and France may offer more opportunities for Chinese exports. China is working to gain access to these markets as it would advance the credibility of their technology further establishing them as a leader in nuclear energy. **The geopolitical intentions are not hidden behind China's increased nuclear involvement abroad**. **It has framed its push for increasing its own domestic nuclear energy production as a war against climate change, but China's global influence goals should not be ignored. Exporting nuclear energy creates a link to China that many nations will be locked into for decades. With each reactor exported or project financed Beijing has intertwined itself within a critical element of growing nations' energy production which it will rely on to support its growing economy. China's current reactor construction accounts for more than half of global nuclear growth, exporting to various nations** such of which are allied with the west as well as nations **that are**

not member of the Nuclear Non-Proliferation Treaty. 11 It is for this reason the concerns over nuclear proliferation have been raised. China is setting itself apart from every other nuclear exporting country, sans Russia, using nuclear energy projects as a geopolitical tool, expanding its level of influence and power in regions it currently operates in and creating new ties to regions that have traditionally been outside its **S**phere **O**f **i**nfluence. Russia While China has been strengthening its domestic nuclear ability with the hopes of increasing its global expansion, Russia has been steadily increasing its nuclear energy exports. Despite being responsible for the worst nuclear disaster in history, Russia has remained active in the nuclear energy space, re-emerging with a new design after a 20-year lull. Unlike many western nations, Russia has continued its efforts to advance and export nuclear [technology] through its state-owned corporation, Rosatom. As a result, Russia finds itself as the leading exporter of nuclear energy**. Rosatom's exports of reactors have nearly tripled s**ince 2011, their confirmed export orders comprise 60 percent of the overall market and a quarter of Russia's own GDP totaling $330 billion.**12 These plans span the globe, from the Middle East to South America, highlighting the global reach and, more importantly, influence Russia has been able to attain**. Similar to China, Russia considers nuclear energy exports a key element of its foreign policy. Signing nuclear deals with developing countries has allowed Russia to bolster its international image by playing the benevolent supporter of rising nations while situating itself to reap the benefits of its goodwill in the future. Russia has already displayed its willingness to exploit its natural gas exports in Europe as it dominates the market with no viable competitor. There is little reason to think it will not act in such a manner in its nuclear energy exports as well. A major reason Rosatom has become so dominant in the market is because of its Build, Own, Operate offerings. This lowers the barriers to entry significantly for developing nations. As such it an enticing option to purse **a nuclear relationship with Russia** over any other nation. Under this scheme, Russia's Rosatom manages everything from the fuel needed to the building and operation of the reactor to the management of spent fuel, while also financing 49-90% of the project. 13 The dependency this creates on Russian resources and expertise in unparalleled by any other form of energy export. The existence of such a dependency will undoubtedly **be used as tool of political coercion. The leverage Russia is able to exercise over more established nations of Europe will pale in comparison to the leverage it will have over developing nations in Africa and more importantly for the US or South America. The issue is compounded by the fact that nuclear power carries far higher and lasting consequences than natural gas pipelines if poorly managed. Russia will be far more integrated into nations that rely on it for nuclear material and expertise. This integration will give Russia a greater ability to manipulate agendas[.]for geopolitical gain with the implication of a threatening a nations energy supply. Such behavior has been seen with Hungary.** Russia has assisted Hungary advance its nuclear ability considerably to achieve over half of its energy production from nuclear energy. As a result, the Hungarian government has been openly thankful for the support of the Russian government and has called for the EU to end its sanctions and normalize relations with Russia.14 With Rosatom contracted to construct reactors in nearly 30 countries, it is not hard to imagine similar scenarios unfolding. Nations that have traditionally been friendly or even allied with Western powers are severely limited in their options for pursuing nuclear energy production. As such, their desire to gain access to a clean and reliable mean of energy production may reasonably outweigh their wariness for a nation such as Russia or China. However, **once China or Russia gain access to new governments, either with financing, construction, or operation, these US adversaries will have an extremely effective means of destabilizing traditional allies and spheres of influence. Aside from the obvious concerns of Russia and China becoming involved with allied nations in a critical sector, there is the large concern of safety** and regulation of nuclear power. As China advances its domestic ability and gains traction with its latest nuclear technology, Russia will gain a real competitor with the business of nuclear export. **Each country has already shown its willingness to export to any nation with some amount of capital and an interest to construct. With a shrinking market size, each nation will become more likely to export to nations the US would much rather remain non-nuclear. As mentioned, both countries have or have plans to export technology to Africa, the Middle East, and South America, to include nations such as Yemen, Rwanda, Cuba, and Venezuela to name a few. All of which have questionable track records of stability and would pose a significant threat should they gain access to nuclear materials** and reactors that are regulated and operated beneath US standards. The US finds itself in a world where nuclear energy is on the rise and being promulgated by its two largest adversaries. Yet, it also finds itself engaged in an internal debate over the future of nuclear energy. Much of the American public sees this issue as one of domestic safety and environmental concern and fails to place the matter within the larger context of national security.

This is likely due to the fact that great power competition is not seen as a top priority by the American public as shown by recent polling. 15 This polling is reflective of the misconception that the geopolitical chess matches of the Cold War are of the past, developing nations are not pawns to be won but nations free to decide their own fate. However, that is not reflective of the world that is being shaped by Chinese and Russian policies of predatory lending and aggressive exporting of nuclear power to nations that may be entirely unsuited to responsibly utilize such technology.

w/o heg, democracy fails

Thayer [Bradley A., Prof. Poli. Sci. @ Mo State U, In Defense of Primacy, The National Interest, November]

Everything we think of when we consider the current international order--free trade, a robust monetary regime, increasing respect for human rights, growing democratization is directly linked to U.S. power. Retrenchment proponents seem to think that the current system can be maintained without the current amount of U.S. power behind it. In that they are dead wrong and need to be reminded of one of history's most significant lessons: Appalling things happen when international orders collapse. The Dark Ages followed Rome's collapse. Hitler succeeded the order established at Versailles. Without U.S. power, the liberal order created by the United States will end just as assuredly. As country and western great Ral Donner sang: "You don't know what you've got (until you lose it)."

Democracy!

Kasparov 17 [Garry, Chair of the Human Rights Foundation, "Democracy and Human Rights: The Case for U.S. Leadership" 2/17,]

The Soviet Union was an existential threat, and this focused the attention of the world, and the American people. The existential threat today is not found on a map, but it is very real. The forces of the past are making steady progress against the modern world order. Terrorist movements in the Middle East, extremist parties across Europe, a paranoid tyrant in North Korea threatening nuclear blackmail, and, at the center of the web, an aggressive KGB dictator in Russia. They all want to turn the world back to a dark past because their survival is threatened by the values of the free world, epitomized by the United States. And they are thriving as the U.S. has retreated. The global freedom index has declined for ten consecutive years. No one like to talk about the United States as a global policeman, but this is what happens when there is no cop on the beat. American leadership begins at home, right here. America cannot lead the world on democracy and human rights if there is no unity on the meaning and importance of these things. Leadership is required to make that case clearly and powerfully. Right now, Americans are engaged in politics at a level not seen in decades. It is an opportunity for them to rediscover that making America great begins with believing America can be great. The Cold War was won on American values that were shared by both parties and nearly every American. Institutions that were created by a Democrat, Truman, were triumphant forty years later thanks to the courage of a Republican, Reagan. This bipartisan consistency created the decades of strategic stability that is the great strength of democracies. Strong institutions that outlast politicians allow for long-range planning. In contrast, dictators can operate only tactically, not strategically, because they are not constrained by the balance of powers, but cannot afford to think beyond their own survival. This is why a dictator like Putin has an advantage in chaos, the ability to move quickly. This can only be met by strategy, by long-term goals that are based on shared values, not on polls and cable news. The fear of making things worse has paralyzed the United States from trying to make things better. There will always be setbacks, but the United States cannot quit. The spread of democracy is the only proven remedy for nearly every crisis that plagues the world today. War,

famine, poverty, terrorism–all are generated and exacerbated by authoritarian regimes. A policy of America First inevitably puts American security last.

Contention two is power demand

US is losing the AI race

Zulhusni 25 (Muhammad Zulhusni, As a tech journalist, Zul focuses on topics including cloud computing, cybersecurity, and disruptive technology in the enterprise industry. He has expertise in moderating webinars and presenting content on video, in addition to having a background in networking technology. March 24, 2025 "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. DOA: 4/3/25) LLO

Major US artificial intelligence 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, 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 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, advisory board member at ClearPath and a senior advisor at the Center for Strategic and International Studies. She previously served as the executive director representing the United States on the Board of Directors of the World Bank Group and chief of staff at the Council of Economic Advisers in the White House. DJ is a member of Carnegie's taskforce on U.S. Foreign Policy for Clean Energy Supply Chains. 1 November 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, DOA 3/1/2025) ESR

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 **United States** 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 2025(Sonal Patel, POWER senior editor, 3-3-2025, "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/, DOA: 3/7/2024)ET

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 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, 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.

SMRs (small modular reactors) are key 2 meet demand

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Tech giants are increasingly turning to nuclear power to meet the growing energy demands of the data center boom. 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 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 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 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. 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 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. 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 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 2025(Sonal Patel, POWER senior editor, 3-3-2025, "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/, DOA: 3/7/2024)ET

From an operational standpoint, 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. "T**he 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 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 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, 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 2025(FENGRONG LI, CFA, CIRA Managing Director Power, Renewables & Energy Transition (PRET) FTI Consulting, 27 February 2025, "The Powerful Duo of Nuclear and Data Centers", FTI, https://www.fticonsulting.com/insights/articles/powerful-duo-nuclear-data-centers, DOA: 3/7/2025)ET

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 and Schmidt 20 (Graham Allison is the Douglas Dillon Professor of Government at Harvard University where he has taught for five decades., Eric Schmidt, "Is China Beating the U.S. to AI Supremacy?", Belfer Center, https://www.belfercenter.org/publication/china-beating-us-ai-supremacy, DOA 4/2/23) RK

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 United States 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**.1,2,3 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 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 **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 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 United States 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 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 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 Even after several American companies' machines had bested the chess masters of the universe10, 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—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 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 Twelve months after Xi's directive, investments in Chinese AI startups had topped investments in American AI startups.14 By 2018, China filed 2.5 times more patents in AI technologies than the United States.15 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 while Apple Pay only has 22 million in the United States.17 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 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 including the recent introduction of Facebook Pay, are copying Tencent, rather than the other way around.

Kroenig 21 (Dr. Matthew Kroenig is a professor of government and foreign service at Georgetown University and the director of the Scowcroft Strategy Initiative at the Atlantic Council. His most recent book is The Return of Great Power Rivalry: Democracy versus Autocracy from the Ancient World to the US and China (2020), Winter 2021, "Will Emerging Technology Cause Nuclear War?" Strategic Studies Quarterly, https://www.jstor.org/stable/pdf/48638052.pdf DOA: 3/7/23) LLO

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 technology to the United States 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 its 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: Director, Clinical Laboratory Science Program at the U of Missouri. Senior scientist for Physicians for Social Responsibility. 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 // DOA: 4/1/21)JDE

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**.////