

GEO TECH

IMPLEMENTATION AT HOME,
PARTNERSHIPS ABROAD



CSPC

**CENTER FOR THE STUDY OF THE
PRESIDENCY & CONGRESS**



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GEOTECH: IMPLEMENTATION AT HOME, PARTNERSHIPS ABROAD

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Introduction

Throughout 2022 we continue to see the maturation of geotech policy. Both the White House and Congress have been pushing ahead to develop a range of policies to support American innovation and protect our cutting-edge technology leadership. They do so at a time of international competition and growing recognition of the geostrategic and geoeconomic challenge posed by China—a recognition made all the more acute by Russia's expanded invasion of Ukraine in February 2022. This report seeks to highlight the actions taken by the Biden administration and Congress to address this geotech challenge, while also looking at the ways the United States can work with allies and partners to address this shared geotech challenge.

The major geostrategic shift we see has been accelerated by the Russian invasion of Ukraine and Xi Jinping's consolidation of power in China. First, as Moscow assaulted Ukraine and expanded its occupation, we saw a greater degree of solidarity among the nations we would traditionally call the West, along with reticence among the Global South to join in sanctioning Russia. At the same time alongside significant financial sanctions, the West moved to restrict Russia's access to critical technologies. On one hand these measures have degraded the Russian war machine. Yet, much of this conflict still comes down to matters of military production and supply lines more so than advanced technologies. Lessons about access to technology, its use on the battlefield, and how it will determine the balance of security are being written on the battlefields of Ukraine.

In China Xi Jinping's coronation to a third term unprecedented since Mao has come alongside muscular military and diplomatic action abroad and a range of both security and pandemic related crackdowns and repression at home. While zero COVID is a pandemic control strategy, it also reflects the new political reality in China. Business leaders are considering both as they look at their reliance Chinese supply chains and manufacturing. Tensions about Taiwan have also demonstrated how quickly vital supplies of semiconductors could be disrupted in time of conflict. Now, the United States and China find themselves in open technological competition, as the Biden administration has made it clear that the United States will work to not only maintain its edge in certain critical technologies, but also restrict China's ability to develop them further.

Given this geostrategic environment—and its relation to the critical technologies upon which the modern economy relies and future strength will be defined—the Biden administration and Congress moved on executive and legislative Geotech priorities in 2022. After years of legislative wrangling, the CHIPS and Science Act became law in 2022, providing support for American leadership in semiconductor technologies and manufacturing. Bipartisan

infrastructure legislation that became law in 2021 is providing support for broadband internet. In the Inflation Reduction Act, legislation moves to support a range of green energy investments—an area of increasing competition with China—while also addressing the security of critical supply chains. Now, for the Biden administration, the challenge is not getting legislation passed. The window for that may be limited by what spirit for bipartisanship can be mustered in a divided Congress. Now, the challenge is to quickly and carefully roll out programs and investments totaling in the billions of dollars at home, while coordinating what can be considered industrial policy with allies—some now worried about U.S. subsidies for industry.

Beyond legislation and executive efforts to strengthen our industries and their competitive and innovative edges, the Biden administration and Congress have set policies that aim to protect our critical technologies, industries, supply chains, and infrastructure from China. The measures range from expanded export controls on semiconductors to restrictions on Chinese equipment in U.S. telecom infrastructure. Legislation addressing the Uyghur genocide and forced labor is now being applied to supply chains in China. Combined with China's own policies, a decoupling is becoming apparent—at least at high levels of technology. Attention increasingly turns to investment and financial ties between the two powers. Now, with proposals for outbound investment review under consideration, how far we go in decoupling and how we avoid counterproductive, unintended consequences becomes more important.

With challenges in the economic relationship with China, it is important to build other partnerships and reassert U.S. economic leadership. The Biden administration's major geoeconomic foray is the Indo-Pacific Economic Framework (IPEF). With the departure of the United States from the Transpacific Partnership, the region has moved ahead with its own geoeconomic and trade agenda. While IPEF is a welcome step forward for U.S. re-engagement in the region, it will require further detail to allay concerns about its lack of meaningful trade elements such as market access, as well as the lack of legislative elements to cement the policies. Still, the IPEF can serve as a useful tool for engaging economies in the region and countering Beijing's efforts.

Deeper coordination between the United States and European partners on technology policy, trade, standards, and supply chains offers clear benefits. Meanwhile, economic and security uncertainty, combined with an improved transatlantic relationship, are creating a favorable environment for progress on this front. The 2022 EU-U.S. Data Privacy Framework and accompanying Executive Order on civil liberties protections for EU citizens are milestones in the longstanding dispute over transatlantic data transfers. Work continues at the U.S.-EU Trade and Technology Council, and while the Council is still in its early rounds of discussions, it offers the potential for meaningful breakthroughs that will accelerate U.S. and European competitiveness.

The Biden administration has worked closely with allies in multilateral and plurilateral forums to develop joint economic efforts and coordinate geotech policies. Here, partnerships with allies can protect supply chains through increased near-shoring and “friend-shoring”. Still, the implementation of recent legislation, rules on supply chains, and government support for U.S. industries have some allies and partners concerned about the impact on their own technology and innovation leadership. Here, continued emphasis on expanding trade partnerships, harmonizing data and digital policies, and encouraging co-innovation and co-development will be important for success.

Throughout 2022, CSPC continued its engagement with U.S. and allied policymakers, private sector leaders, and academic experts regarding strategically critical technologies, policies to promote innovation leadership, geopolitical and strategic competition, and trends in commerce, trade, and technology. Thanks to re-opened international travel, we were able to return to in-person convening of international experts in Washington and overseas.

This report reflects, and respects, the off-the-record nature of these discussions, combined with open-source research and the analysis of CSPC staff, advisors, and fellows. In the updates on Geotech policy in competitors China and Russia and ally Japan, CSPC staff and fellows have lent their expertise and analysis to the work of our research team. Our analysis of legislation is not meant to be exhaustive—nor endorse legislation—but to track the progress of substantive, and likely, Geotech policymaking and implementation.

In 2022, following our January geotech report on the early actions of the Biden administration, CSPC has continued to track geotech developments. A sector-specific report specifically focused on the latest developments in 5G and 6G technology and how U.S. policies can be better tailored to promote leadership in these technologies, encourage continued Open RAN development, and protect the intellectual property that underpins innovation in these fields.

The report early this year encouraged greater and faster action from the administration and Congress befitting the recognition of the geotech challenge. Now, the events of 2022 have made the scope and nature of the challenge all the clearer, and a bipartisan geotech consensus is clear. Now, the challenge grows even more complex, as we must not only keep up with the pace of competitors abroad but also ensure that we make the right investments in our future innovation leadership, economic strength, and national security.

The Geostrategic Shift: A New Cold War?

2022 will be history's marker for when the Sino-American "Cold War" began in earnest. The Party Congress coronation of Xi Jinping and the Biden administration escalation of technology sanctions mark wholesale shifts in how Beijing's and Washington's perceptions of each other — and themselves. Coming after Russia's expanded invasion of Ukraine, the perceptions of threat and conflict have changed, not only for U.S. and Chinese policymakers, but also leaders in government and business around the world.¹

If history does not repeat, but rather rhymes, there is a unique rhyme to the start of this period of tension. In the original Cold War, while tensions between Washington and Moscow grew, it was the outbreak of the Korean War—on the other side of the world from the flashpoints of Berlin and the Iron Curtain—that focused and truly mobilized what would be the U.S. and allied approach to the decades' long struggle for influence to come. Now, where the flashpoints between Washington and Beijing are the Straits of Taiwan or the South China Sea, it was Russia's expanded invasion of Ukraine that awoke policymakers to the geostrategic shift away from globalization towards a more complicated competition. Sanctions on Russia have also demonstrated how the United States and its allies might seek to punish an aggressive power, while also revealing the limits of such approaches.

How we move forward requires a careful balance between embracing our strengths and addressing our weaknesses — while being clear eyed about the scope of the challenges ahead. While the political and economic changes in China are significant, there is not the clear divide between blocs as the Iron Curtain made. Economic interdependence is significant, but increasingly being reevaluated. The shift is seen more in the strategically critical technologies of concern, but doubts about the economic relationship extend across other supply chains and other fields such as green technology, fintech, and automated systems.

First, in China, the political changes continue to drive the economic and technology picture. What the 20th Party Congress made clear is that, for now, it is Xi's China. The standing committee of loyalists demonstrates a consolidation of power that has taken place over the past decade — often behind the scenes, other times very publicly — and the removal of the consensus-based system that served as a brake on any one-man rule of China. The very public embarrassment of Hu Jintao demonstrated at a minimum that there would be no other "paramount leader" sharing the stage with Xi, while signaling — alongside the committee

¹ This section is expanded from the October 28, 2022, CSPC Friday News Roundup article, "2022 & the New Cold War" by Dan Mahaffee. <https://medium.com/@cspc-dc/friday-news-roundup-october-28-2022-5dba8b7b07a0>

appointments — the sunset of Hu’s cadre within the party. More sinisterly, the scene comes out of many a dictator’s playbook: “if I can do this to him, imagine what I can do to you...”

Beyond that drama, the reality ahead is that China has a leadership cadre focused on Xi Jinping’s priorities. We see those priorities apparent in Zero-Covid, the Uyghur genocide, the crackdown on Hong Kong, moves to prepare for invasion of Taiwan, and economic debt-trap coercion married with wolf-warrior diplomacy on a global stage. Now, facing unrest at home, the question may be not so much whether Beijing’s model is on the ascendance, but rather how will it get itself out of the corner in which it has backed itself?

Zero-Covid policies have left China facing hard choices between economic growth, social stability, and the impact of the virus on its fragile population and healthcare system. At the same time, China’s response to Speaker Pelosi’s visit to Taiwan demonstrated the scope of China’s overresponse, as well as the world’s vulnerability to conflict in the region. Western leaders in government and the private sector now increasingly reevaluate their relationship with China, yet for much of the developing world, China remains the main economic, technological, and, increasingly, cultural power.

The Biden administration’s shift regarding the technology competition with China that we will describe in further detail also reflects a changing economic and technological relationship. With the United States now openly restricting China’s technological advance, the contours of the competition are clear as ever. Halting China’s access to key technologies does buy some time, and may shut off some avenues of research and development, but we can no longer assume that our technological superiority over the competition — nor expect other countries automatically to follow suit. Still, we must be careful about our own approach, even as we highlight China’s excesses.

In many ways the Biden administration has continued a tough approach to China that many policymakers in the Trump administration began to chart. That said, the main critique of Biden by the incoming Republican House majority is that the administration has been weak on China. Therefore, even harsher measures, including outbound investment review, seem likely agenda items for a new Congress. Here, we must avoid the temptation to pursue policies that “out-China, China” or do more harm than good to our own competitiveness. This report covers this in greater detail on the section on Geotech in the next Congress.

This economic element is one of the reasons why some reject the label Cold War, or chide those who use it for an over-reliance on historical comparison. Certainly the U.S.-China

economic co-dependence is now challenged by the geopolitical tension and pressures in both capitals for decoupling.

The Cold War for example, never had this, or really any level, of economic interdependence between the two blocs. Nor did the Soviet Union ever reach anywhere near our economic size. However, those facts should not dissuade us from addressing the gauntlet thrown down by Beijing — rather we must understand that this competition will not only take place with the tools we know of the past Cold War: fleets, forces, spies, diplomats, etc., but also financial markets, supply chains, critical infrastructure, and the other various sinews of economic power. Importantly, we must ensure that resilience is baked in throughout these. Still, as we embark on this competition, we have to be aware of the economic disruption that could result, as well as the fact that many countries and businesses will still be reluctant to turn their back on the Chinese marketplace. How we incentivize new partnerships will be about finding models for development that are of economic and intellectual mutual benefit, address partners' concerns about resources and sustainability, and provide an alternative based on free enterprise and the rule of law.

Befitting the technological aspect of this competition, this new Cold War will be quite like a competition of operating systems. We need to make sure that our system is running smoothly, serving as the most attractive to those around the world wondering whether the future is one defined by Washington and its allies or Beijing and Moscow. In many ways, to succeed, we'll have to focus less on a future that we define, and one that we build together with the Global South. This is where an approach that aims to work with allies can bring greater benefits. At the same time, we must also ensure that given the scope of this challenge — especially if the U.S. is more focused on the Indo-Pacific — that Europe can carry its share of the strategic burden. On one hand, this augurs for the importance of the Indo-Pacific Economic Framework (IPEF), but also addressing the growing economic divide between the United States and Europe—both in economic performance and tensions over subsidies. Maintaining this transatlantic relationship is vital to U.S. strategic balancing. Even if Europeans are not not actively engaged in the Indo-Pacific, they will need to shoulder more of their own security and range of measures needed to deter and compel Moscow.

The Technological Blockade of Russia

On February 24th of 2022, Russia embarked on an expanded invasion of Ukraine. Moscow's forces struck on multiple fronts, believing the country to be little more than a political house of cards; that the Russian armed forces would be welcomed, President Volodymyr Zelenskyy would flee, and Ukraine would once again be part of a greater Russia (as President Vladimir Putin believed). In reality, the Russian military performed far worse than expected, while Ukraine's forces performed far better than anticipated.

The outcome of the war in Ukraine is far from certain. Calls, as of this writing, for negotiations between Kyiv and Moscow are growing, but what a political end-state looks like is unclear. Western countries supporting Ukraine are loath to ask the question of "how this ends" lest they expose fissures in the unity of support that has been critical to Kyiv's recent successes. Indeed, without Western arms and munitions, it is unlikely that Ukraine could have withstood Russia's (bumbling) advances, let alone turned the tide and retaken Russian-occupied territories. Kyiv's advances have been so significant that calls for the re-taking of Crimea have begun to emerge. Perhaps fanciful at best, dangerous at worst, it is nonetheless indicative of the battlefield conditions.

What is abundantly clear is that with that one decision, Putin managed to sever nearly three decades of economic connectivity and integration with the West. From widespread personal and business sanctions (on some 1,000 individuals and entities)², trade embargoes, limitations on the sale of oil and gas, bans on the sale of Russian gold³, and more, the West hoped to strangle Russia's economy, increasing the cost of the war, and force Putin to suspend his operations. The United States banned Russia from making debt payments in foreign currency held in U.S. banks, and major Russian banks were removed from the global SWIFT system.

Thus far this has not had the effect of forcing Putin or Russia to the table. That this is the case is unsurprising—the effect of sanctions have a lagging effect, with their long-term impact being more significant than their performative immediate impact. Moreover, it is unclear whether any amount of economic pain will affect Putin's decision-making calculus. Indeed, Russia's economy has been under some measure of sanctions since the annexation of Crimea in 2014 and Russia's support to separatists in Eastern Ukraine.

It has, however, decidedly impacted the Russian economy. According to independent analysis by the World Bank, the International Monetary Fund (IMF) and the Organization for Economic

² <https://www.bbc.com/news/world-europe-60125659>

³ <https://www.bbc.co.uk/news/business-61941589>

Cooperation and Development (OECD), Russia's GDP is expected to drop by at least 3.4% in the best-case scenario and by up to 5.5% in the worst-case scenario.⁴ This forecast drop is nearly as large as the 6% drop experienced during the 1998 financial crisis.

Oil and Gas

Russia's economy is still predominantly hydrocarbons based. In 2019, oil and gas accounted for some 56% or \$237.8 billion of the country's export income, which in turn makes up nearly 40% of the country's revenue. Perversely, the war in Ukraine caused the value of Russian energy exports to rise despite the sanctions placed upon the industry. This was due to the surge in oil and gas prices on the international market. For example, In May 2022, Russia earned 883 million euros per day from oil exports, up from 633 million euros per day in May 2021.⁵ Russia's revenue from oil rose 41% over the last year, according to private analysis.⁶

This dynamic is set to change, however, as the European Union—which prior to the war imported 36% of its energy from Russia⁷—will ban up to 90% of Russian hydrocarbons. This would dramatically cut Russia's output by as much as 2.3 million barrels of crude oil products per day by February 2023.⁸ The United States has already banned the import of Russian oil and gas, and the UK will phase out Russian oil by the end of this year, having already suspended imports of gas. In September of this year G7 ministers agreed to cap the price of Russian oil in a further bid to limit the revenue Moscow was making from the surge in prices. Western insurers will not cover shipments of Russian oil if the price exceeds the cap.

Imports & Technology

Perhaps most striking is the fact that many of Russia's weapons systems deployed in Ukraine contain Western technology despite varying degrees of pre-war embargoes on dual-use technologies.⁹ Russia has steadily worked to build a stockpile of Western electronics and semi-conductors, many of which found their way into Russian military technology. This notably undercuts Moscow's narrative of a self-sufficient military-industrial base, but also highlights the weaknesses of embargoes and sanctions. Perhaps the greatest case of the inefficacy of technology sanctions is North Korea. Despite decades of economic isolation and some of the

⁴ <https://www.consilium.europa.eu/en/infographics/impact-sanctions-russian-economy/>

⁵ <https://www.nytimes.com/2022/07/29/opinion/russia-oil-sanctions-biden.html>

⁶ <https://www.bbc.com/news/world-europe-60125659>

⁷ <https://www.cnbc.com/2022/05/31/oil-prices-eu-russian-crude.html>

⁸ <https://www.iea.org/reports/oil-market-report-august-2022>

⁹ <https://www.nytimes.com/2022/06/02/business/economy/russia-weapons-american-technology.html>

most robust and comprehensive technology sanctions against Pyongyang, North Korea's ballistic missile and nuclear programs have continued to improve at a steady pace.

Thus far, the West's effort—led by the United States—to prevent the transfer of semiconductors, aircraft components, and other critical technologies has had an effect. American leadership was joined by European Union, Japan, Australia, Canada, New Zealand, Britain and South Korea, Taiwan and Singapore have also indicated that they would support the embargoes.¹⁰ While Russia has boldly suggested this would have no effect, it is worth noting that Moscow has had to turn to Iran for drones¹¹ and North Korea for munitions.¹²

Here there is an inverse dynamic occurring—Russia is rapidly burning through its advanced technology (such as it is), without having access to foreign replacements, while Ukraine is receiving increasingly capable military systems with near unlimited support from the West. Naturally mass has a virtue in and of itself—a central feature of historic Russian military doctrine—but the declining capability of Russian systems presages increased battlefield pressure, to say nothing of the broader economic impact.

More broadly, Russia's economy is facing a period of technological stagnation and isolation in the coming years. Next to no discussions have occurred as to how Russia will reconnect with the global economy, and outside of energy there is little demand for Russian products. Estimates at the low-end of Russia's economic recovery are anywhere from seven to 12 years, assuming that sanctions are fully lifted. This will almost certainly not be the case. Even if the war ends tomorrow on Ukraine's most optimistic terms, there will be punitive measures imposed on Moscow for the foreseeable future. The economic pain Russia will feel in the mid-to long-term will be significantly.

While disconnecting from the global economy does fit within some Russian nationalist dreams of autarky, the impact cannot be underestimated. Early withdrawals by major international brands were replaced by domestic opportunists e.g. McDonalds. This replacement approach is unsustainable for sectors where there are no domestic alternatives. Even where there are domestic alternatives, their performance will almost certainly leave something to be desired, resulting in a net decline in productivity and output.

That said, Russia's economic resilience is not to be underestimated. Moscow has worked to increase the country's domestic industrial and manufacturing base in critical areas such as

¹⁰ <https://www.nytimes.com/2022/03/16/business/economy/us-exports-russia-ukraine.html>

¹¹ <https://www.washingtonpost.com/national-security/2022/11/19/russia-iran-drones-secret-deal/>

¹² <https://www.washingtonpost.com/national-security/2022/11/02/north-korea-russia-weapons-ukraine/>

machine tools, ship building, oil and gas, and others to decrease its vulnerability to Western sanctions, but also to spur the domestic economy. While their performance and capabilities may not be to Western standards or international export, it can in many cases be sufficient to sustain at least in the near term.¹³ In July of this year, Moscow implemented measures aimed at putting the economy on a war footing to support the military's operations.¹⁴

The connection between the state of the economy at home and the war abroad has largely remained unmade, at least thus far. The partial mobilization provoked widespread, but generally limited protests and in late October, Sergei Shoigu, the Minister of Defense announced that it had been completed.¹⁵ There have yet to be widespread strikes or industrial action, or economic-related protest activities. Should these emerge, it could well be signs that the general population is beginning to connect the war with their own economic plight, which may result in greater political pressure on Putin. It is worth cautioning that the Russian economy has been under siege in the eyes of many Russians since 2014 and a measure of internal resilience has set in.

The Brain Drain

While the economy may find a measure of autarkic stability, it is unlikely to be able to replace the lost intellectual capital resulting from the exodus of workers. While full figures are unclear and speculative at best—by one estimate 50,000-70,000 IT specialists fled Russia even prior to Moscow's partial mobilization¹⁶; according to the FSB, 260,000 are believed to have left the country after the announcement¹⁷—it is nonetheless damaging to Russia's future economic prospects. This will dramatically limit the country's efforts, which were already halting at best, to diversify away from oil and gas exports, and to expand the country's domestic information technology sector.

The brain drain risk is very much on the minds of the Russian leadership. Prime Minister Mikhail V. Mishustin called on Russian tech workers to create "our own ecosystem", and began offering lower tax rates, preferable mortgages, and exemptions from the partial mobilization. Mishustin said, "You will be able to work reliably and calmly for your country, for your company, earn

¹³ <https://www.bloomberg.com/news/articles/2022-09-15/russian-economy-seen-to-get-boost-from-outperforming-weapons-manufacturing>

¹⁴ <https://www.ft.com/content/fe233252-69fa-4259-8b35-a34d8738b968>

¹⁵ <https://www.reuters.com/world/europe/russias-shoigu-says-partial-mobilisation-complete-82000-recruits-conflict-zone-2022-10-28/>

¹⁶ <https://www.nytimes.com/2022/04/13/technology/russia-tech-workers.html>

¹⁷ <https://novayagazeta.eu/articles/2022/09/25/istochniki-v-fsb-naschitali-bolee-260-tysiach-pokinovshikh-rossiiumuzhchin-siloviki-khotiat-zakryt-granitsu-no-putin-ne-naznachaet-obsuzhdenii-news>

normal money and live here comfortably.”¹⁸ It is worth remembering that the Russian system, while increasingly authoritarian is not wholly authoritarian, and is responsive to developments within the country, as evidenced by Mushustin’s remarks. The Kremlin knows it cannot afford to alienate everyone just as it knows it cannot unilaterally mobilize every warm body, bodies that are needed to operate factories and manufacturing facilities. It does and will adjust.

The effects of this brain drain are difficult to quantify and may not be fully appreciated for years to come. There is also a risk of overestimation about not only the exodus of Russians out of the country—something made nearly impossible by diplomatic sanctions and embargoes at this stage—and the willingness of Russians to stay abroad given the political reaction and vilification average Russians have experienced in many countries. It is wholly possible that Russians simply look for other avenues of activity outside of the government’s purview (or related to government activity), or simply withhold their productivity and investment. Should the regime change in Moscow, should the war end, and should the country begin to reconnect with the international economy, it is certainly possible that Russians who fled to indeed return home.

The Year Ahead

As mentioned at the outset, Russia’s economy will experience considerable pain in the near- to mid-term. There are no signs that there is a push, at least from the West, to reconnect with Russia’s economy. While China can step in in some areas, this is not a firesale for Beijing—Moscow neither wants nor can afford to simply become a vassal state for President Xi Jinping as many of the more breathless commentators have suggested. Equally, Beijing finds itself in a complex position vis-à-vis the war in Ukraine and Russia. In the case of the former, the longer the West is distracted by Russia’s invasion of Ukraine, the less attention the West has for China’s designs in the Indo-Pacific. Equally, the more damage to Ukraine’s infrastructure Moscow causes, the greater the cost of reconstruction the West faces, which could present opportunities for Chinese businesses. Beijing therefore finds itself in an attractive economic position, if a complicated political one.

The full effect of sanctions will likely hit in 2023 economically and politically. The social contract Putin had with the Russian people will come under increasing strain as the steady improvement in the cost of living and daily lives of the average Russian will all but halt, if not retreat. Even if the war ends today, the reconnection of Russia to the global economy will take years, if at all. Moscow’s sensible programs to diversify its economy will all but halt, but the more optimistic expectations of Russian collapse are overblown and disregard Russia’s pre-war efforts to

¹⁸ <https://www.nytimes.com/2022/04/13/technology/russia-tech-workers.html>

develop self-sufficiency and autonomy, especially in the face of fairly comprehensive post-2014 sanctions and embargoes.

Protecting & Fostering the Technological Lead

As the Biden administration's geotech policy has matured, it has continued the arc of a remarkable bipartisan recognition of the importance of technology competition and innovation leadership spanning the Obama, Trump, and Biden administrations. Given the growth of the importance of the digital economy and the impact of strategically critical technologies on current and future economic prosperity and national security, these policies are maturing under the Biden administration.

Where we have seen the most significant shift, however, has accelerated in the second half of 2022. The remarks by National Security Advisor Jake Sullivan on September 16, 2022, to the Special Competitive Studies Project Global Emerging Technologies Summit, lay out the clear shift in U.S. thinking on the technology competition. Recognizing the geostrategic shift described earlier and the change in thinking following the assault on Ukraine, the U.S. geotech approach is coming together.

This speech laid out what the priority technologies were for the Biden administration: computing technologies such as microelectronics, semiconductors, quantum systems, and artificial intelligence (AI); biotechnology and biomanufacturing developments with genetics and pharmaceuticals; and clean energy technology.

Sullivan described how the administration would use the monies from the CHIPS & Science Act and the Inflation Reduction Act (IRA), "our goal is to 'crowd in' private capital, not replace it, and to attract 'patient capital' to bring critical technologies to scale."¹⁹

This is the model by which the United States could change the way it approaches industrial policy, seeking not to emulate the top-down model of other countries, but to see the government and taxpayer dollars playing a more active role in investing in new technologies, direct support for R&D, and workforce training, while tax credits promote private sector R&D, corporate and individual workforce development, friend-shoring, and the adoption of strategically critical technologies.

¹⁹ <https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/16/remarks-by-national-security-advisor-jake-sullivan-at-the-special-competitive-studies-project-global-emerging-technologies-summit/>

Finally, Sullivan announced what may be the biggest shift, which is how the United States would approach its innovative edge and perceived lead in strategically critical technologies. As Sullivan stated:

Our competitors are using increasingly sophisticated means to illicitly acquire sensitive technologies, information, and know-how, and we must adapt accordingly.

On export controls, we have to revisit the longstanding premise of maintaining “relative” advantages over competitors in certain key technologies. We previously maintained a “sliding scale” approach that said we need to stay only a couple of generations ahead.

That is not the strategic environment we are in today.

Given the foundational nature of certain technologies, such as advanced logic and memory chips, we must maintain as large of a lead as possible.²⁰

This marks a sea change in how the United States approaches its export controls, where a relative advantage is no longer sufficient. While Sullivan did not specifically say China, this speech made clear that the Biden administration would change its technological approach in this competition. No longer are we satisfied to say that we want to maintain that relative edge, rather we are now in the position of avowedly halting another nation’s, or nations’, technological development in strategically critical technologies.

As this report will lay out in the following sections, the Sullivan speech serves to illustrate the policies being implemented by the Biden administration: First, investments in industry and innovation at home. Second, halting the advances by adversaries seeking technology leadership. Third, working with allies and partners to cooperate across the depth and breadth of geotech and related strategically critical technologies.

The Growing Role of the Commerce Department

While Sullivan’s speech laid out the structure for how the administration is approaching the broader technology competition, much of the implementation is coming from the U.S. Department of Commerce. With the term “industrial policy” no longer heresy in Washington, the department has \$100 billion for the semiconductor industry and U.S. broadband, as this

²⁰ Ibid.

report will describe in further detail. This is approximately ten times the annual budget of the department.

The Secretary of Commerce, former Rhode Island governor Gina Raimondo, has been profiled as “a rising star” given her role in these programs, as well as the Department of Commerce’s leadership on matters related to export controls, and its lead position regarding the Indo-Pacific Economic Framework (IPEF). That this is not managed by the office of the U.S. Trade Representative (USTR) demonstrates, however, how IPEF is not a trade deal.

First, the expansion of the department’s portfolio will be a key test for the administration, the department, and its leadership. The department also faces skepticism about whether the government is situated to be making the right bets—though the administration would argue that these efforts are less focused on risky startups and more established industries already critical to national and economic security.

Still, past politics demonstrate how an administration’s political adversaries can pile on scandals that suggest the misuse of taxpayer dollars—even when there is broader bipartisan agreement on supporting these industries for our competitiveness. Careful stewardship by the Department of Commerce will be key to ensuring that as much political momentum is sustained as possible in these geotech efforts.

Implementing New U.S. Legislation

In 2022, the U.S. Congress made significant progress on geotech legislation, while also building on legislative successes from 2021. Billions of dollars are now going to priorities related to semiconductor manufacturing, broadband infrastructure, wireless technologies, green energy, and supply chains. Significant in today's political environment, much of this is the result of 2021's bipartisan infrastructure legislation and 2022's CHIPS and Science Act. Both of these pieces of legislation passed with bipartisan support. Additionally, the Inflation Reduction Act has additional requirements to promote green energy and battery supply chain security, although there is controversy among allies and partners over rules of origin and support for investments in U.S. industries and critical technologies.

The CHIPS & Science Act

On September 2, 2022, the Biden administration announced the strategy for the implementation of the CHIPS for America Fund made possible by the CHIPS and Science Act. The administration also created a [Chips.gov](https://chips.gov) website that would highlight the implementation strategy, resources for the private sector, and provide public updates on the \$50 billion for “programs to strengthen and revitalize the U.S. position in semiconductor research, development, and manufacturing—while also investing in American workers.”

The administration's strategy breaks down the spending as follows: \$28 billion for investments in manufacturing of the most sophisticated logic and memory chips — none of these are currently produced in the United States, so the administration is moving ahead with an eye towards expansion of manufacturing and “multiple high-cost production lines and associated supplier ecosystems. \$10 billion in incentives for new domestic production of older chips that are critical for national security and key economic sectors—these are the ones that are in more often in the consumer goods, cars, and other things we have associated with the “semiconductor shortage”. Together, this first \$38 billion will be grants, cooperative agreements, or subsidies for loans/loan guarantees. The remaining funds will be invested in R&D programs including a “National Semiconductor Technology Center” and other institutional developments focused on R&D. Here the strategy importantly notes the “lab-to-fab” challenge faced as U.S. strengths in research and development face headwinds when U.S. manufacturing capacity dwindles.²¹

²¹ This section is expanded from the September 9, 2022, CSPC Friday News Roundup article, “CHIPS Strategy Released” by Dan Mahaffee. <https://medium.com/@cspc-dc/friday-news-roundup-september-9-2022-fb1a0cf16b7f>

It is worth noting that this current strategy speaks nothing of the \$1.5 billion for the Public Wireless Supply Chain Innovation Fund, though that will be run through the National Telecommunications and Information Administration (NTIA) rather than NIST. If anything, it is a positive sign that the industry players can continue to work with those government agencies that they know, rather than reshaping the entire process. Still, it will remain to be seen how quickly the administration can move to disburse these funds. Furthermore, with the work that NTIA is doing on our telecommunication supply chain, that is a critical area where investments in technology architectures like Open RAN for 5G and 6G require action now to secure critical telecommunications, not two or five years in the future. From lab-to-fab is one challenge, but so too is the scaling and commercialization of these technologies — key to the follow-on innovations allowed by the first-mover advantage.

In addition to the funds, there are the policy aims. Though not listed first, the incentives program will prioritize security and resilience in the supply chain, including various standards and guidelines. The Commerce Department aims to structure incentives to attract private capital and collaboration amongst various industry stakeholders. The administration also lists goals about expansion of opportunities for semiconductor jobs in underserved communities and the creation of other semiconductor “clusters” at the local and regional level. While these goals are laudable, it should not come at the expense of building on our existing strengths in R&D and the locales that have already developed the knowledge base and workforce focused on semiconductors.

We also will never be able to wholly onshore the entirety our semiconductor production. Using the 1990s as a comparison, 37% of chips were produced domestically, still far more though compared to 12% today.²² Despite the physical, workforce, and financial challenges, it would not make economic sense. Working to friend-shore manufacturing will recognize comparative advantages in U.S. semiconductor design and tool manufacturing, while working with allies on their design, tooling, and manufacturing.

Finally, that the strategy recognizes the workforce demonstrates the remaining challenges where government and private sector money can help but is hardly a panacea: people, construction, and materials. Building and operating these fabs, researching future chip technology, and the broader innovation ecosystem all require a well-trained workforce. Reports estimate that we need 70,000 to 90,000 skilled workers for new semiconductor plants. Building new fabs, even with these incentives, will take years, as semiconductor producers and consumers note.²³

²² <https://www.cnbc.com/2022/08/02/biden-signs-china-competition-bill-to-boost-us-chip-production.html>

²³ <https://www.cnbc.com/2022/08/02/after-chips-act-us-has-long-road-to-rival-asia-in-semiconductors.html>

Therefore, even as we make investments in our semiconductor capacity, concerns about overseas vulnerabilities will not be immediately addressed. For the high-end chips, there will still be a reliance on Taiwan and South Korea, while China increasingly is responsible for the mid-level to low-level, more commoditized chips and their production. The investment of the CHIPS act is felt by the Chinese industry. The CHIPS Act will “disrupt international trade and distort global semiconductor supply chains,” said one spokesperson, Wang Wenbin. “China firmly opposes that.”²⁴

Here, we see how support for the U.S. semiconductor industry is only one element of the policy toolbox, as the report will also describe how technology restrictions applied to China will also address semiconductor competition.

2021 Bipartisan Infrastructure Legislation

The 2021 bipartisan infrastructure legislation, officially known as the “Infrastructure Investment and Jobs Act” tasked the NTIA with \$48 billion in grant programs “to connect everyone in America to affordable, reliable high-speed Internet service.” Even before the pandemic, the importance of broadband internet connections for business and learning were clear, and now even more so. Gaps in connectivity buttress gaps in economic and educational achievement and ensuring that all Americans have access to high-speed internet is the 21st century of 20th century electrification.

The administration has moved ahead with the Broadband Equity, Access, and Deployment (BEAD) program, which at \$42.45 billion is the cornerstone of what NTIA calls the “Internet for All Initiative.” The program establishes “unserved locations” which lack minimum download and upload speeds of 25 and 3 Mbps, respectively, and “underserved locations” which have speeds under 100 and 20 Mbps.

The program prioritizes unserved locations, stipulating that those locations receive coverage before underserved locations are addressed. That has been critiqued by technology experts as prioritizing geographic coverage at the expense of the numbers connected.²⁵ The challenge is that both rural and urban America suffer from connectivity divides, and the \$42 billion will likely not be enough to address this divide.

²⁴ <https://asia.nikkei.com/Business/Tech/Semiconductors/China-can-t-afford-to-counter-the-CHIPS-Act-yet-experts-say>

²⁵ <https://hbr.org/2022/07/how-bidens-internet-for-all-initiative-can-actually-fulfill-its-mission>

Furthermore, workforce and supply chains are again an issue. Expanding wireless infrastructure will require technicians as well as the equipment for networks—semiconductors, hardware, etc. At the same time, wired networks require fiber optic cable and their own electronic equipment. Fiber optic cable shortages are also a constraining factor, as their supply chains have been disrupted by helium shortages.²⁶

Inflation Reduction Act: Supply Chains & Green Energy

While reduced in size from initial legislative proposals put forth by President Biden and Democratic Congressional leaders, the party-line Inflation Reduction Act (IRA) is 2022's priority achievement for Congressional Democrats and the Biden administration. Of specific geotech importance are the measures related to mineral supply chains, EV batteries, and measures to address the growing competition between the United States and China in terms of green technologies.

One of the concerns repeatedly cited by policymakers and private sector leaders is that China is increasingly applying the "Huawei model" to green technologies such as electric batteries, wind turbines, solar panels, smart grid technologies, and the other hardware that will be part of the energy transition to renewables. Like cellular technology, China is aiming to export its technology in these fields below cost, while tied to other economic and political incentives. However, like digital infrastructure, this would place China in charge of a nation's energy future.

Therefore, the Inflation Reduction Act has sought to promote the development of domestic green technologies and develop new mineral supply chains. However, the text of the legislation and its goals may outpace the reality of mineral supply chains and EV battery production.

The main tool the IRA has for promoting diversity in battery supply chains is the consumer tax credit. This tax credit is designed to steer consumers to EVs that meet certain criteria in terms of their battery sourcing. First, final assembly of the vehicle must take place in North America, and nothing can come from "foreign entities of concern"—which includes Russia and China. Second, half the tax credit depends on whether the battery minerals were extracted or processed or recycled in the United States or a country that has a U.S. free trade agreement. The other half depends on whether the battery components are manufactured or assembled in North America and to what percentage.

²⁶ <https://arstechnica.com/information-technology/2022/07/global-shortage-of-fiber-optic-cable-threatens-digital-growth/>

The goal of the act is clearly to send a demand signal for EV production; critical mineral extraction, processing, and recycling; and battery assembly in North America and other free trade partners.

However, this approach significantly limits the scope of battery and EV supply chains, to the detriment of allies like Japan, South Korea, and those in Europe whose vehicles are not eligible for the credit.

As Reed Blakemore and Paddy Ryan from the Atlantic Council note:

The inclusion of FTA countries as qualifying sources of mineral supply suggests room to consider several other like-minded partner countries. Formulating the right trusted partnership model will be crucial in building a supply chain which can support US leadership in EV production while also de-concentrating—and therefore de-risking—the EV battery supply chain.

The United States and FTA countries together may still struggle to account for the entirety of mineral demand within the broader EV industry, both in terms of quantity and type of mineral. Argentina, for example, a top-five global producer of lithium, does not have an FTA with the United States. Japan, which is set to become a major player in midstream processing, would also be excluded.

To support a robust alternative mineral supply chain, the sourcing provisions of the tax credit should consider the numerous multilateral and bilateral partnerships necessary to make the global supply chain possible, many of which do not include an FTA. Codifying a means to evaluate these *sui generis* relationships presents an opportunity to aggregate efforts between Congress and the administration, where partnerships such as the Minerals Security Partnership (MSP), the Energy Resource Governance Initiative (ERGI), and other nascent bilateral partnerships already exist.²⁷

Therefore, as the Biden administration and Congress look to tweak the IRA and handle its implementation, the formula and scope of those mineral and battery supply chains permitted under the legislation can be expanded. It can be done so in a way that still promotes the development of facilities in the United States—as we have already seen South Korean carmaker Hyundai break ground on a battery plant in Georgia—while existing facilities and investments by Japanese, South Korean, and European carmakers in the United States could also be considered towards the goals of ensuring “friend-shored” supply chains for batteries and EVs.

²⁷ <https://www.atlanticcouncil.org/blogs/energysource/the-inflation-reduction-act-places-a-big-bet-on-alternative-mineral-supply-chains/>

Balancing both economic and national security concerns across a range of issues, including measures designed to transition to cleaner energy sources, is important as the United States faces an urgent strategic competition with China. Leveraging effective trade and security relationships with allies and friendly countries will help the U.S. strengthen its position in that competition, while encouraging a greater rebalance of economic partnership between the countries of the Indo-Pacific and the U.S.

Protecting Technology Leadership & Economic Security

While supporting U.S. innovation leadership is one part of the approach, the other is to maintain and protect the comparative lead in critical technologies that the United States and its allies already enjoy. What is significant in the Biden administration is the aforementioned shift from a relative advantage, albeit one that remained steadily ahead of adversaries, to one that actively seeks to halt potential adversaries' further advances in these technologies. At the same time, the administration, Congress, and federal regulators have also sought to protect U.S. economic security by safeguarding U.S. infrastructure from Chinese firms that pose risks to U.S. national security, pose intelligence threats, or increasingly work closely with the Chinese government and military. Here we see continued restrictions on what can be procured or installed in the United States.

Here it is clearest that there is an ongoing tech decoupling, driven by the realities of geotech competition. This has been accelerated by the events of 2022 and the response to the Russian invasion of Ukraine. The sanctions levied on Russia have served to demonstrate how a country can be disconnected from modern technology supply chains. On one hand, China is far more robust in its own technological capabilities; on the other, China is far more dependent on technology and technology imports than Russia. China's technology ties with other countries—both in the west and across the Global South—are also more developed and interdependent than those they had with Russia. However, these technology restrictions must also be rooted in a fundamental understanding that there is no line in China between military, intelligence, and civilian applications in commerce, the digital world, or technology development. Applying restrictions requires a balance of this understanding with the economic realities of our interdependence—thus nuanced and targeted approaches can focus on specific offending firms or critical technologies without greater harm to American and allied firms' ability to do business around the world.

Given the global marketplace for technology and other key allies' capabilities in strategically critical technologies, a major challenge moving forward will be finding agreement on harmonizing export controls and remaining united in a common approach towards technology and export restrictions. Private sector leaders in the United States, as well as key ally and partner countries, have legitimate concerns too about how the looming loss of revenue from sales in China—and the potential for Chinese retaliatory measures. Keeping allies onside and ensuring that the damage to our own firms is not counterproductive becomes the next challenge for the administration as it bolsters the range of restrictions it applies to the export of strategically critical technologies.

Addition of 31 Chinese Companies to the “Unverified List”

The most significant step forward since the September 16, 2022, speech by National Security Advisor Jake Sullivan is the administration’s move in October 2022 to add thirty-one Chinese companies to the Department “unverified list.” The companies added to the list are all Chinese players in the field of advanced semiconductors and digital memory, fields vital to research into artificial intelligence (AI). Our previous geotech reports have highlighted how the Chinese have prioritized research into AI for a range of civil and military applications.

Given how the Biden administration has identified AI as one of the critical technologies, it is natural that this field would be a first step in expanding export controls. Speaking in November to the CNBC business channel, Secretary of Commerce Gina Raimondo outlined the administration’s thinking, “China has become more aggressive in what they call their military-civil fusion strategy, which is essentially fancy talk for buying our sophisticated chips, which are supposedly for commercial purposes.” She added how China was using those chips and other technologies in research and weapons that could one day be used against the United States or its allies. ““This is the most strategic, most bold move we’ve ever made to say no, we’re not going to stand for that.”²⁸

The unverified list, not to be confused with the entity list, establishes that the U.S. government cannot confirm the end use of the technology. Therefore, these Chinese companies are no longer able to access U.S. technology and expertise needed for the manufacturing of semiconductors. U.S. firms quickly moved to remove staff and halt servicing of equipment in China, while the foreign companies working with the listed Chinese firms also removed U.S. staff, restricted U.S. technology, and waited to see what legal guidance applied to their own workforce and technology.²⁹

Greg Allen of the Center for Strategic and International Studies (CSIS), who previously led the Pentagon’s Joint AI Center, has [provided a detailed breakdown](#) of how the latest action by the administration targets the specific chokepoints of Chinese AI efforts by restricting access to U.S. technologies and expertise. Of note:

This policy signals that the Biden administration believes the hype about the transformative potential of AI and its national security implications is real. Right now, the performance benchmarks for the advanced AI chips that China is

²⁸ <https://www.cnbc.com/2022/11/03/us-commerce-secretary-raimondo-doubles-down-on-biden-plan-to-restrict-us-companies-and-citizens-from-helping-china-make-semiconductor-chips-.html>

²⁹ <https://www.cnbc.com/2022/10/13/biden-chip-curb-asml-stops-us-staff-from-servicing-customers-in-china.html>

prohibited from purchasing only apply to a relatively small set of overall market demand. However, the Biden administration intends to hold those benchmarks constant, meaning that the gap in performance will grow over time as the world advances and China remains stuck behind. It is as though the United States is saying to China, “AI technology is the future. We and our allies are going there. You can’t come.”³⁰

Whether we are saying that China cannot come, or whether we are challenging it to catch up on its own is the question now posed by these actions. The impact of these measures on U.S. companies also is also something that remains to be seen. As William Reinsch, also of CSIS noted, the shift in export controls means that there is a point now where U.S. and Chinese technology will increasingly move separately. The scope of this action will inevitably expand as technology innovates and grows:

The immediate consequences of the rule are narrow. In the short run, it doesn’t cover much—less than 1 percent of chips being sold—leaving many companies unaffected. However, since the rule caps the level of technology subject to control, rather than moving the control level up as our own technology advances, the universe of controlled items is guaranteed to grow over time. Given the pace at which technology in the semiconductor sector advances, it will not take more than a few years before the impact becomes much greater. In addition, if the administration expands the rule to cover additional items, as has been rumored, the rule could rapidly become unwieldy.³¹

Reinsch goes on to raise important questions about these policies, ranging from how China might innovate on its own to how third countries might substitute out U.S. technology or push ahead with their own designs that can be sold anywhere. This is critical considering how U.S. companies are affected, and how policies are coordinated with the Netherlands, Japan, South Korea, Germany, and elsewhere where foreign companies continue to do business with China. As the next section will discuss, harmonizing these actions with allies will be important for successfully restricting China’s access to advanced technology.

Sec. 889 NDAA Measures

In addition to the measures undertaken by the Biden administration, Congress is considering measures in the fiscal year 2023 National Defense Authorization Act (FY23 NDAA) to add China’s three national champion chipmakers: Semiconductor Manufacturing International Corporation (SMIC), ChangXin Memory Technologies (CXMT), and Yangtze Memory

³⁰ <https://www.csis.org/analysis/choking-chinas-access-future-ai>

³¹ <https://www.csis.org/analysis/export-controls-dust-begins-settle>

Technologies Corp. (YMTC) to Sec. 889 of the Fiscal Year 2019 NDAA. Senate leaders and noted China hawks Senator Chuck Schumer (D-NY) and John Cornyn (R-TX) have included this in the manager's amendment in the Senate version of the FY23 NDAA.³²

Sec. 889 of the 2019 NDAA created a federal procurement prohibition on telecommunications equipment or services from Huawei and ZTE, and surveillance equipment or services from Hikvision, Hytera and Dahua. This action was important to protect the integrity of critical telecommunications networks in the United States and protect Americans' privacy.

Sec. 889 was also necessary to prevent taxpayer funding to Chinese Communist Party backed "national champions" who have known ties to China's military and intelligence services and are complicit in gross human rights violations such as the Uyghur genocide in Xinjiang province currently taking place. Chinese state backed chip makers are complicit and SMIC is already on the Department of Commerce's Entity List.

FCC Prohibitions on Chinese Companies

In November 2022, the Federal Communication Commission (FCC) announced further restrictions on Chinese technology and communications companies that posed a risk to U.S. national security. Pursuant to the Secure Equipment Act of 2021, the FCC has moved to further restrict imports from telecom companies Huawei and ZTE, radio manufacture Hytera, and surveillance camera companies Hikvision and Dahua.³³ This measure expands the "Covered List" kept by the FCC.

While this measure went ahead to restrict future certifications of equipment by these companies, the FCC order also makes it clear that the body could explore the revocation of existing certifications. In his statement, FCC Commissioner Brendan Carr encouraged his fellow commissioners to explore the revocation of certifications for firms on the covered list.³⁴

This demonstrates how the FCC can use its authorities under recent legislation to further protect telecommunications networks. As revocations are potentially explored, policymakers will need to be aware of the potential impact on existing installations and the cost of replacement as they push to secure our networks and communications.

³² <https://www.congress.gov/117/crec/2022/10/11/168/162/CREC-2022-10-11-pt1-PgS6063-6.pdf>

³³ <https://www.fcc.gov/document/fcc-bans-authorizations-devices-pose-national-security-threat>

³⁴ Ibid.

Investment Review

One of the more contentious issues discussed around the broader geotech and economic security debate is the idea of an outbound investment review regime. Given the identification of China as a security risk, it is natural to suggest that investment funds from the United States should not be going to the companies of China's civil-military fusion programs. During summer of 2022 negotiations over what would eventually become the CHIPS and Science Act, a proposal was put forth by Senators John Cornyn (R-TX) and Bob Casey (D-PA) to create an outbound investment review committee similar to the already existing Committee on Foreign Investment in the United States (CFIUS). The Casey-Cornyn National Critical Capabilities Defense Act would stand up an interagency body to review, restrict, or prohibit outbound investments in "national critical capabilities" from the United States into "countries of concern" or "entities of concern".³⁵ The breadth of this language could implicate many foreign investments or joint ventures, and industry raised its concerns,

The proposals gained traction in 2022 and were considered as part of the broader negotiation of what would ultimately become the CHIPS and Science Act. However, they were not included in the ultimate legislation that reached President Biden's desk.

The language in the Casey-Cornyn proposal has been critiqued by some as overly broad, but there is consensus on Capitol Hill about the need for some form of outbound investment review. The challenge is to scope it in a way that protects those specific technologies and innovations that are critical, but without damaging the global dynamism of American companies that are our leaders in innovation and R&D. Overly broad policies could have an impact on existing supply chains and joint ventures, while potentially stifling all forms of inbound and outbound investment. While this is not to suggest that there should be no review of outbound investment, such reviews should be done in a way that is targeted to the specific technologies and entities of concern. Furthermore, if new entities are established, it is important that they are resourced and staffed such that any review can be carried out quickly.

In 2018, the Foreign Investment Risk Review Modernization Act (FIRRMA) expanded the scope of *inbound* investment review, and on September 15, 2022, President Biden's Executive Order 14083 directed CFIUS to consider five factors in evaluating inbound investment:

1. A given transaction's effect on the resilience of critical U.S. supply chains that may have national security implications, including those outside of the defense industrial base.

³⁵ <https://www.congress.gov/bill/116th-congress/senate-bill/5049?s=1&r=2>

2. A given transaction's effect on U.S. technological leadership in areas affecting U.S. national security, including but not limited to microelectronics, artificial intelligence, biotechnology and biomanufacturing, quantum computing, advanced clean energy, and climate adaptation technologies.
3. Industry investment trends that may have consequences for a given transaction's impact on U.S. national security.
4. Cybersecurity risks that threaten to impair national security.
5. Risks to U.S. persons' sensitive data.³⁶

This guidance to CFIUS has brought greater direction to inbound investment review and links it to specific national security goals and the technologies prioritized by the administration. As the CFIUS process becomes ever critical for protecting inbound investment in the United States, it is important that the administration and Congress continue to provide the resources needed for the committee to carry out its work quickly as well. Such a model can demonstrate a well-resourced, targeted, and rapid security review process that protects American economic security while encouraging international investment and economic dynamism. Such must be considered for all types of investment review processes.

³⁶ <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/15/fact-sheet-president-biden-signs-executive-order-to-ensure-robust-reviews-of-evolving-national-security-risks-by-the-committee-on-foreign-investment-in-the-united-states/>

Working with Allies & Partners

The reality is that we live in a globalized world, even if this most recent “era of globalization” is giving way to a greater level of competition between nations. In our reports, we have repeatedly reiterated that the range of technology allies and partners that the United States enjoys is an asset compared to those of China and Russia. Still, that does not mean we can rest on our laurels, nor can we assume that the same holds true in the growing economies and populations of the Global South. While this report will provide some specific case studies of ongoing plurilateral and multilateral efforts, along with Japan’s reinvigorated focus on economic security matters.

Across the board, it is important that geotech policies be harmonized and coordinated with allies. If we are aiming to deny potential adversaries certain technological innovations, that will only be effective if we work with the other technologically advanced allies and partners to provide uniform investment reviews, export controls, technology standards, etc. This will require an understanding of the various interests at stake. For example, we see how the administration’s push to restrict Chinese access to semiconductor technology also required a waiver for South Korean companies to continue to operate U.S. technology in China for one year, such that Seoul and Washington can better coordinate a shared approach on controlling this technology.³⁷ Similarly, the Biden administration has been negotiating with the Netherlands on the role that their firms ASMI and ASML play in the semiconductor space, and similar discussions are likely to be held with Japan regarding their leading semiconductor firms.³⁸

Continuing to harmonize efforts to protect infrastructure and critical supply chains will also be shared concerns among our allies and partners, and here too we must also ensure that our policies do not have unintended consequences that create unnecessary redundancies, overcapacities, or beggar-thy-neighbor policies—all while China and others could leapfrog western countries competing amongst themselves. For example, this is why the shortcomings in the Inflation Reduction Act (IRA) battery tax credits interfere with existing relationship with valued allies and fails to recognize the reality of the timeframes necessary for reshaping supply chains.

Anger with the IRA has been most noted from South Korea and the European Union. Seoul and Brussels both expressed their anger over the EV provisions and the perceived discrimination against Korean and European brands. The South Korean ambassador stated that Washington and Seoul are currently working closely to negotiate options to assuage South Korean

³⁷ <https://www.reuters.com/technology/sk-hynix-secures-one-year-waiver-us-govt-chip-equipment-its-facilities-china-2022-10-12/>

³⁸ <https://www.ft.com/content/0c4e752d-cf22-425f-a3cb-876b68e1b787>

concerns.³⁹ European officials have expressed their concern in recent meetings, and it is believed that some of these concerns will be raised by French President Macron during his visit to Washington—France has called for retaliation already while other European members are favor negotiated solutions.⁴⁰ The European Union’s complaints, beyond the EV tax credit, focus on subsidies for green energy, hydrogen, wind, and solar, warning that the carbon transition and battle against climate change risked becoming a zero-sum competition between countries/trading blocs and their firms.

Finding constructive solutions to these disagreements with allies and partners is vital to maintaining a united front in the global technology competition. Here the United States must work with our friends to ensure that we create a system that is dynamic and attractive to other nations with cutting edge technology, fair competition, peace and stability, and the rule of law. Here, the efforts that the Biden administration and allies have put forward in multilateral and plurilateral fora demonstrate new models of international geotech cooperation.

Indo-Pacific Economic Framework

Since the United States withdrew from the Trans-Pacific Partnership (TPP) as soon as President Trump took office, the region has moved ahead with its own economic deals. The remaining eleven countries of the TPP moved on to Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The eleven-member CPTPP is 13 percent of global GDP. Fifteen countries, including China and seven CPTPP members are members of the Regional Comprehensive Economic Partnership (RCEP). The RCEP accounts for 31 percent of global GDP and is considered more flexible on matters of support for state-supported or state-owned industries and less in the way of labor or environmental protections.

While then Vice President Biden was the lead negotiator on the TPP, he has not moved to return to it, reflecting his alignment with the labor wing of the Democratic Party and its traditional skepticism of trade agreements. During his first term, the Biden administration has not sought a new trade deal nor trade promotion authority (TPA).

Instead, the economic pillar of the Biden administration’s alignment to the Indo-Pacific is the Indo-Pacific Economic Framework, which has been joined by Australia, Brunei, India, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and Vietnam.

³⁹ <https://www.cnn.com/2022/10/25/ira-ev-tax-credits-south-korea-us-in-working-to-adjust-regulations.html>

⁴⁰ <https://www.ft.com/content/de1ec769-a76c-474a-927c-b7e5aef7d9e>

In May 2022, the administration unveiled the four pillars of the IPEF: connected economy goals related to digital trade, AI, data privacy, and digital labor standards; resilient economy goals designed to promote better security and transparency in critical supply chains; clean economy goals related green energy, decarbonization, and the necessary infrastructure investments; and fair economy goals that will address anti-corruption, anti-bribery, and anti-tax evasion measures.⁴¹

The Biden administration and partner countries are moving ahead with the implementation of the IPEF and the September ministerial meeting of the IPEF countries in Los Angeles, announced the following priorities for each pillar.

- In terms of **trade**: labor; environment; digital economy; agriculture; transparency and good regulatory practices; competition policy; trade facilitation; inclusivity; and technical assistance and economic cooperation.
- Next, in terms of **supply chain**: establish criteria for critical sectors and goods; increase resiliency and investment; establish an information-sharing and crisis response mechanism; strengthen supply chain logistics; enhance the role of workers; and improve supply chain transparency.
- Then in terms of the **clean economy**: energy security and transition; greenhouse gas emissions reductions in priority sectors; sustainable land, water, and ocean solutions; innovative technologies for greenhouse gas removal; and incentives to enable the clean economy transition.
- And, finally in terms of the **fair economy**: anti-corruption efforts; tax transparency and information sharing; anti-corruption capacity building and innovation; and broader efforts to foster “cooperation, inclusive collaboration, and transparency.”⁴²

While the IPEF countries move ahead in tackling those priorities, the most common critique of IPEF at home and abroad has been the lack of market access compared to CPTPP and RCEP. Absent a trade “carrot,” questions have been raised about how the United States could incentivize countries to join the IPEF and meet its standards. The nature of this approach is to avoid Congress and the controversy of reopening controversial trade deals—particularly among pro-labor Democrats and isolationist Republicans. Skepticism on Capitol Hill about a deal designed to go around Congress—along with questions about benefits for American farmers and manufacturers—combines with foreign doubts about what IPEF can achieve absent market

⁴¹ <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/23/fact-sheet-in-asia-president-biden-and-a-dozen-indo-pacific-partners-launch-the-indo-pacific-economic-framework-for-prosperity/>

⁴² <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/september/united-states-and-indo-pacific-economic-framework-partners-announce-negotiation-objectives>

access and legislative support. In some cases, this countries' interest may be driven by a desire to cement U.S. economic engagement in the region, but it is still worth exploring how alternative elements for infrastructure investment, digital support, and actions to counter China's corruption and coercion can serve as incentives for IPEF participation.

One potential tool is made possible by the CHIPS and Science Act, which establishes the "International Technology Security and Innovation Fund" at the U.S. State Department, which will provide \$100 million a year for five years "to support secure semiconductor supply chains as well as the development and adoption of secure telecommunications networks."⁴³ This resource can work as an incentive regarding the IPEF priorities of a connected economy, assisting with replacement of 5G and 6G network equipment and additional cybersecurity measures. It could also leverage efforts with the U.S.-EU Trade and Technology Council, and perhaps include a certification process and standard for network security, similar to what CISA does for domestic operators.

Other elements for important to consider for the IPEF process are ways to mitigate coercive trade practices or efforts to disrupt supply chains of critical materials or inputs. The efforts of IPEF to provide transparency into supply chains and early warning of potential disruptions will result in vital tools to address future technology competition and the threat of supply chain disruption by bad actors. The creation of a special fund that could serve to counter China or other nations' coercive trade embargoes, by providing immediate temporary replacement demand for key exports for example, could serve to protect smaller countries that have faced Chinese sanctions or other coercive trade behavior, as well as building on the understanding of larger powers' similar experiences, as Australia and Japan can attest.

Continuing to build out these and other creative incentives will be important for the prospects of the IPEF's success, and it will be important for the administration to coordinate with Congress where possible on enshrining some of these elements and incentives into law—to demonstrate their duration beyond any one administration.

[Returning to the Trans-Pacific Partnership \(or CPTPP\)](#)

While the IPEF demonstrates a U.S. focus on regional economic leadership, many key partners in the region hope that the United States can return to something like the TPP negotiations or enter into the CPTPP. Beyond the incentives that exist in IPEF, this would have the most meaningful economic incentives by providing market access and building on existing

⁴³ <https://www.state.gov/the-passage-of-the-chips-and-science-act-of-2022/>

negotiations. The U.S. return to CPTPP or similar negotiations would come at a time when Beijing is moving to join the trade body—and Japan and others will try to delay that accession—but so too is the United Kingdom. U.S. rejoining of CPTPP or similar would demonstrate how the bloc could become the premier economic alignment among like-minded nations.

The politics of the TPP defined the 2016 election, and it is not lost on experts that both parties in the election opposed the deal. However, the politics and economics have changed since then. The process by which NAFTA was re-negotiated into USMCA demonstrates how political leadership can reshape trade deals and enshrine the results into new agreements. While the China threat was palpable in 2016, economic concerns stemming from 2008 remained. Today, the China threat is recognized and shared across parties, and the economy is one of inflation and full employment.

It would not be without opposition, but the political and economic dynamics surrounding trade are shifting. Wendy Cutler and Clete Willems, with bipartisan experience in economic and trade matters, have recommended 12 areas to renegotiate to encourage U.S. reentry into the pact.⁴⁴ These and other similar conversations are happening, and their findings indicate how, over the coming years, the United States can re-enter these important trade negotiations.

U.S.-EU Trade and Technology Council

The U.S.-EU Trade and Technology Council (TTC) was created in 2021 for the purpose of “coordinating approaches to key global technology, economic, and trade issues; and to deepen transatlantic trade and economic relations, basing policies on shared democratic values.” The Council first met in 2021, convened for the second time in May of 2022, and met again on December 5, 2022. It is co-chaired on the U.S. side by USTR, the Department of Commerce, and the Department of State. European Commission Executive VP Margarete Vestager reported November 21 that the TTC had made “substantial progress.” Indeed, consensus has been reached on the Council’s priorities and agenda, several sub-working groups and coordination mechanisms have been established, and both sides leveraged the TTC to coordinate their export control regimes after Russia’s attack on sovereign Ukraine. But enormous challenges remain.

The TTC is grounded on two precepts: first, the magnitude of the transatlantic trade and investment relationship between these two economic giants and failure to broker a free trade agreement demands a coordination mechanism. And second, there is a mutual understanding

⁴⁴ <https://asiasociety.org/policy-institute/reimaginingTPP>

that only by intensifying their cooperation and coordination can the United States and Europe compete against China in the realm of emerging 21st century technologies. This raises the stakes for U.S. and EU negotiators to make concrete and swift progress on the TTC agenda items.

These include, inter alia, setting the rules of the road for 5G, establishing secure and trusted (e.g., non-PRC) IT networks, and advancing internet governance principles grounded in the concept of freedom online. It also includes less glamorous topics like conformity assessments, promoting and defend common interests in international standards development, and advancing a “common approach and common implementation of regulations” for the digital economy, in the words of EU Commissioner Vestager. Negotiators announced on December 5 a new joint AI roadmap that prioritizes security and risk management at the next meeting.

Discussions are also underway on ways to secure semiconductor supply chains while preventing a subsidies race between the U.S. and EU, each of which has its own version of the aforementioned CHIPS Act. Other priority areas of work include developing mechanisms to counter non-market practices and economic coercion, and a proposal to launch a transatlantic sustainable trade initiative, which would set common standards for charging stations, battery elements, and e-recycling as well as best practices on green procurement, e-mobility, solar, critical materials, and carbon footprint methodologies. The TTC’s work has already been complicated by the aforementioned European complaints about the IRA, even though the U.S. has set up a separate bilateral “task force” on the issue. The United States, for its part, has legitimate concerns to raise about new EU regulations on digital companies that disproportionately impact U.S. tech firms. Negotiators therefore find themselves under increased pressure with a ballooning set of problems. It remains to be seen whether the TTC will be able to produce concrete results.

[Partnership for Global Infrastructure Investment](#)

First announced at the 2022 G7 summit, the United States, European Union, and Indonesia hosted a dialogue of G20 leaders regarding the Partnership for Global Infrastructure Investment (PGII). Aimed at increasing and speeding quality infrastructure investment in low- and middle-income countries, President Biden, Indonesian President Joko Widodo, and European Commission President Ursula Von der Leyen jointly hosted this meeting with leading representatives from Argentina, Canada, France, Germany, India, Japan, the Republic of Korea,

Senegal, and the United Kingdom, “to highlight PGII collaboration and support among likeminded partners globally.”⁴⁵

During this meeting, the projects announced included the Indonesia Just Energy Transition Partnership and Millennium Challenge Corporation Compact; trilateral support with Australia and Japan for Pacific digital infrastructure; securing Brazilian critical mineral supply chains; health care infrastructure in India; and expanding digital access in the global south through financing of new connections and public-private partnerships.⁴⁶

Continuing to build out PGII projects can serve as further incentives for geotech cooperation with the United States and incentives for IPEF participation. These projects can continue to serve as a clear alternative to China’s debt-trap, corrupt and coercive investments. In making these investments, it is important to note the useful partnerships with countries like Japan and Australia, who have closer ties to the region.

Continued Quad Efforts

On the sidelines of the 2022 UN General Assembly in September, the U.S. Secretary of State and Foreign Ministers of Australia, India, and Japan met for a ministerial meeting of the Quad. While continuing to reiterate the shared values of the Quad for a free-and-open Indo-Pacific, the group affirmed its support for ASEAN.

In terms of Quad commitments, the group signed guidelines for humanitarian and disaster relief, planned for a counterterrorism exercise, issued statements against ransomware use, and moved forward with the Indo-Pacific Partnership for Maritime Domain Awareness.⁴⁷

Chip 4

As part of the regional efforts to address supply chain vulnerabilities and protect strategically critical technology, the United States has proposed a “Chip 4” strategic alliance of the United States, Japan, South Korea, and Taiwan. Here, one of the biggest challenges has been creating alignment on perceptions of China’s semiconductor industry and the threat that it poses versus the existing economic ties with China. South Korea is likely the most exemplary of this

⁴⁵ <https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/15/fact-sheet-presidents-biden-widodo-von-der-leyen-and-g20-announce-g20-partnership-for-global-infrastructure-and-investment-projects/> e

⁴⁶ Ibid.

⁴⁷ <https://www.state.gov/joint-readout-of-quad-ministerial-meeting/>

phenomenon.⁴⁸ Seoul has sought to balance its close economic and security ties with the United States with the economic ties that it enjoys with China and Beijing's influence over Pyongyang.

However, it is not just South Korea, as business interests in Japan and Taiwan also question the emphasis on economic security over existing business and supply chain arrangements with China. Furthermore, continued tensions between Japan and South Korea have weighed on this, along with countries' reticence to engage directly with Taiwan, given China's tremendous leverage in regional trade and investment dynamics.⁴⁹

U.S.-Japan-Netherlands Export Control Coordination

At the time of the reports writing, negotiations were ongoing between the United States, Japan, and the Netherlands over export controls on advanced semiconductor equipment. While the United States had led with the announcement of export controls on China's semiconductor industry, firms in Japan and the Netherlands also provide tools, equipment, and expertise necessary for advanced semiconductor manufacturing. According to press reports, U.S., Japanese, and Dutch officials have reached agreements on semiconductor export controls, greatly limiting China's ability to develop advanced semiconductors.⁵⁰

⁴⁸ <https://techwireasia.com/2022/07/chip-4-alliance-will-south-korea-pick-the-us-or-remain-an-ally-to-china/>

⁴⁹ <https://www.ft.com/content/98f22615-ee7e-4431-ab98-fb6e3f9de032>

⁵⁰ <https://www.bloomberg.com/news/articles/2022-12-12/japan-is-said-to-join-us-effort-to-tighten-chip-exports-to-china>

Japan's Efforts at Economic Security Legislation

While 2022 began with lofty expectations for Tokyo's nascent economic security policy, the subsequent vicissitudes of insurmountable forces at home and abroad have challenged its full effectiveness. Tokyo's economic security policy is largely synonymous with Prime Minister Fumio Kishida himself, and the way in which it has developed so far reveals an inextricable link to his leadership. Indeed, the speed with which he laid the foundation for Tokyo's economic security policy in 2022 has proven to be unprecedented thanks to his successful domestic political maneuvering in guiding the enactment of the Economic Security Promotion Law in May and additional legal basis for the further consolidation of his signature policy.

Meanwhile, he has had mixed results in boosting Japan's overall economic security in the context of great power competition due to Tokyo's lingering strategic ambiguities—be it policy towards Russia, tensions between security and economic interests vis-à-vis China, or the weight of historical memory on needed security reforms. Still Japan has pushed ahead with a more than 50 percent increase in defense spending over the next five years—bringing defense spending to 2 percent of GDP—and developing new strategic guidance documents to guide security planning. Finally, Kishida's state capitalist approach to economic security, especially semiconductor supply chains, could mesh well with the similar efforts of allies like the U.S., if coordinated, but still encounters limitations due to the scope of the chip supply dilemma. It's implementation would best be conducted as part of a larger strategic approach. With this in mind, an analysis of Tokyo's economic security policy in 2022 would inevitably require a reflection on Kishida's leadership in guiding its evolution driven by the various internal and external factors which highlighted this passing year.⁵¹

The Economic Division Inception

The first test of Kishida's economic security agenda arose from within his own administration. Having launched the economic security policy and even a ministerial post promoting it by the end of 2021, the Japanese prime minister looked to gain further momentum toward his first major objective of passing and enacting the highly-anticipated Economic Promotion Bill in 2022. The rapid consolidation of Kishida's signature agenda was largely thanks to the internal consensus on the need for boosting Japan's economic security within the country's ruling party, the Liberal Democratic Party. Indeed, Kishida's allies, especially the veteran LDP lawmaker Akira Amari, had laid the foundation for Tokyo's economic security policy through political maneuvering spanning across the government and even the private sector. In particular, Amari's connections, such as Professor Toshifumi Kokubun of Tama University and Toshihiko Fujii of the Ministry of Economy, Trade, and Industry (METI), have profound influence on

⁵¹ This section features analysis from CSPC Senior Fellow Hidetoshi Azuma

Tokyo's discourse on the future of its economic security policy. This in turn represented the foundation of Kishida's economic policy as it had yet to fully achieve institutionalization and largely remained in the hands of certain individuals allied with the prime minister.

One of the main issues surrounding the policy was the absence of a coherent national strategic framework guiding Japan's economic security. Indeed, each ministry essentially has its own definition of economic security largely shaped by its respective institutional focus. For example, the prevailing emphasis on supply chain security is tied to METI's influence, especially on the making of Tokyo's economic security policy agenda during its early days. The rise of the MOF was also an outcome of broader political dynamics driving the Kishida administration, which has been increasingly leaning towards the ministry's agenda of tax hikes to support security funding. Absent an early internal consensus on the trajectory of Japan's economic security, Kishida increasingly faced the prospect of leading his signature agenda astray without an external shock.

[Japan's Economic Security Promotion Law](#)

Japan's National Diet enacted the highly-anticipated Economic Security Promotion Law in May 2022 as a milestone legal framework designed to bolster the country's economic security. The origin of this law is to be found in Tokyo's growing recognition of the need to enhance Japan's economic security after former U.S. president Donald Trump launched a trade war with China in 2017. Indeed, Trump's policy galvanized Tokyo into rethinking its economic relations with China given its entrenched dependence on the neighboring country, especially in supply chains. The rise of Kishida's premiership led to the launch of Japan's economic security policy focused on rectifying the country's key vulnerabilities in its economy in light of the intensifying U.S.-China great power competition. Therefore, the swift introduction of the 2022 Economic Security Promotion Law during the early days of Kishida's tenure epitomized his priority policy focus on economic security. Yet, the same law also reflected the limited scope of his signature policy, leading Tokyo to demonstrate strategic ambiguity even in areas which are fundamental to Japan's national security as in the case of its deepening economic cooperation with Russia over Sakhalin. While the 2022 law is often touted in Tokyo as merely the first step toward a more comprehensive framework, its contents provide insights into Japan's underlying thinking behind its economic security policy.

Japan's 2022 economic security law established a basic policy and introduced new systems for advancing Japan's economic security. The following four pillars support the law's objectives:

- 1) bolstering supply chains of critical resources;
- 2) ensuring the security and reliability of critical infrastructures;

- 3) public-private cooperation on important advanced technologies;
- 4) classification of patent applications.

The law provides the Japanese government with the power to intervene in the economy where its perceived vulnerabilities are deemed to have national security significance. Yet, such a legal mandate still remains incomplete. For example, despite the expansion of government power enabled by the law, Tokyo eventually decided not to resolve the perennial issue of security clearances by choosing not to address it in the final draft of the bill. This was due to the LDP's political compromise with its coalition partner, the Komei Party, which opposed the establishment of a unified security clearance system, an issue which incorporates historical and cultural challenges in the approaches and role of government and private actors in conducting background checks on individuals. The LDP therefore first sought to tackle the issue of secret patents in light of the growing concerns over numerous leaks of sensitive technological information to China for its potential dual use. While this is undoubtedly an important step, it is essentially a stop-gap measure and awaits a more comprehensive security clearance system to fundamentally address the issue of information security. Therefore, the limited scope of the law, especially its near-exclusive focus on supply chain security, is largely a reflection of what Tokyo perceived as the most pressing economic security imperatives.

The economic security law reflects Tokyo's growing recognition of the need for remedying the country's perceived vulnerabilities in its economy in today's technology-driven great power competition. To be sure, the previous administrations had sought to tackle emerging threats to Japan's economic security stemming from the lack of a relevant legal framework. For example, the 2020 revision of the Foreign Exchange and Foreign Trade Control Law further tightened the existing regulatory requirements for foreign direct investments (FDI) which are deemed to have national security significance. While such prior efforts were made on an *ad hoc* basis, Kishida's economic security policy is distinct as an attempt to craft a comprehensive framework for boosting Japan's economic security.

The policy at large may create a long-term tension between policy objectives and perceived imperatives driven by oft-sudden geopolitical upheavals, including the ongoing Russian invasion of Ukraine. For example, although initially aiming to bolster Japan's strategic autonomy, strategic indispensability, and commitment to the rules-based order as outlined in the December 2020 LDP study group proposal, Prime Minister Kishida has risked divergence from other democracies on Russia due to economic dependence on securing continuous energy supplies from Sakhalin. Moreover, Tokyo's current economic security framework emphasizes food security, which is increasingly at risk due to the disruption of the Ukrainian crop supplies caused by the Russian invasion.

While Japan's economic security law is a welcome development for the U.S. in its geotechnological competition with authoritarian powers, it still awaits additional measures, before becoming a comprehensive force complementing bilateral cooperation within the alliance, which increasingly looks to encompass the economic dimension with the introduction of the U.S.-Japan 2+2 Economic Dialogue. Kishida appears to have a predilection for institutionalizing his agendas, and this explains the rather rapid introduction of the law itself as well as various new institutions ranging from the creation of the Economic Security Minister post to the August 2020 launch of the Economic Security Promotion Division within the Cabinet Office to oversee the implementation of the law.

There is a fundamental difference between Japan and the U.S. in their perspectives on economic security. Japan has traditionally viewed economic security largely as a peacetime phenomenon in which the exercise of economic statecraft by a hostile country could threaten Japan's national security. Indeed, Representative Amari himself frequently remarked: "[To kill Japan, there is no need for missiles. Cutting mask supplies alone would do it.](#)" This perspective reflects Japan's resource-scarce geography and its memories of historical economic blockades ranging from the U.S. oil embargo in 1940 to the Middle Eastern energy crisis of the 1970s. By contrast, considerations for wartime economic resilience shape the U.S. perspective on economic security whose most important legal basis is the Defense Production of 1950, a landmark bill created during the Korean War. In other words, war is inextricable from the U.S. understanding of economic security. Recent Chinese moves on Taiwan, including overreactions to recent visits by the American Speaker of the House, may now be compelling a change in Japan's approach.

While Japan's 2022 Economic Security Promotion Law is undoubtedly a major step forward in boosting its economic security, it would ultimately require a comprehensive strategy for effective implementation. The Kishida administration will revise the 2013 National Security Strategy by late December 2022 and has declared its intention to include economic security in the new document. Because Kishida has deliberately designed his economic security policy to be evolutionary in nature in order to be flexible in meeting novel challenges, the upcoming revision of its National Security Strategy will likely become a touchstone determining the future trajectory of his signature agenda.

[Japan in the Global Chip War](#)

Semiconductors have been the single most important area of focus of Kishida's economic security policy so far. Kishida's focus on semiconductors is undoubtedly a reflection of the emerging geotechnological landscape overshadowing Japan driven by the intensifying U.S.-

China great power competition, especially Beijing's looming aggression against Taiwan, the world's largest chip producer. Meanwhile, the emerging geotechnological imperatives of revamping the existing supply chain dependence on China would accord significant opportunities to Japan's domestic semiconductor industry, which had previously dominated the world till the late 1980s and subsequently yielded its former manufacturing leadership to other Asian countries, particularly Taiwan. In fact, the recognition of such opportunities has been the real driver behind Tokyo's budding semiconductor policy with profound implications for the future of Japan's economic security. Indeed, this explains Tokyo's nascent semiconductor policy largely focused on government subsidies designed to bolster Japan's domestic industry to spearhead targeted decoupling from China. The upshot has been the growing push for reviving the proverbial Japan Inc. whose state capitalism program spawned the economic miracle after WWII.

Tokyo's priority focus on semiconductors preceded the Kishida administration's economic policy launched in October 2021. Beginning in 2020, the LDP began organizing various study groups on economic security and calling for the strengthening of Japan's domestic semiconductor industry in response to the simmering U.S.-China geotechnological competition and the various supply chain issues caused by the coronavirus pandemic. Such efforts culminated in the launch of the Semiconductor Caucus led by some of the most powerful leaders of the LDP, including former prime minister Taro Aso, former prime minister Shinzo Abe, and former Minister of Economy, Trade, and Industry Akira Amari. The trio, commonly known as the "3As," laid the foundation for Kishida's economic policy, even influencing his election as the prime minister. Following the formation of the Semiconductor Caucus, the METI unveiled Tokyo's Semiconductor Strategy recognizing semiconductors as "a strategic base technology" vital to Japan's national security. Indeed, Amari himself emerged as the *de facto* spokesperson for Tokyo's renewed semiconductor policy and often described its importance by declaring: "[Who controls semiconductors controls the world.](#)"

While Tokyo's recognition of the significance of semiconductors and subsequent political developments initially appear to enhance Japan's position in the U.S.-China geotechnological competition, the prevailing thinking favoring government subsidies has its limits, due to the wide range of technologies involved with chip production, a challenge allies face as well. Indeed, one of the key outcomes of the above political developments has been a series of calls for large-scale government subsidies for Japan's semiconductor industry. For example, Amari called for a 10 trillion yen (approximately 72 billion U.S. dollars as of November 2022) government funding for Japan's semiconductor industry during the 2020s. According to Amari's calculation, Japan's potential semiconductor funding would even exceed the 52 billion U.S. dollars earmarked by the CHIPS Act in the U.S. Similar calls followed, culminating in Tokyo's 47

billion yen (approximately 3 billion US dollars as of November 2022) funding planned in December 2021 and approved in June 2022 for the joint plant in Kumamoto known as Japan Advanced Semiconductor Manufacturing (JASM). Taiwan Semiconductor Manufacturing Company (TSMC) and Sony will run the plant underwritten by the METI. The expected joint venture is widely touted as a boost for Japan's semiconductor industry as well as the local economy in Kumamoto. Yet, the plant itself will produce lower end chips ranging from 12 to 28 nanometers which are primarily for use in automobiles and electronics, distinct from more cutting-edge chip technologies.

Having laid the foundation for reviving Japan's domestic semiconductor industry in Kumamoto, Tokyo unveiled another state-driven venture called Rapidus in November 2022. Rapidus is a joint venture funded by some of Japan's top companies, such as Sony, SoftBank, and Toyota, and underwritten by the METI with the stated objective of producing cutting-edge logic chips in Japan. Japan currently lacks the manufacturing capabilities needed to produce logic chips, which are used in computers and smartphones. In fact, Amari again emerged to spur Tokyo's pursuit of Japanese-made logic chips and called for the ultimate attainment of the domestic manufacturing capabilities for 2-nanometer chips in the future. 2-nanometer chips are currently the most advanced semiconductor technology possessed by the American company, IBM. Realizing Amari's ambitious vision would likely require close cooperation with the US. Furthermore, building chips is one part, joining the U.S. and other advanced economies on export controls demonstrates their protection.

[Building a Future Strategy](#)

While Japan's economic security policy is a welcome development for the U.S.-Japan alliance, 2022 has proven to be a year of trials for Tokyo. It is still a nascent policy with the potential to become a redoubtable force in driving the U.S.-China geotechnological competition given Japan's geography and place in the rules-based international order. A coherent strategic framework to guide future developments in this area is called for and the new security and defense strategies will arrive at an opportune time.

The New Congress & Geotech

In many ways the new Congress will share the geotech priorities of the old Congress. Despite the tenor of partisanship in the United States, concern over our technological edge and innovation leadership transcends parties. However, this does not mean that there will be frictionless legislating when it comes to geotech matters. Some of this will have to do with the nature of partisanship, for even as there is agreement, the House Republican majority has already signaled that it seeks to act tougher on China than the Biden administration. Coming on top of the administrations already forceful policies, this could create an escalatory dynamic in how both ends of Pennsylvania Avenue approach our relationship with Beijing. At the same time, other matters will face hurdles due to the narrow nature of the Republican majority in the house and the realities of a House in Republican hands and a Senate narrowly held by Democrats.

Despite the sound and fury surrounding the 2022 elections, little changed in the way of key players in geotech policy making. Many of the key sponsors and leaders of legislative efforts like the chips act and the Inflation Reduction Act remain in influential positions. The coalitions that came together to create bipartisan geotech legislation remain largely intact, and their shared perceptions of the geotech challenge continue to guide approaches that are supportive of American industry and skeptical of China's growing and existent technological and economic power. Despite the rhetoric of some fringe elements, many in Congress who also understand the importance of cooperation and collaboration with allies and partners remain—and in positions of leadership and influence.

With the Democratic incumbent prevailing in the Georgia runoff, a 51-49 Senate means that the Democratic senators will have full control of the schedule and committees. Still, given narrow majorities and the nature of Senate rules, bipartisanship will be required for any further geotech legislation. Also, with an election looming, larger packages will likely be harder to come by. Efforts may be best focused on addressing shortcomings or unintended consequences from earlier legislation.

In the House, the nature of that body and its rules mean that a narrow majority is far more unstable. It is less likely to produce bipartisan action unless we see a major realignment in how individual members of the house or caucuses break the party whip. This is highly unlikely. While there are outstanding questions about the prospects of presumptive speaker Kevin McCarthy, those believed to be incoming committee chairman on matters of oversight related to geotech, national security, and intelligence have demonstrated past leadership and understanding on geotech matters. What the change in control of the house means for geotech policy has a lot to do with the future of Republicans planned "China Task Force."

Key leaders involved in the China Task Force include Reps. Kevin McCarthy (R-CA), Michael McCaul (R-TX), Mike Gallagher (R-WI), and Michael Waltz (R-FL). While the task force has already indicated that it would address many of the geotech-related topics covered in this report, it will also look into the influence of the Chinese Communist Party on American college campuses, the acquisition of American agricultural land by Chinese entities, and the defense of Taiwan.⁵²

Starting before the 2022 election—and building on hawkishness towards Beijing that grew throughout the trump administration, especially following the pandemic—Republicans in office and Republican candidates signaled that they would pursue an approach towards Beijing that seeks a harder line than the Biden administration has taken. As this report has already outlined, the Biden administration has already taken significant steps to restrict Chinese access to critical technologies and reduce our reliance on vulnerable supply chains. In one sense, there is an opportunity for bipartisan policy making to take place between an administration that has already shown a firm approach towards Beijing and Congress seeking to provide legislative remedies. However, the partisanship of our current system and the need to differentiate policies before the election—with each party seeking tougher approaches on China—raise worries that this body will focus more on the Biden administration than Beijing.

Leaders on both sides of the aisle should be lauded for their recognition of the challenge that China poses to U.S. technology leadership and how the Chinese Communist party under Xi Jinping has continued to move in a direction that turns US-China economic codependence from opportunity into what many government and private sector leaders recognize as vulnerability. The political reality in both Washington and Beijing continues to push towards the decoupling of economically beneficial relationships. In a Congress that seeks to pursue tougher policies on China along with an administration that is already tough on China, legislators should remember to provide meaningful off ramps and opportunities for reengagement, as we cannot afford to fall back on Cold War thinking.

More reflective of this broader and more strategic approach to relations with China, Senators Angus King (I-ME), John Cornyn (R-TX), and Tim Kaine (D-VA) introduced legislation in September 2022 to develop a “China Grand Strategy Commission” modeled on the successful

⁵² <https://thehill.com/homenews/house/3708474-republicans-sharpen-knives-for-china-with-eye-on-house-majority/>

Cyberspace Solarium Commission.⁵³ The 18-member commission would have a mixture of members:

- Two co-chairs chosen by Presidential and Congressional Leaders' consensus agreement.
- The Deputy National Security Advisor, the Deputy Secretary of Defense, the Deputy Secretary of State, the Deputy Secretary of the Treasury, the Deputy Secretary of Commerce, and the Principal Deputy Director of National Intelligence representing the Executive Branch.
- Three members appointed by the Senate Majority Leader and Chair of the Senate Armed Services Committee, one of whom is a Senator.
- Three members appointed by the Senate Minority Leader and Ranking Member of Senate Armed Services, also one of whom is a Senator.
- Three members appointed by the Speaker of the House and Chair of the House Armed Services Committee, one of whom is a member of the House.
- Three members appointed by the House Minority Leader and Ranking Member of House Armed Services Committee, one of whom is also a member of the House.⁵⁴

Similar to the Cyberspace Solarium Commission, the legislation provides timelines and a structure that simplifies action and allows the commission to produce actionable recommendations for a whole-of-government approach to policy to China, what a stable international order looks like with China as a participant, and how the United States can protect and strengthen U.S. national security interests. However, as this proposal is refined, it would be ideal to expand the inputs for Congressional appointments beyond simply the Armed Services Committees, as a whole-of-government approach by the Executive Branch requires whole-of-government legislating and oversight from Congress. Ultimately, this effort is structured to be far more bipartisan and consensus-building than the House "China Task Force."

However, as the proposals for various China-related Congressional bodies go forward, House Republican leaders have announced that Wisconsin Republican Mike Gallagher will be chairing a Select Committee on China. While the approach taken by Republicans in the minority did not include any Democratic participation, Gallagher has repeatedly indicated that he hopes the new House body will work in a bipartisan manner.⁵⁵ Rep. Gallagher has previously demonstrated bipartisan leadership on national security issues, including the Cyberspace Solarium Commission, and we hope that this, and all China competition-related efforts, are bipartisan.

⁵³ <https://www.king.senate.gov/newsroom/press-releases/king-cornyn-kaine-introduce-legislation-to-create-a-china-grand-strategy-commission-to-navigate-growing-competition>

⁵⁴ <https://www.congress.gov/bill/117th-congress/senate-bill/5039/text?r=5&s=1>

⁵⁵ <https://gallagher.house.gov/media/press-releases/gallagher-outlines-vision-select-committee-china>

Looking more directly at what Congress might do in terms of furthering “decoupling” is outbound investment review. While it did not advance in the previous Congress, it is likely to be reopened in this Congress. It is low hanging fruit for the China task force, as well as a way too easily distinguish a tough approach on China and tech and finance industries at the same time. With the retirement of ranking member Pat Toomey from the Senate Banking Committee, a powerful voice in that body opposing broad outbound investment review has retired. Representative Patrick McHenry, the likely chairman of the House Financial Services Committee has expressed his doubts as well about an overly broad or onerous investment review process, but has also indicated his willingness to work with the administration to discuss the matter, alongside continued efforts to improve and bolster inbound investment review in the current CFIUS process.⁵⁶

In terms of broader international engagement and trade, something that divided government could provide is an opportunity for democratic and republican compromise on trade deals, trade negotiation authority, or even support of key elements of the Indo-Pacific Economic Framework (IPEF) put forward by the Biden administration. However, despite some talk of additional support for various trade proposals, or even small ones to demonstrate “easy victories,” many in Congress are skeptical of whether the Biden administration has a trade promotion agenda. IPEF is largely designed to get around Congress, and the lack of market access raises questions about the benefits for Americans seeking to sell overseas—especially in agriculture. Some Members of Congress are asking the same questions that foreign leaders are asking about IPEF. Still the framework is the main thrust of the Biden administration’s economic and technological outreach in a strategically important region, and hopefully the administration and Congress can work together on promoting this concept, and hopefully bolstering it with the power of legislation.

One approach would be to explore the advancement of Trade Promotion Authority (TPA) legislation as a pathway to eventual re-entry of the United States into serious market access discussions that might build upon a successful, if limited IPEF foundation. The arguments in favor of entering and leading regional trade arrangements in terms of circumscribing China’s ability to de facto make the trade rules remain valid. The domestic politics which were unsupportive of TPP may change as the urgency to compete with China across realms of economic as well as military power intensifies, and the competition between the parties to promote a more effective ‘China strategy’ take on more nuance. It will make increasingly more

⁵⁶ <https://republicans-financialservices.house.gov/news/documentsingle.aspx?DocumentID=408446>

sense to evaluate all levers for enhancing the position of the United States and regional partners in making the trade rules.

The Inflation Reduction Act (IRA), as we note in this report, has flaws in the battery tax credit structure that fail to reflect the reality of current supply chains and partnerships with countries that are not strictly free trade partners. In an ideal world, both Congress and the administration would have a robust, bipartisan agenda to expand free trade agreements. Still, the EV tax credit structure could be fixed to recognize those allied and partner countries in arrangements alternative to free trade agreements that promote supply chain security and partnerships in EV and battery development. This would better promote friend-shoring, expand available EVs, and soothe the concerns of allies and partners. However, it is unlikely that Republicans would fix the flaws in the Democrats' party-line legislative accomplishment.

In the Republican House, some have also expressed their doubts about leading American companies, particularly big tech, and other elements of industry and finance considered too close to China. Combined with traditional conservative skepticism of industrial policy or things resembling it, there may not be the same push for supporting US innovation and R&D as there was in the previous Congress. The CHIPS Act and Inflation Reduction Act will have investment and subsidy programs that will be a likely target for congressional House Republicans investigation and oversight efforts. The example of Solyndra and controversies over investments in clean energy during the Obama administration serve as a likely model for how some might seek to turn a failed government investment into a political scandal. At the same time an overly politicized approach to congressional oversight will fail in the long run to provide stewardship of taxpayer dollars and the understanding of how future programs can better foster innovation leadership and R&D breakthroughs.

Finally, the nature of divided government and how this Congress can handle the basics of doing congressional business will greatly affect geotech related legislative efforts as well as the broader health of a range of economic, innovation, and defense programs. Most fundamental to this is Congress's ability to provide timely appropriations for the programs that it has already authorized, as well as ensuring that key programs do not fall subject to the artificial fiscal restraints of continuing resolutions — or the even greater disruption of government shutdowns. In the end, the prospects for legislation will come down to the nature of this Congress: partisanship, leadership, and when attention starts to turn to 2024.

Conclusion & Recommendations

The events of 2022 have brought focus to the geotech challenge, and we have seen how a common geotech approach across multiple presidential administrations and Congresses reflects a bipartisan consensus to promote innovation leadership and ensure that our adversaries do not lead in the next generation of strategically critical technologies. The geopolitical developments of the year have brought new unity among western nations, while also illustrating how authoritarians' whims can disrupt the fragile supply chains of a globalized world.

The challenge and opportunity of what lies ahead in the geotech challenge is that it is less about what our adversaries do—though we can and should protect the fruits of our innovation from their theft and exploitation—and more about how we identify the weaknesses we need to strengthen, existing strengths to build upon, and develop an approach to the geotech challenge that combines government support for innovation and R&D with private sector entrepreneurialism and free enterprise.

In Washington, it will be important to ensure that the programs now distributing billions in taxpayer dollars are well-managed and work with private capital. The entities responsible for innovation programs, investment reviews, overseas development, digital diplomacy, trade promotion, and all the other various elements of geotech statecraft need to be well-resourced with budgets and technology and well-staffed by leaders who have know-how and experience in private sector innovation and economic security.

With divided government ahead until at least 2024, the bipartisan consensus that undergirds geotech thinking will be all the more necessary for cooperation. Efforts that work to build a consensus-based long-term strategy will be more successful than those used for short-term political gain. Accusing the other side of being “weak on country X or Y” serves only to divide us, delay action, and, more likely than not, comparatively empower country X or Y.

Working with allies is also vital to the success of any geotech strategy. There will be disagreements and difficulties. When it comes to harmonizing export controls, investment review processes, and other protections, differences in threat perception between Washington and allied capitals will continue to challenge policymakers' efforts. When it comes to threats, we must be sober and straightforward in our assessments. There is no need to hype a threat when our adversaries' actions can speak plainly and for themselves. To this end, greater transparency and information sharing about real threats should take place with allies—and, in a responsible way, with the general public.

Finally, in working with allies there is an opportunity for the United States to reassert its economic leadership. While not a full trade deal, the Indo-Pacific Economic Framework is an important foundation upon which to build the standards and policies for a secure, sustainable technological and economic future. Only with allies can we push back against adversaries' coercive efforts, as well as presenting an alternative model for how the world addresses the economic and technological challenges of the future.

Recommendations

Continue Bipartisan Geotech Efforts

The bipartisan consensus on geotech is a remarkable contrast to the tenor of much of our current politics. Where the Biden administration and Congress can continue to work together on geotech will be all the more important in divided government. Beyond geotech efforts, it will still be important to ensure that the “basics” of governing can also happen, so that authorizations and appropriations work together, budgets are passed, and CRs and shut-downs avoided.

Protect and Promote U.S. and Allied Technology & Innovation

Protecting our innovation from theft and copying through export controls and investment reviews provides barriers to outflows of current technology, while support for R&D and innovation promotes the technologies of the future. Continuing to restrict the export of advanced technologies to adversaries will ensure that we do not see these technologies used against us in the future. However, we cannot assume that these protections will arrest our adversaries' technological development. Therefore, as we, with allies and partners, work to invest and develop the technologies of the future, we should also remember how our model of free enterprise and private entrepreneurship is what has successfully driven generation after generation of innovation in our societies.

Ensure Actions Demonstrate Preparation, Not Provocation

Geotech preparedness becomes all the more important as global tensions grow. Flashpoints in Taiwan and the Baltics for example, and the hot war zone of Ukraine, all together represent areas where miscalculation and provocation can lead to conflict. Other matters ranging from attribution in cyberspace to countering disinformation all raise the risk of miscalculation and escalation. Our actions, and those working with allies, should be focused on meaningful preparation for this competition and building economic, political, and societal resilience. Let our adversaries be the ones demonstrating provocative, destabilizing behavior, while we build avenues for geotech cooperation and deeper economic ties.

Secure Supply Chains in Concert with Allies; Setting Goals that Acknowledge Realities of Supply Chain Management

Securing our supply chains through friend-shoring and near-shoring is a cornerstone of future economic security. The impact of the pandemic, Russia’s invasion of Ukraine, China’s zero COVID policies, and other disruptions and embargoes before 2020 have demonstrated the fragility of supply chains of critical minerals, chemicals and pharmaceuticals, and semiconductors as well as other electronic components. This fragility is a national security threat that can be exploited by adversaries or exacerbated by other organic crises. Bold goals and incentives from legislators can encourage investments and promote demand signals for domestic and allied supply chains, adoption of more secure and/or greener technologies, and other economic security, sustainability, and resilience goals. However, these measures should be coordinated in a way that avoids beggar-thy-neighbor policies amongst allies, as well as in a way that recognizes that supply chain development and reconfiguring can take years, if not decades.

Expand the Aperture of Geotech Cooperation, Development with Allies

Given the breadth of geotech interests and the application of strategically critical technologies across the fields underpinning future economic security and prosperity, it is vital that we work with allies and partners. In securing technologies, this means harmonizing export controls and investment reviews—while promoting measures that ease doing business among friends. In innovating new technologies, it can include coordination on R&D while also ensuring that support for industry is coordinated to avoid beggar-thy-neighbor subsidization. In deploying technologies, allies and partners can better coordinate acquisition, while continuing to coordinate digital and tech standards. All of this means changing mindsets ranging from corporate competition to government classification to be better oriented to accelerating this cooperation—and ultimately faster “friend-shoring” of supply chains and R&D. In areas, this will also require assistance to build our allies’ and partners’ capabilities. One such example is working with Japan around the need for a security clearance system, while our own measures can look at over-classification that prevents our leaders from sharing needed information with allies, partners, and the American people.

Carefully Manage Economic Interdependence with Adversaries

Even as the geopolitical landscape has changed, the events of 2022 have continued to demonstrate continued global interdependence, even as talk of separate, decoupled “economic blocs” also continues to grow. The ongoing energy, commodity, and agricultural disruption of the Russian invasion and the prospect of the disruption of a cross-Taiwan Strait conflict demonstrate how open conflict can disrupt the global economic fabric. Similarly, as

governments put up barriers to trade and investment to promote economic security, these efforts should be done in a manner that is focused on specific technologies to protect and the bad actors we wish to exclude from geotech trade and innovation. These efforts should be coordinated with allies, and done in a way that continues also to protect economic dynamism and the free flow of capital among allies, partners, and entities not identified as threats. Overly onerous or broadly applied measures threaten to harm the innovation and economic dynamism needed for a healthy geotech ecosystem.

Demonstrate Cautiousness with Outbound Investment Review

Measures can and should be taken to ensure that U.S. investments are not funding our adversaries' military and technological development. Similarly, there is a continued need for review of sensitive inbound investments. These need to be done in ways that are targeted and carried out with rapidity to ensure that security concerns are balanced with the need for dynamic global commerce. Overly broad rules combined with understaffed agencies or review entities will result in barriers to commerce impacting legitimate business with allies and partners. Efforts to accelerate "friend-shoring" could be affected by overly onerous rules, while also allowing adversaries' firms to outpace our own. As policymakers pursue outbound investment review—or reform inbound review—they should ensure that efforts are targeted, well-staffed and resourced, coordinated with allies and partners, and designed to promote, rather than punish investment cooperation with our friends.

Promote Digital & Tech Infrastructure Partnerships with Allies, Partners, & Global South

Vital to the efforts at digital diplomacy, fostering digital trade, and promoting U.S. and allied geotech interests is to build secure technology infrastructure via partnerships with allies and the developing world. To this end, continued support for technology assistance efforts, new tech and connectivity infrastructure in the developing world, secure digital infrastructure and platforms, and cooperative, public-private models for digital development can serve to build stronger geotech ties as connectivity, new technologies, and innovation continue to spread around the world.

Build on the Indo-Pacific Economic Framework, Return to CPTPP to Re-establish U.S.

Economic & Trade Leadership

Underpinning economic security is a healthy economy. A healthy economy is one that is open to the world and ready for free and fair trade with those willing to play by the same rules. The Indo-Pacific Economic Framework provides useful pillars for building such partnerships and writing the rules, yet it does not have the full effect of a trade deal. Despite the political challenges, demonstrating geotech leadership requires a greater push for trade agreements and partnerships, incentives ranging from those already in IPEF to actual market access, and

negotiating authority for officials to discuss and balance U.S. and partners' interests. It will require a reset with Congress—acknowledging that IPEF is structured to avoid Congress—to build a bipartisan consensus behind what opportunities IPEF can achieve for geopolitical and economic interests. While full trade promotion authority (TPA) is a hot button issue, and one that the administration may not even want given its pro-labor inclination, bipartisan support for strengthening U.S. global economic and trade leadership is vital for geotech success and economic security.

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