HILL BRIEF | MARCH 2026

Tech Edge

A Living Playbook for America's Technology Long Game

By the CSIS Economic Security and Technology Department

KEY TAKEAWAYS

- America has struggled for decades to find its footing while China played the long game. U.S. policy has been shaped by myths: that China only copies, that lost advantages cannot be recovered, and that focusing on AI is enough.
- Technology innovation and diffusion depend on *ecosystems*: companies, research institutions, supply chain partners, and supportive policies that turn lab discoveries into factory output.
- Lose capabilities in one area, and losses cascade. Build them and advantages compound. Sustained leadership requires *technological dexterity*: ecosystem strengths built across interconnected technologies like AI and rare earths, or chips and high-end machine tools.
- America leads in Stack technologies (AI) and Precision technologies (jet engines)—with talent pools, supplier partnerships, and regulatory standards that China cannot easily replicate. It trails in Base technologies (rare earths) and Production technologies (machine tools), where the "missing middle" of engineering withered and learning curves were ceded to others.
- America's technology long game requires three strategies: *play all the keys*—invest across technologies with new capital instruments; *speed to scale*—compress deployment through faster engineering, construction, and qualification; and *defend the network*—protect innovators, workers, supply chains, and markets from mercantile and malign actors.

BACKGROUND AND CONTEXT

America is in a strategic bind. While it leads in areas such as AI and advanced aerospace, China is building structural advantages across technologies by combining patient state capital, mercantile practices, and growing innovation capacity. U.S. policy remains anchored in legacy strengths and fragmented tools that cannot replace sustained domestic and allied capacity building. Recent developments—such as China's export controls on critical minerals and its advances in AI under chip constraints—highlight the limits of focusing narrowly on frontier innovation or trade restrictions alone.

Long-term advantage depends less on individual breakthroughs and more on strengthening the building blocks of ecosystem power: economy-wide fundamentals, technology-specific enablers, governance capacity, and company strategies. Not all technologies are built the same way. Stack technologies, such as AI, need capital markets and talent; Precision technologies, such as jet engines, need partnerships and certification regimes; Production technologies, such as machine tools, need patient capital and vocational training; and Base technologies, such as rare earths, need coordinated supply chains.

The United States remains strong in Stack and Precision technologies, where integrated ecosystems create durable industrial advantages. However, it lags in Base and Production technologies, where engineering scale-up and supply chain depth are decisive. Europe and Japan lead in high-end machine tools, and China dominates rare earth processing—gaps that compound over time. Closing them requires more than export controls or targeted subsidies. America needs new capital instruments, faster deployment mechanisms, and better-coordinated industrial policy across agencies and allies—a technology long game it has yet to fully organize around.

LEGISLATIVE AND POLICY IMPLICATIONS

The *Tech Edge* long game has far-reaching implications for congressional legislation and oversight:

Playing all the keys requires strengthening Base and Production technologies alongside frontier R&D. Refocusing CHIPS and Science Act funding toward Base and Production gaps and activating Defense Production Act (DPA) Title III for critical minerals processing are immediate priorities. The Comprehensive Outbound Investment National Security (COINS) Act, which

CSIS | CENTER FOR STRATEGIC & INTERNATIONAL STUDIES

advances outbound investment screening, should be extended beyond semiconductors and AI to cover Production and Base technology gaps.

Achieving speed and scale requires action across three fronts. The SPEED Act (H.R. 4776) and energy transmission reform address permitting bottlenecks essential for AI and manufacturing competitiveness. Manufacturing USA reauthorization must be redirected toward end-to-end pilot lines—currently only 5 percent of projects reach pilot-scale validation. With respect to the U.S. workforce, S.1290 (AI and Critical Technology Workforce Framework Act) and S.3319 (Workforce of the Future Act) address the talent pipeline for Stack and Production technologies.

Defending the network requires Congress to move from blunt tariffs toward surgical trade tools. With broad tariff authority now constrained by the courts, Congress should legislate conduct-based trade remedies targeting dumping and predatory investment. Strengthening the Committee on Foreign Investment in the United States (CFIUS) and advancing tech-focused trade compacts with allies, including Pax Silica partners, complete the tool kit.

CHALLENGES AND RISKS

Implementing a technology long game requires overcoming five compounding risks:

1. The unpredictable, escalatory tariff agenda risks alienating supply chain partners whose cooperation is essential for Base and Production technology resilience.
2. Congress authorized but never fully appropriated the CHIPS and Science Act's science provisions—leaving university ecosystems, researcher pipelines, and use-inspired R&D chronically underfunded.
3. Federal strategy without both state-level and private sector alignment fails at execution. Current uncertainty on trade, permitting, and workforce is making private commitment harder, not easier.
4. Workforce pipelines take years to build. It will become increasingly challenging to build ecosystem depth without a pragmatic approach to nurture homegrown talent while continuing to attract global talent.
5. The U.S. government lacks the institutional capacity to execute a sustained technology strategy. Economic security authorities are not well coordinated across departments and agencies, and lost talent will be hard to replace.

RECOMMENDATIONS

Play all the Keys

- Targeted R&D and commercialization funding: Direct CHIPS and Science Act–authorized funding toward Base and Production gaps, not only frontier research. Fully appropriate the science provisions.
- Technology-specific financing tools: Expand mechanisms that provide patient or strategic capital where private markets undersupply it (e.g., DPA Title III, loan guarantees). Establish an Allied Technology Dexterity Fund that pools capital from the U.S. government and allies to invest jointly in Base and Production gaps.

Speed to Scale

- Permitting and deployment reform: Establish enforceable shot-clocks for mining, energy, and industrial infrastructure.
- Refocus Manufacturing USA: Shift emphasis toward end-to-end pilot lines and shared engineering infrastructure, not only pre-competitive R&D.
- Adoption accelerators: Amend CHIPS Act appropriations to fund sector-specific deployment initiatives in energy, defense, and health.
- Workforce execution capacity: Expand vocational and technical training—including through S. 1290 and S.3319. Build clear immigration pathways for high-skilled workers.

Defend the Network

- Economic security coordination: Create a central economic security coordinating architecture across the Departments of Commerce, Energy, Defense, and the Treasury.
- Modernize CFIUS and outbound tools: Expand COINS Act authorities beyond semiconductors and AI. Strengthen CFIUS through the Protecting American Agriculture from Foreign Adversaries Act.
- Allied coordination: Formalize trade deals with traditional allies—and relevant Pax Silica partners—to include two-way market access and investment along with technology standards. Advance conduct-based trade remedies targeting dumping and predatory investment.

Figure 1: Ecosystem Building Blocks: No Absolute Advantages

Economy Wide Fundamentals (World average: 50)						
United States: 73 ↑			China: 55 ↑			
Building blocks / Technology	**Tech-specific Enablers**		**Ecosystem Governance**		**Enterprise Strategies**	
	U.S.	China	U.S.	China	U.S.	China
Stack AI stack	Dominant ↑	Competitive ↑	Advanced →	Competitive →	Advanced ↑	Advanced ↑
Precision Jet engines	Advanced →	Lagging ↑	Competitive →	Emerging ↑	Advanced ↓	Lagging ↑
Production Machine tools	Competitive →	Competitive ↑	Emerging →	Emerging ↑	Emerging ↓	Emerging →
Base Rare earths	Emerging ↑	Dominant →	Competitive ↑	Dominant →	Emerging →	Advanced →

Trend of indicators: ↑ Improving → Stable ↓ Deteriorating

Qualitative scale:

Dominant	Advanced	Competitive	Emerging	Lagging

Note: Economy-wide fundamentals refer to rescaled z-scores that are a composite index of eight economy-wide indicators that score the United States and China relative to all countries. The economy-wide fundamental gap is 19, but due to rounding, the figure shows a gap of 18.

Source: CSIS Economic Security and Technology Department.

Additional Resources

Navin Girishankar et al., *Tech Edge: A Living Playbook for America's Technology Long Game* (Washington, DC: CSIS, January 2026), **https://www.csis.org/analysis/tech-edge-living-playbook-americas-technology-long-game**.

For more information, contact: **Chloe Himmel** at 202.775.3186 or **chimmel@csis.org**.