



# **PAX SILICA**

## **America's Attempts to Regain Wider Control over the World's AI Ecosystem**

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## **PAX SILICA AMERICA'S ATTEMPTS TO REGAIN WIDER CONTROL OVER THE WORLD'S AI ECOSYSTEM**

Pax Silica is a global initiative to retain America's digital dominance. China's current dominant position in the value chains of artificial intelligence (AI), especially its control over rare earth elements and their refinement, is considered a threat to the long-term standing of the United States. Unlike previous attempts, Pax Silica relies on a restricted group of signatories to create a "China-free" ecosystem. However, this format faces significant structural vulnerabilities, most notably the "refinery bottleneck" and the non-signatory status of critical nodes, such as Taiwan and the Netherlands. To succeed, Washington must demonstrate long-term policy credibility to attract capital and expand its membership to encompass all phases of semiconductor and AI supply chains.

### **INTRODUCTION**

Donald Trump's second presidential term has been characterized by the deliberate use of disruption as a strategic lever. However, when it comes to technological dominance, he maintains a clear continuity. Pax Silica is the latest phase of an effort to secure America's digital infrastructures. While the period from 2017 to 2021 focused on excluding firms such as Huawei through the Entity List and the Clean Network Initiative, the current focus has shifted from 5G hardware to the physical ecosystem underlying AI. President Trump sees this strategy as existential. In 2024, China accounted for 69.2 percent of global rare earth element production. This was not a problem in itself until China started using its near monopolistic position to put pressure on Washington and force tariff compromises. Pax Silica was created to avoid America being blackmailed in this manner. One reason why Trump wants more concentrated focus in terms

of scope and objectives is that while the Clean Network program included over sixty countries, Pax Silica is a smaller alliance of fewer than ten signatories. This shift highlights the relocation of technological hubs toward the Indo-Pacific and the Global South. Comprising Australia, Greece, India, Israel, Japan, Qatar, South Korea, Singapore, Sweden, the United Arab Emirates, the United Kingdom and the United States, the alliance aims to build a resilient, independent supply chain. However, success requires more than just high-level diplomacy; total domination of every phase of production is needed to eliminate supply chain vulnerabilities.

## **PART ONE: FROM DIGITAL OPENNESS TO CLOSED AI SUPPLY CHAINS**

Donald Trump’s second presidential term has been defined by unorthodox diplomacy and a deliberate extension of strategic ambiguity across the international system. One domain where a clear continuity of great-power strategy across presidential cycles can be identified is technology. Within the long sequence of strategies and maneuvers aimed at preserving U.S. digital supremacy, the cooperation launched under the “Pax Silica” name represents the latest milestone.<sup>1</sup> Announced in late 2025, this international initiative seeks to secure control over the physical value chains underpinning the technological development of artificial intelligence (AI).

Although the Pax Silica declaration published in December does not explicitly name the threat originating from the People’s Republic of China,<sup>2</sup> the initiative is best understood as a response to China’s increasingly dominant position. Beijing’s dominance in rare earth elements (REEs) is the result of a six-decade-long state strategy<sup>3</sup>: by 2024, it accounted for 69.2 percent of global REE mine production, excluding undocumented extraction, while the United States trailed far behind with roughly 45,000 metric tons, or 11.5 percent of global output.<sup>4</sup> Reflecting strategic framing from the highest political level (Xi Jinping described rare earths in 2019 as “an important strategic resource”),

1 “Pax Silica - An Initiative to Secure Supply Chains for the AI Era,” Pax Silica Forum, accessed February 26, 2026, <https://paxsilica.org/>.

2 “Pax Silica,” United States Department of State, accessed February 26, 2026, <https://www.state.gov/pax-silica/>.

3 Keith Bradsher, “Inside China’s Six-Decade Campaign to Dominate Rare Earths,” *The New York Times*, December 31, 2025, <https://www.nytimes.com/2025/12/31/business/china-rare-earth-history.html>.

4 Arendse Huld, “China’s Rare Earth Elements: What Businesses Need to Know,” *China Briefing*, August 29, 2025, <https://www.china-briefing.com/news/chinas-rare-earth-elements-dominance-in-global-supply-chains/>.

Beijing transformed this dominance into leverage in April and October 2025, when new export controls on rare earths and magnets enabled China to pressure Washington and force tariff compromises. As U.S. Treasury Secretary Scott Bessent put it,<sup>5</sup> the October move “pointed a bazooka at the supply chains and the industrial base of the entire free world.” As the Pax Silica declaration itself states, securing access to raw materials is the zero-order condition for sustaining the explosive growth of AI, meaning that control over REE sources is not merely a strategic objective, but an existential issue.

Technological rivalry between the United States and China has already gone through several distinct phases. The securitization of technology in the United States began in the early 1990s, when IT security expert Winn Schwartau warned Congress in 1991 of an impending “electronic Pearl Harbor,” arguing that U.S. government and commercial computer systems were effectively defenseless amid a growing number of hacker attacks.<sup>6</sup> This moment marked a departure from the libertarian ethos underpinning the information and communication technology (ICT) revolution, as digital openness increasingly came to be perceived as a national security vulnerability rather than a strength. Over time, cyber threats, particularly those linked to China, pushed technology firmly into the realm of foreign and security policy. This transition was symbolically captured in 2009, when Hillary Clinton identified internet freedom and data security as core priorities of twenty-first-century statecraft.<sup>7</sup>

Donald Trump fundamentally reoriented U.S. policy aimed at maintaining technological dominance. Following his inauguration in 2017, a series of trade, industrial, and diplomatic initiatives were launched that explicitly targeted China or companies associated with U.S. rivals, most notably Huawei. The opening move of this strategic shift was the Entity List announced in 2018, which prohibited the export of sensitive technologies, especially semiconductor products, to Chinese firms.<sup>8</sup> Efforts to gain control over global supply chains

5 Ana Swanson, “With China Truce, U.S. National Security Controls Now Appear Up for Negotiation,” *The New York Times*, October 30, 2025, <https://www.nytimes.com/2025/10/30/us/politics/china-trump-trade-security-chips-minerals.html>.

6 Sean T. Lawson et al., “The Cyber-Doom Effect: The Impact of Fear Appeals in the US Cyber Security Debate,” *2016 8th International Conference on Cyber Conflict (CyCon)* (2016): 65–80, <https://doi.org/10.1109/CYCON.2016.7529427>.

7 Hillary Clinton, “Remarks on Internet Freedom,” United States Department of State, February 21, 2010, <https://2009-2017.state.gov/secretary/20092013clinton/rm/2010/01/135519.htm>.

8 “The Entity List and Specially Designated Nationals,” MIT Office of the Vice President for Research, November 24, 2025, <https://research.mit.edu/security-integrity-and-compliance/foreign-engagement/regulations-and-references/entity-list-and->

were subsequently institutionalized through additional initiatives, including CHIPS for America, the National Strategy on Critical and Emerging Technologies, and the ICT Supply Chain Executive Order. As a direct precursor to Pax Silica, however, the Clean Network Initiative stands out, as it explicitly articulated the need for a defined network of allied partners.<sup>9</sup> Launched in 2020, the program was a flagship element of Washington’s effort to securitize digital infrastructure and exclude Chinese technology from global telecommunications and data networks. It was a hard security and exclusionary initiative, aimed at keeping Chinese firms, most notably Huawei and ZTE, out of sensitive digital ecosystems by restricting participation in 5G networks, cloud services, applications, undersea cables, and data routing.

Pax Silica highlights two important trends in the contest for technological dominance between the United States and China. First, great-power priorities have shifted: instead of the hardware components of 5G networks, AI has moved to the center of strategic competition. Second, the configuration of partner countries has also changed. While the Clean Network program encompassed more than sixty countries, including 27 NATO members and 26 EU member states, Pax Silica has fewer than ten signatories—only two European countries are among them. Several traditionally close U.S. allies appear only as non-signatory participants. This shift indicates that, in a transforming global order, technological hubs and value-chain nodes are increasingly relocating toward the Global South and the Indo-Pacific region.

## **PART TWO: SECURING BOTTLENECKS AND AVOIDING GEOPOLITICAL MINEFIELDS**

Washington’s motivation for creating a secure and “China-free” supply chain for AI seems to be a realistic move, especially if the current global supply chain is well understood.<sup>10</sup> Even though it is fair to say that most parts of the chain is well diversified since, for example, rare earth elements are from several regions, and chip design is also a multi-regional phase—China dominates the refinement of rare earth elements so strongly that Washington has every right to

<sup>9</sup> “The Clean Network,” United States Department of State, accessed February 26, 2026, <https://2017-2021.state.gov/the-clean-network/>.

<sup>10</sup> John Coyne, “Pax Silica Can Reshape Supply Chains for Greater Economic Security,” *The Strategist*, December 16, 2025, <https://www.aspistrategist.org.au/pax-silica-can-reshape-supply-chains-for-greater-economic-security/>.

be concerned about the security of the supply chain.<sup>11</sup> Pax Silica aims to overcome this challenge and reduce Beijing’s dominant position as much as possible. The signing members of the new alliance—Australia, the United States, the United Kingdom, Japan, the Republic of Korea, Singapore, the United Arab Emirates, Qatar, India, and Israel<sup>12</sup>—all fit perfectly into an independent supply chain, and with the possible addition of the non-signatory members—Canada, the European Union, the Netherlands, OECD, and Taiwan<sup>13</sup>—an even more complex and better-distributed alliance is about to rise.<sup>14</sup>

| Step                        | Description  | Who Has the Advantage?   | Which Pax Silica Member(s) Contribute the Most? |
|-----------------------------|--|--------------------------|---|
| (1) Raw Material Mining     | Extracts basic physical inputs from Earth  | China <sup>15</sup>      | Australia<br>U.S.<br>India                      |
| (2) Raw Material Processing | Transforms raw materials into a usable format  | China <sup>16</sup>      | Japan<br>U.S.<br>Australia                      |
| (3) Speciality Chemicals    | Enables the materials to become a precise pattern transfer during chip production  | Pax Silica <sup>17</sup> | Japan<br>South Korea                            |
| (4) Chip Design             | This is the architectural planning before the construction of the product, which defines performance, efficiency, and capabilities | Pax Silica <sup>18</sup> | U.S.<br>Israel<br>India                         |

11 I. S. I. Markets, “CEIC Article: China’s Dominance of the Rare Earths Industry,” CEIC Data, accessed February 26, 2026, <https://info.ceicdata.com/ceic-article-chinas-dominance-of-the-rare-earths-industry>.

12 “Pax Silica: A Coalition of Partners for the AI Era,” Pax Silica Forum, December 12, 2025, <https://paxsilica.org/f/pax-silica-a-coalition-of-partners-for-the-ai-era>.

13 Currently there is no official information about the differences between signatory and non-signatory members.

14 Akhil Ramesh, “Pax Silica and the Case for Bringing Industry Back into Foreign Policy,” The National Interest, February 26, 2026, <https://nationalinterest.org/feature/pax-silica-and-the-case-for-bringing-industry-back-into-foreign-policy>.

15 Heidi E. Crebo-Rediker and Mahnaz Khan, “Leapfrogging China’s Critical Minerals Dominance,” Council on Foreign Relations, February 4, 2026, <https://www.cfr.org/reports/leapfrogging-chinas-critical-minerals-dominance>.

16 “Designing an Effective Strategic Stockpiling System for Critical Minerals – Analysis,” International Energy Agency, January 27, 2026, <https://www.iea.org/commentaries/designing-an-effective-strategic-stockpiling-system-for-critical-minerals>.

17 Hui Shan Seah, “AMRO’s 2024 Annual Consultation Report on Japan,” ASEAN+3 Macroeconomic Research Office, March 4, 2025, <https://amro-asia.org/amros-2024-annual-consultation-report-on-japan/>.

18 Antton Haramboure et al., “Vulnerabilities in the Semiconductor Supply Chain,” OECD Science, Technology and Industry Working Papers 2023, no. 5 (2023), <https://doi.org/10.1787/6bed616f-en>

|   |   |                          |                            |
|---|---|--------------------------|----------------------------|
| (5) Electronic Design Automation (EDA) Software | Translates the abstract design into actual manufacturable masks, which is essential, since modern chips are too complex for manual designs          | Pax Silica <sup>19</sup> | U.S.                       |
| (6) Manufacturing Equipment                     | These machines are essential in the fabrication process because they create the final size of the chips and decide the actual chip production speed | Pax Silica <sup>20</sup> | Japan<br>U.S.              |
| (7) Advanced Wafer Fabrication                  | Advanced logic chips are created at this phase by cutting-edge equipment  | Pax Silica               | South Korea                |
| (8) Mature-Node Fabrication                     | Production of old-generation chips, which are less complex but are being produced in larger volumes   | China <sup>21</sup>      | Singapore                  |
| (9) Memory Chips                                | Produces memory components, since AI training is a memory-intensive process   | Pax Silica               | South Korea <sup>22</sup>  |
| (10) Advanced Packaging                         | Combines multiple chips into high-performance units   | Pax Silica <sup>23</sup> | U.S.<br>Singapore          |
| (11) Assembly, Testing, and Basic Packaging     | Industrial finishing phase, which prepares chips for integration, tests for defects, and encases chips in protective packaging                      | China <sup>24</sup>      | India<br>U.S.<br>Singapore |
| (12) Final Electronics Assembly                 | The integration of the chips into servers, vehicles, and systems is done at this phase; semiconductors and chips become part of different products  | China <sup>25</sup>      | India                      |

19 Jan-Peter Kleinhans et al., “Mapping the Semiconductor Value Chain: Working towards Identifying Dependencies and Vulnerabilities,” *OECD Science, Technology and Industry Policy Papers* 2025, no. 182 (2025), <https://doi.org/10.1787/4154cddf-en>.

20 “Department of Commerce Closes Export Controls Loophole for Foreign-Owned Semiconductor Fabs in China,” United States Bureau of Industry and Security, August 29, 2025, <https://www.bis.gov/press-release/department-commerce-closes-export-controls-loophole-foreign-owned-semiconductor-fabs-china?>

21 Daniel Blaughter and Benton Gordon, “Made in China 2025: Evaluating China’s Performance,” November 14, 2025, <https://www.uscc.gov/research/made-china-2025-evaluating-chinas-performance>.

22 Heekyoung Yang, “SK Hynix Says Reading HBM4 Production as It Seeks to Retain Lead over Rivals,” *Reuters*, September 12, 2025, <https://www.reuters.com/world/sk-hynix-says-reading-hbm4-production-it-seeks-retain-lead-over-rivals-2025-09-12/>.

23 OECD, “Mapping the Semiconductor Value Chain.”

24 OECD, “Mapping the Semiconductor Value Chain.”

25 John VerWey, “Electronic Products,” United States International Trade Commission, 2018, [https://www.usitc.gov/research\\_and\\_analysis/trade\\_shifts\\_2018/electronics.htm](https://www.usitc.gov/research_and_analysis/trade_shifts_2018/electronics.htm).

As the table above shows, for every supply chain phase, there is at least one Pax Silica signing member that can contribute. The broad distribution among the member states anticipates a strong alliance with comprehensive coverage across the entire supply chain. This complementarity between the members strengthens the overall resilience of the alliance, as responsibilities and capabilities are not concentrated in a single state but rather distributed among several partners. In this way, the alliance is structured to cover the full spectrum of the AI supply chain while reducing internal vulnerabilities.

Among the member states, we can say that the United States can contribute to most of the supply chain phases: (1) raw material mining, (2) raw material processing, (4) chip design, (5) EDA, (6) manufacturing equipment, (10) advanced packaging, and (11) assembly, testing, and basic packaging. The clear domination of the United States within the alliance is unquestionable; however, several other member states are filling in crucial loopholes, such as South Korea with its contribution to (3) specialty chemicals, (7) advanced fabrication, and (9) memory chips. Other members of Pax Silica, which are less represented in the table, such as the United Arab Emirates and Qatar, are also essential, as they provide financial support for the required investments aimed at increasing productivity during the production phases. This is highly important, as one of Beijing's main advantages is its large production volume, which positions it as a leading supplier. By financially supporting investments to increase production volumes in Pax Silica member states, Qatar and the UAE aim to counterbalance China's principal advantage.

The dominance of Pax Silica and China in the different sectors of the supply chain comes from different structural advantages. In the case of Pax Silica, the alliance is stronger in those phases that require high technological sophistication, research and development, and advanced industrial know-how. This can be seen especially in chip design, EDA software, manufacturing equipment, advanced wafer fabrication, memory chips, and advanced packaging, where companies from the United States, Japan, and South Korea are among the global leaders. China, by contrast, is dominant mainly in those sectors where large-scale production capacity, refining infrastructure, and cost-efficient industrial output matter the most. For example, China processes around 85–90 percent of the world's rare earth elements<sup>26</sup> and roughly 55–65 percent of lithium and cobalt

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26 "Executive Summary – The Role of Critical Minerals in Clean Energy Transitions," International Energy Agency, accessed March 16, 2026, <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary>.

refining,<sup>27</sup> giving it a decisive position in the early stages of the supply chain. China is also rapidly expanding its role in semiconductor manufacturing, where it is projected to account for around 30 percent of global mature-node fabrication capacity by the end of the decade.<sup>28</sup> In addition, China remains the world's largest hub for electronics manufacturing and assembly, producing more than one-third of global electronics output. In contrast, in chip manufacturing, for example, the gap between Pax Silica-aligned and Chinese firms remains substantial: TSMC alone accounted for 69.9 percent of the global foundry market in 2025,<sup>29</sup> while SMIC remains primarily a fast-expanding domestic champion rather than a global leader at the technological frontier. Therefore, the competition between Pax Silica and China is not only a competition between states, but also between two different industrial models: one based on technological superiority, the other on production scale and industrial depth.

Still, it is essential to acknowledge the new alliance's weaknesses and those bottleneck phases, which can hinder Washington's ability to gain a geopolitical advantage in this sector over Beijing. These vulnerabilities can be divided into two major groups: (1) supply-chain coverage, and (2) member states pressure resistance. The main and perhaps most urgent challenge is how many phases the new alliance can cover and dominate in the supply chain. To be able to create a secure chain, it is not enough to have control only over only some supply chain phases, but it is essential to dominate all of them. Without actual domination in each phase, the whole system stays vulnerable. In the case of Pax Silica, it is fair to say that most of these supply chain phases are covered, but there are phases that are still dominated by China. Those include (1) raw mineral mining, (2) raw mineral refining, (8) mature-node fabrication, (11) assembly, testing, and packaging. Others are dominated by actors who did not commit to this new alliance, including (7) advanced wafer fabrication and (10) advanced packaging, which are phases dominated by Taiwan, as well as the (6) manufacturing equipment phase, which is dominated by the Netherlands, since it has the most advanced technology.<sup>30</sup> Currently, the difference between signatory and non-

27 International Energy Agency, "Executive Summary."

28 "Assessment of the Status of the Microelectronics Industrial Base in the United States," United States Bureau of Industry and Security, December 2023, <https://www.bis.gov/media/documents/section-9904-report-final-20231221.pdf>.

29 "TSMC Nets Nearly 70% of 2025 Foundry Market," *Taipei Times*, March 14, 2026, <https://www.taipei-times.com/News/biz/archives/2026/03/14/2003853777>.

30 Christopher Cytera, "Pax Silica — Can It Stop China?," Centre for European Policy Analysis, January 14, 2026, <https://cepa.org/article/pax-silica-can-it-stop-china/>.

signatory members is unclear; most likely, the members in the second group committed to less than the signatory members. The difference between the two groups can be crucial because Taiwan, Canada, and the Netherlands are all non-signatory members and could be perfect fits to fill the gaps in the supply chain.

To fully secure its supply chain, Washington will need to bring in new members. Canada could be crucial in further diversifying the supply of rare earth elements and could supplement Australia's rare earth elements in the alliance. Taiwan, as it was stated above, is one of the most important actors in advanced semiconductor production worldwide, which is essential for the front-edge fabrication phase in the supply chain. The Netherlands, meanwhile, is in a unique position, since they have slowly become globally dominant in AI-relevant chip production,<sup>31</sup> and, at the same time, they produce the most advanced chipmaking machines.<sup>32</sup> If Washington could push these states to become signatories of Pax Silica, all but one stage of the supply chain would be covered. The refineries of rare earth elements would still be in the hands of Beijing, but the dominant position of China would be reduced and counterbalanced as much as possible. However, China's domination over refineries remains a concern for Washington. This one crucial bottleneck could threaten the whole supply chain and each of the member states. Without the refineries and the capacity of those, the alliance's ability to mass produce would fall, which could lead to a negative market reaction, such as closer ties with China.

The second challenge that the alliance must overcome is the expected pressure on states, both economically and financially.<sup>33</sup> From basic economics, some kind of counteraction can be expected from actors who feel left out of the newly formed alliance. Main actors like China, Russia, Brazil, or even European Union member countries have the ability to economically pressure the members of the alliance. These kinds of pressures will challenge the signatory members, since their governments must stick to the alliance and its rules to succeed. At the same time, these members will all need to increase their capacities to be able to match the demands of the market. To increase their capacities, a huge amount of capital is needed, which can be partly covered by the member states, but an important part will most likely be covered by financial actors. From the point of view of these financial actors, investing in such a mega project's sub-phases

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31 Cytera, "Pax Silica — Can It Stop China?"  
 32 Cytera, "Pax Silica — Can It Stop China?"  
 33 Coyne, "Pax Silica Can Reshape Supply Chains."

could be risky if the member states do not stay committed. The strength of the alliances is equal and unbreakable commitment from the members. If any of the signatory members step away from the agreement, the whole supply chain could fall apart. For these reasons, the governments of the signatory member states will face huge challenges and will have to tolerate volatility and price shocks at the beginning. This challenging period of time will prove—or disprove—the policy credibility demanded by investors.

In order to create a totally secured AI supply chain, Washington must expand Pax Silica’s signing members and find a solution for China’s domination over several phases, with a highlighted focus on the refinery phase. These two bottlenecks are the most crucial at this early stage. Currently, the alliance has the capacity to challenge China’s position and cut Beijing off from several parts of the supply chain, but it cannot definitively overcome China and beat it on the market. To achieve that, the alliance needs to be expanded, the refinery problems need to be solved, and policy credibility needs to be established. Once these steps are achieved, the Washington-led alliance can turn toward new challenges, such as the question of mass production or the prevention of counter-alliances being created.

## **CONCLUSION: BRIDGING VULNERABILITIES AND ESTABLISHING CREDIBILITY**

The ultimate success of Pax Silica hinges on Washington’s ability to bridge the gap between a strategic declaration and a fully functional, end-to-end supply chain. Today’s alliance is promising, but incomplete. While it leads in chip design and manufacturing, it remains reliant on outside actors for advanced machinery. The most critical “bottleneck” remains rare earth elements refinement, where China reigns supreme. To secure its objectives, the United States must transition key partners like Taiwan, Canada, and the Netherlands from non-signatory participants to fully committed members. Maintaining “policy credibility” will be essential to reassure financial investors that this group of limited members can deliver in their undertakings. For now, it seems it would be more rational to expand Pax Silica membership to those countries that can help reduce gaps and vulnerabilities in the current American strategy to secure its predominance over the global physical AI ecosystem.





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