May 7, 2025

AI and Tariffs: Considerations for Policy Makers

Introduction

As the US implements new tariff policies, the American Society for Artificial Intelligence (ASFAI) recommends that policymakers consider the impact of any new policy on US preeminence in AI.

One important justification for tariffs is that many US supply chains have been sent offshore. If these supply chains are in the hands of potential adversaries, it could weaken us as we attempt to remain at the cutting edge of AI technology. However, it also means that short-term disruptions in global trade can be detrimental to the AI industry. Any tariff policy should consider both the immediate needs for AI-related industries and the long-term robustness of critical supply chains.

To clarify these issues, we discuss three of the key building blocks for creating and maintaining AI, with primary focus on:

- **Technical Infrastructure**
- **Energy**
- **Talent**

We consider how tariffs may have an impact in each of these areas. Finally, we consolidate the analysis of these three building blocks and provide key insights and recommendations for policymakers and private sector leaders.

Technical Infrastructure

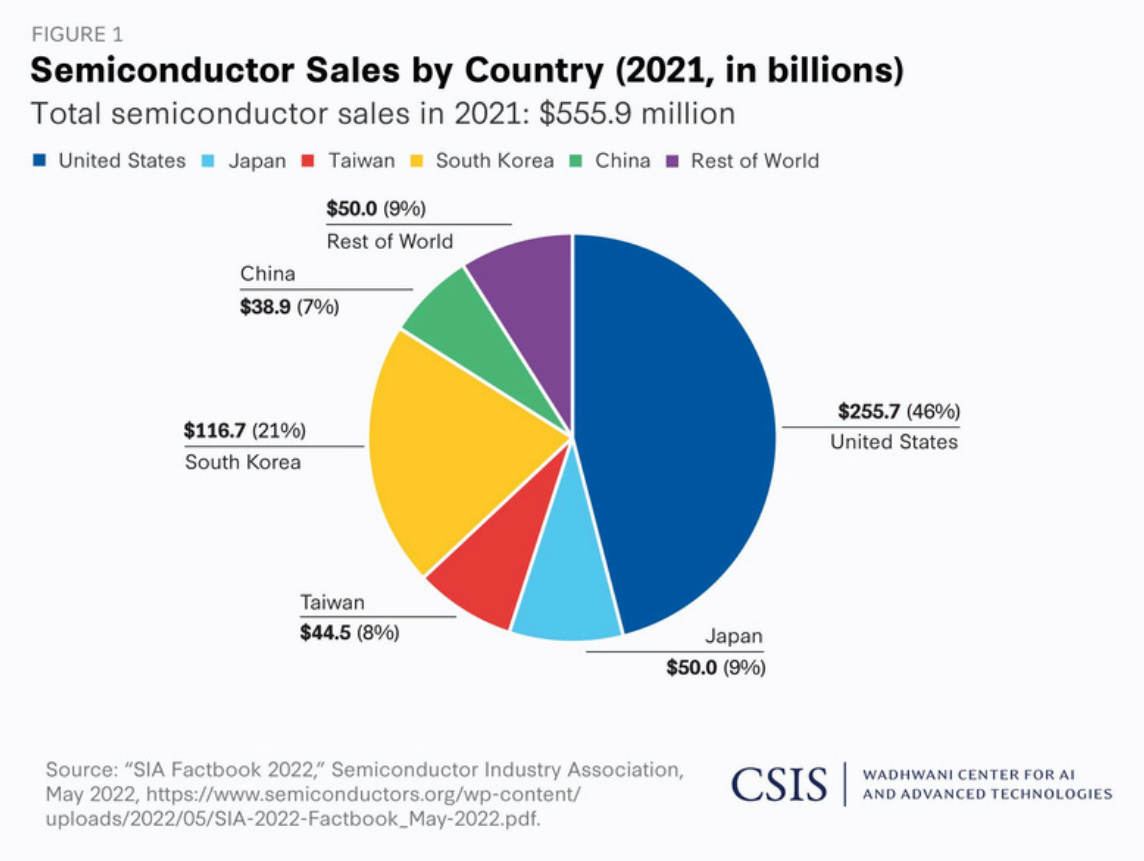
Technical Infrastructure refers to components required for the development, training, and operation of AI, including compute, data storage, and networking. Private companies provide these technologies in the form of physical units and cloud services (e.g., servers, data storage systems, and network devices, along with their software to run and operate the environment). A large portion of AI-related technical infrastructure components are designed by US firms and manufactured overseas, primarily in Taiwan, Japan, and Korea, with growing amounts from mainland China.

Compute refers to the processing power and associated technology used to run AI workloads during training and at inference-time. Compute technology includes CPU and GPU chips, HBM (high bandwidth memory) and DRAMM, cooling fans or liquid cooling technologies, Solid State Drives (SSD) and ethernet connectivity.

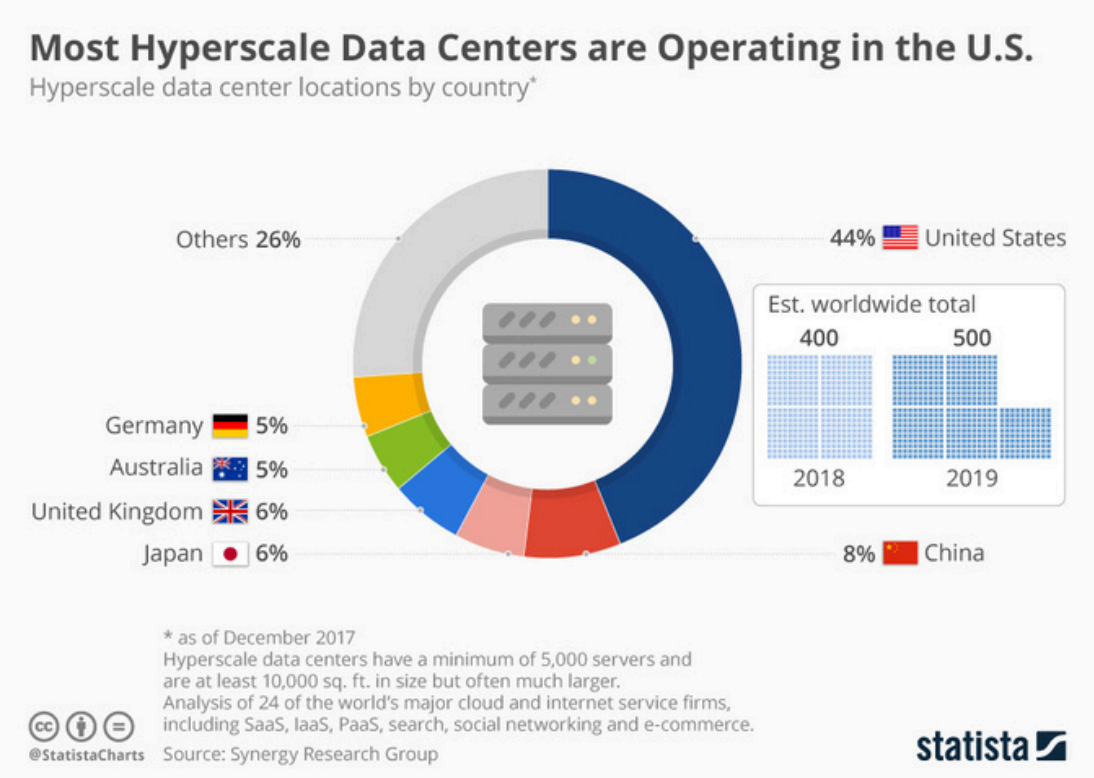
Data Storage refers to the hardware and software systems that store and serve the large volumes of data used for training, validation and inference. Data storage requires similar components as compute, including CPUs, custom ASICS, cooling fans, RAID controllers, SSDs or Hard Drives, memory, ethernet or Infiniband networking.

Networking refers to equipment that enables high-speed, low-latency data exchange among AI compute nodes, storage systems, and external services. Networking equipment includes CPUs, custom chips, network adapters, Ethernet components, and memory.

The US is a leader in compute, data storage and networking technology, but all of these depend on advanced semiconductors. Currently, the most advanced semiconductor fabrication facilities are located in Taiwan (TSMC) and South Korea (Samsung). Other important overseas manufacturing locations include China, Singapore, and Japan. Any disruption in the availability of advanced chips could be devastating to the U.S. AI industry.



In addition to the *production* of advanced computing equipment, the US is also the world leader in the current *deployment* of large data centers. To facilitate further growth in AI, the number of data centers required will need to grow substantially. If supply chains are disrupted, this growth could be halted.



In addition to hardware, software components are also needed for the development and operation of AI technology. A wide variety of software tools are used in AI, including those listed in the chart below (most is of US origin):

Component	Examples	Purpose
Programming Languages	Python, R, Java, Julia	Coding & model building
ML Frameworks	TensorFlow, PyTorch, Keras	Training & machine learning
Data Management	SQL/NoSQL databases, Pandas	Storing & preprocessing data
Dev. Environments	Jupyter Notebooks, PyCharm	Writing & testing code
Application Layer Tools	React, Django	Connecting models toUI
MLOps Tools	Azure ML Studio, MLflow	Deploying & monitoring models
Specialized Libraries	SpaCy (NLP), OpenCV	Domain-specific functionality

Tariff Implications for Technical Infrastructure

Any tariff policy should take into account the impact on the availability of equipment and software needed for AI. While much attention has been placed on the availability of 'chips,' a broader view of the component technologies should be taken into account. The White House has indicated that many such technologies would be exempt from tariffs*, but such policies should be flexible in light of the complex nature of global supply chains.

There are both positive and negative outcomes that could result from tariff policy. Positive potential outcomes from an aggressive tariff policy include:

1. Causing companies to "onshore" manufacturing to the US, resulting in more robust, domestic supply chains.
2. Slowing the growth of AI in adversary countries such as China by making it more difficult for them to access US markets.
3. Enabling more leverage in bilateral trade agreements, resulting in the reduction of foreign tariffs on US products.

Potential negative outcomes include:

1. Making critical hardware components more expensive, which could slow investment and growth in AI.
2. Causing adversary countries such as China to invest more in domestic production, resulting in a long run acceleration of AI technology led by a nation adversarial to the US.
3. Causing uncertainty in global markets, which could reduce availability of financing for AI-related companies.

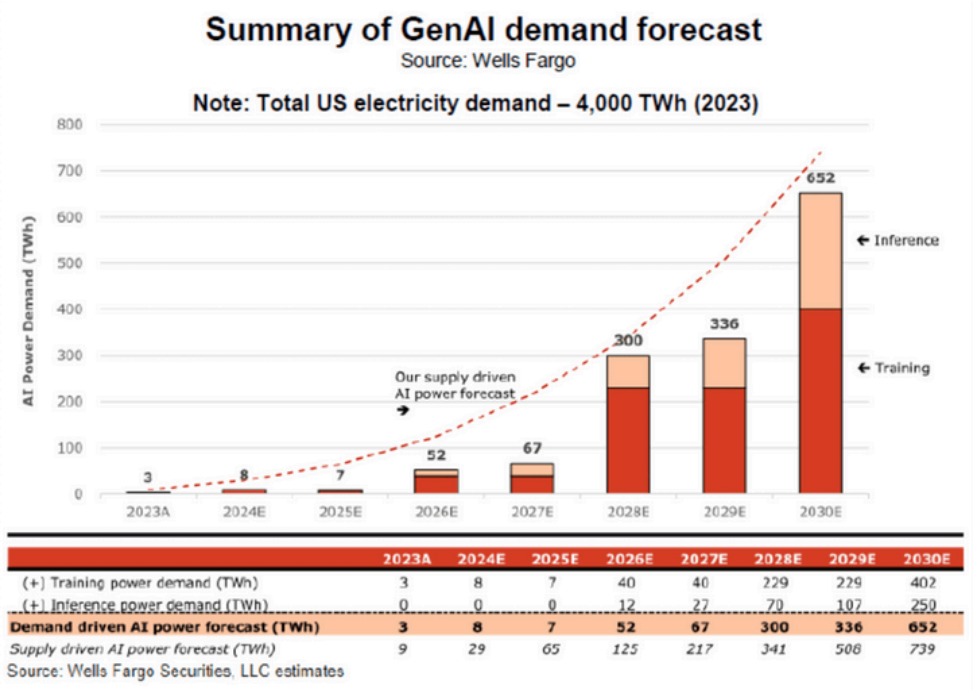
We are currently experiencing explosive growth in AI technology, and so short-term impacts should be weighted accordingly. New fabrication facilities for advanced semiconductors take at least 5 years to plan, develop, and build. The process of encouraging more US production has already begun, but disruption to global technology markets could still be catastrophic and give rivals a chance to catch up to the US in AI technology.

Therefore, policies targeted toward long term objectives such as onshoring supply chains should not be adopted at the expense of immediate concerns such as the stability of global markets and the availability of the components necessary to advance AI technology. Any tariff policy should be carefully calibrated to balance these concerns with an emphasis on the immediate impacts during this critical period for AI growth.

*https://www.whitehouse.gov/presidential-actions/2025/04/clarification-of-exceptions-under-e xecutive-order-14257-of-april-2-2025-as-amended/

Energy Requirements

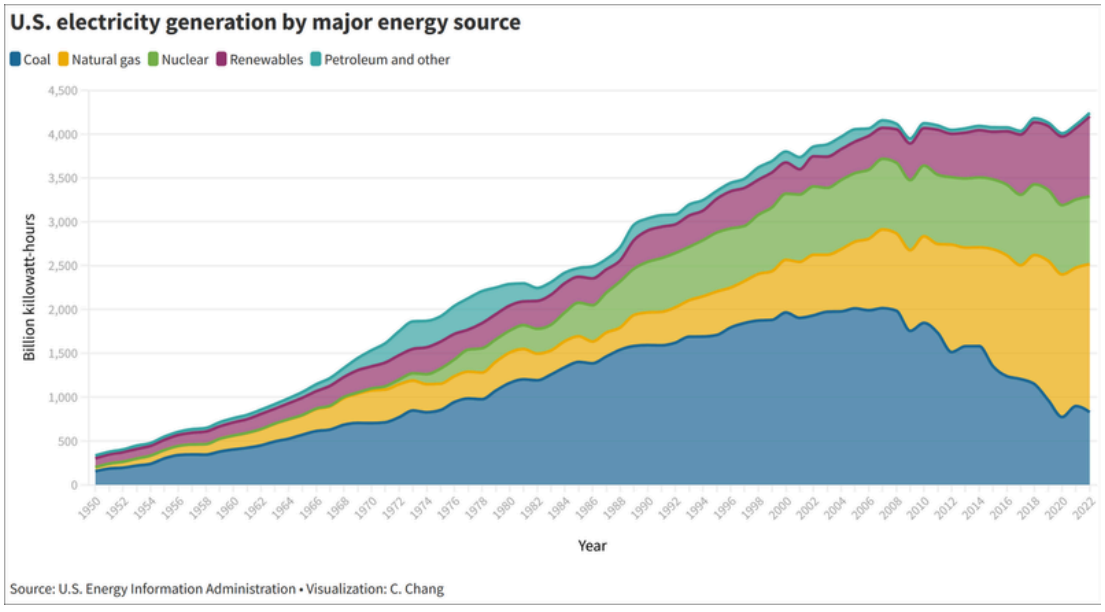
The availability of energy is just as critical for the future development of AI as the availability of technical infrastructure. Training a single large language model (LLM) like GPT-3 consumes approximately 1,300 MWh of electricity, equivalent to the annual consumption of 130 U.S. homes. Training GPT-4 consumed 50 times more energy than GPT-3. Generative AI models use up to 33 times more energy per task in comparison with traditional software. Estimates show that AI could demand as much as 15% of the total US energy supply within a few years.



	2023A	2024E	2025E	2026E	2027E	2028E	2029E	2030E
(+) Training power demand (TWh)	3	8	7	40	40	229	229	402
(+) Inference power demand (TWh)	0	0	0	12	27	70	107	250
Demand driven AI power forecast (TWh)	**3**	**8**	**7**	**52**	**67**	**300**	**336**	**652**
Supply driven AI power forecast (TWh)	*9*	*29*	*65*	*125*	*217*	*341*	*508*	*739*

Source: Wells Fargo Securities, LLC estimates

In 2022, China authorized building the equivalent of two new coal plants per week. Meanwhile, electricity production in the US has largely stagnated over the last 20 years.



The current administration has taken steps to ensure the availability of natural gas and coal as energy sources, and has revoked a Biden-era EO that "hampered the private sector's ability to innovate in AI by imposing government control over AI development and deployment". Thus, it is clear that the Administration sees the value in ensuring the growth of US energy production & that fossil fuels are essential to energy growth in the short term.

However, it is important that this policy objective is applied to tariffs, and that considerations are made for energy resources, including both renewables and fossil fuels. If the US is going to meet the growing energy demand related to AI, we will need to increase our production of electricity from natural gas, nuclear, and renewables. Natural gas is likely to be the most cost-effective way of expanding energy production in the short run, but solar energy could suffer the most from a disruption in trade since the US is reliant on other countries for the production of solar panels and batteries.

Furthermore, even if the current US shifts further toward natural gas and clean coal, building the power plants and grids attached to them will require steel and aluminum. Nearly a quarter of all US steel comes from imports, 40% of which comes from Canada, Mexico, and the remainder from countries in the EU and Asia. Roughly half of all US aluminum usage is from imports, with the vast majority coming from Canada.

Tariff Implications on Energy

US energy supply chains are more robust than those for technical infrastructure. Thus, the potential tariff implications for energy production are not as critical. However, tariff policy can certainly have an impact. Indeed, in addition to exempting many semiconductor products, the recent EO setting a new tariff policy exempted "energy and energy products" from Mexico and Canada.

Similar to technical infrastructure, the main potential advantage of tariffs with respect to energy would be causing companies to "onshore" energy-related production (including production of solar technology and materials such as rare earths for battery storage). The main downside would be making some energy production (especially solar) even more expensive. It could also create basic building materials such as steel, aluminum, and concrete more expensive. However, in the short term, tariffs are likely to have a more modest impact on US energy prices compared to other products.

Talent

In addition to technical infrastructure and Energy, AI development relies heavily on the availability of people with the associated talent and skills. AI talent is in high demand. There are several categories of skills which support the building blocks of AI.

The US needs workers with the *physical* engineering and contracting skills to build out fabs and energy sites. Due to the shortage of skilled workers, building out new production facilities can require importing a large number of workers from other countries, as was the case for the new TSMC fabrication facility in Arizona.* We also need more workers with technical skills related to deep learning frameworks, computer vision, natural language processing, and generative AI. Additionally, we need workers with data infrastructure skills such as data architects, solution architects, software engineers, and those skilled in data governance, analytics, cloud compute as well as AI ethics, policy, and governance.

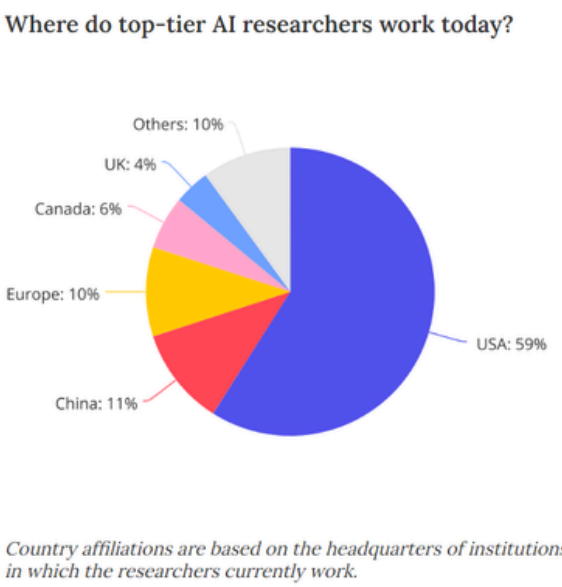
The good news with regards to AI-skilled talent in the US is that the US is the top destination for foreign born students to obtain advanced degrees in AI-related fields. Furthermore, over 80% of international U.S.-trained AI PHDs choose to stay in the US for at least five years.**

However, the bad news is that since a significant portion of America's AI workforce and graduate talent pipeline are foreign-born, America is not independent when it comes to AI talent. The US relies on international students and workers to sustain its leadership. In fact, 50% of graduate-level computer scientists employed in the US were foreign-born, as were 70% of enrolled computer science graduate students.

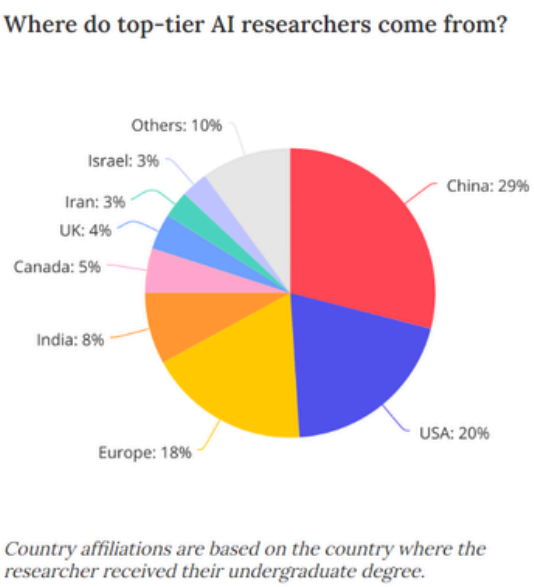
The number of *domestic-born* graduate students in the same programs has not increased since 1990. This means America is not seeing increasing STEM education results. By contrast, China, where AI is now part of mandatory coursework from age six onward, has seen explosive growth in the number of people with AI-related skills. It may be possible to reverse this trend, and the administration has recently begun efforts to do so.8 However, currently, while over half of the top AI researchers in the world work in the US, only 20% of these researchers are from the US. In short, America needs foreign talent to continue to dominate in AI.

*https://www.whitehouse.gov/presidential-actions/2025/04/clarification-of-exceptions-under-e xecutive-order-14257-of-april-2-2025-as-amended/

**https://cset.georgetown.edu/publication/strengthening-the-u-s-ai-workforce/



Country affiliations are based on the headquarters of institutions in which the researchers currently work.



Country affiliations are based on the country where the researcher received their undergraduate degree.

Tariff Implications on Talent

As with energy, the tariff implications on talent are not as significant as the potential implications for technical infrastructure. But the fact remains that if the US stops attracting the top talent, we will not win the AI race.

The most important positive result that could come from tariffs is that if more AI-related companies move onshore to the US, they will attract more talent to come here. Of course, this depends on a combination of a successful tariff policy and a complementary immigration policy.

A potential negative impact is that a trade war could cause uncertainty in financial markets and reduce demand for US products worldwide, which could undermine US investment in AI. This would reduce the financial benefit of coming to the US, and may encourage non-US talent to stay home (or return home after receiving a US education). Accordingly, tariffs could make it more difficult for the US to access talent from regions across the world.

Conclusion and Recommendations

Due to the current exponential growth in AI technology, it is critical that tariff policies take into consideration the impact that such policies might have on US dominance in AI. We recognize that:

1. It is critical to ensure that the US is not overly dependent on China and Taiwan for AI-related technology.
2. It is equally important that US investment in AI is not curtailed in the short run by instability in global markets or shortages of chips, energy, or talent.

Thus, tariff policies that are not carefully tailored based on the needs of the AI industry are likely to have a highly detrimental impact on the availability and cost of AIP-related infrastructure (e.g., chips) *in the short run*, while having a more indeterminate impact on energy and talent. In the long run, the impact on technical infrastructure might be less detrimental, but the current growth of AI is time sensitive, making it difficult to bank on the long-run benefits of onshoring when it comes to AI.

AI Building Block	Highly Detrimental	Indeterminate	Highly Beneficial
Technical Infrastructure			
Energy			
Talent			

Furthermore, any tariff policy must be a part of a well-considered policy package that encourages the growth of the US investment in AI. Accordingly, the following policy recommendations should be considered to ensure the US can maximize the benefits and minimize the risks of tariffs:

1. **Exempt critical AI components from tariffs** (as current EOs have done).
2. **Continuously evaluate and revise tariffs** based on feedback from private
3. **Leverage tariff policy to negotiate** lower barriers to entry for American products in foreign markets.
4. **Subsidize the development of infrastructure** related to AI and energy (e.g., using matching funds and investment tax credits)
5. **Streamline regulatory approvals for infrastructure and energy** as related to AI, including the build-out of fabrication facilities and power plants.
6. Develop a human resources investment plan to better train American workers and students in AI-related skills.
7. **Adopt favorable immigration policies** that enable the US to attract and retain top AI talent.