

Think Tank



Five Key Challenges Facing U.S. Manufacturing

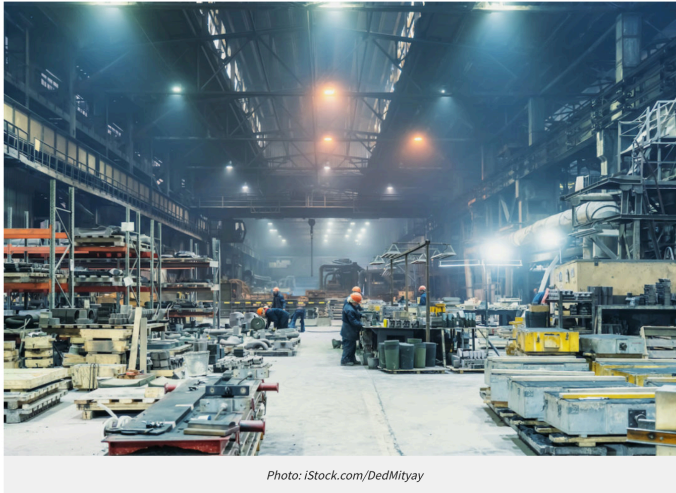


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June 13, 2024 Bindiya Vakil, SCB Contributor



The U.S. is witnessing a manufacturing renaissance, with companies building new facilities at a record pace not seen in decades. Spending on new manufacturing construction rose to an annual rate of \$114.7 billion in 2022, a staggering 40% increase year-over-year, and a 62% increase over the past five years, according to the U.S. Census Bureau.

This reshoring trend is driven by several factors, including the CHIPS and Science Act, rising labor and transportation costs, U.S. tariffs on China, geopolitical tensions, and a desire to reduce single-source dependency and enhance supply chain resilience.

A recent [report](#) on global chip supply chains projects the U.S. will triple its domestic semiconductor manufacturing capacity between 2022 and 2032. However, as many companies are learning, reshoring manufacturing to the U.S. doesn't come without challenges.

The automotive, semiconductor, high-tech, and aerospace and defense industries are at the forefront of this reshoring wave. The U.S. semiconductor market in aerospace and defense, for example, is expected to reach \$7.93 billion in 2024. Major players like Intel, NVIDIA, Samsung, and Micron Technology are expanding their footprint in the U.S.

While reshoring manufacturing back to the U.S. can bring a host of benefits, such as shorter supply chains, increased national security, improved quality control, and economic and job growth, it doesn't come without significant hurdles. Following are five major challenges facing U.S. manufacturing.

Powering U.S. manufacturing. The actual construction of a manufacturing facility is often the easiest part; the surrounding infrastructure and utilities pose greater challenges. The U.S. electricity grid is becoming less reliable as fossil fuel and nuclear power plants are decommissioned, and renewable sources like solar and wind are not yet backed by enough storage and transmission capacity to meet future demand.

The TSMC chip plant being built in Arizona, for example, will initially create 200 megawatts of demand — enough to power approximately 40,000 homes. With up to five additional fabs planned for the area, the electricity demand could surge to an astonishing 1,200 megawatts. An unreliable power supply can disrupt manufacturing operations, and the vast amount of electricity needed for onshore new manufacturing comes at a time when America's power grid is increasingly unstable. Meeting the increased demand, particularly from energy-intensive industries like high-tech, will require a delicate balance between electricity supply and demand, preventing energy curtailment or worse, blackouts.

Labor issues. While there were 570,000 U.S. manufacturing job openings in March of this year, it's projected that by 2033 an estimated 1.9 million manufacturing jobs could be vacant. Finding enough skilled workers is a major obstacle for companies in the U.S. This highlights the crucial step of assessing the labor supply and cost in proximity to potential manufacturing sites. Labor shortages can impact supply chains in many ways, including the inability to meet production demand, reduced output, longer lead times, delays in opening new factories, lost revenue, and an inability to invest in new technologies.

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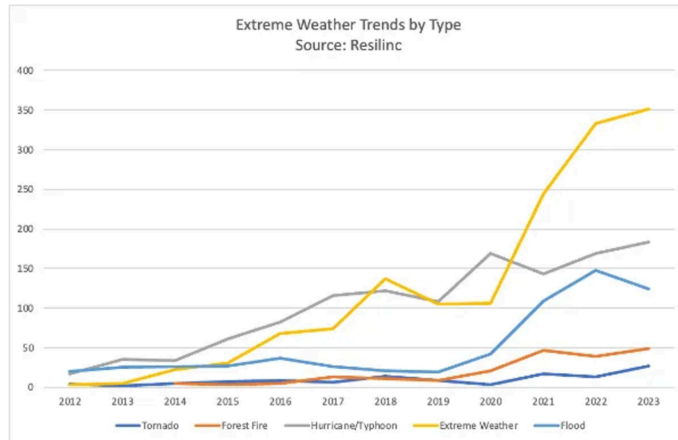
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likely to continue.

Climate change risk. So far this year, Resilinc has tracked over 300 extreme weather events that can wreak havoc on supply chains. Historical data also shows that the frequency and intensity of extreme weather events like heatwaves, flooding, droughts and hurricanes are increasing every year.



According to NOAA, April, 2024 was the hottest month on record, continuing an 11-month global record-breaking streak. Rising temperatures contribute to more powerful hurricanes, stronger winter storms, floods, extreme heatwaves and droughts. Hurricanes can seriously disrupt supply chains by damaging critical infrastructure such as roads, railways and ports; severe winter storms can strain energy grids, causing power outages and halting manufacturing; and extreme heatwaves or drought can cause shortages of critical resources like energy and water. While reshoring aims to enhance supply chain resilience, let's not forget that no region is risk-free.

Maintaining a strong supply base. China has dominated as the "world's factory" for so long that its dense ecosystem of easy-to-find vendors of all kinds of components of manufactured products will be hard to replicate. Scaling to the same breadth of suppliers, and even finding availability of certain products and parts, could prove difficult in the U.S., at least for the next several years. If a company reshores product assembly to the U.S., for example, but is still reliant on nuts and bolts from Chinese or Taiwanese suppliers, it has not solved its supply chain problem. Establishing new supplier networks can be time-intensive and costly.

The regulatory environment. While Federal legislation like the CHIPS and Science Act, Inflation Reduction Act and infrastructure funding, along with local and state incentives, have helped drive advantageous reshoring efforts, U.S. regulations may also pose challenges for companies based on their products and production processes. According to the National Association of Manufacturers, the industrial sector faces 297,696 restrictions on its operations from federal regulations. Compliance costs can quickly add up between federal, state, and local regulations, covering areas like environmental protection, worker safety and product standards. This can make the cost of doing business in the U.S. more expensive compared to other countries with less stringent standards.

Strategic planning and foresight can boost the U.S. to the forefront of the manufacturing sector. Collaboration between industry, government and utilities will be crucial to addressing infrastructure needs, workforce development and regulatory frameworks that support a resilient domestic manufacturing base. Ultimately, companies should aim not just for resilient, but anti-fragile supply chains. Whether reshoring or nearshoring, the foundation for building a diversified, resilient supply chain begins with sub-tier mapping.

Mapping provides the complete picture of a company's current supply chain, along with alternative sites and suppliers available to source parts to create the most optimal supply chain design. Without this kind of visibility, any strategy to shift manufacturing to the U.S. is vulnerable to sub-tier dependencies. As we know, the U.S., Mexico or any other nearshore locations have their own risks, constraints and challenges. An informed decision about reshoring or nearshoring requires optimizing the variables and thoroughly analyzing the risks, costs and benefits. Supply chain design strategy should always be for long-term competitive advantage, rather than in reaction to an event.

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