



Revitalizing American Manufacturing

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Introduction

For generations, America's manufacturing sector has been a critical driver of U.S. economic growth and strength. Today, the United States remains the second-largest manufacturer in the world; however, maintaining its global standing will depend, in part, on U.S. policies to maintain and increase manufacturing capacity. Over the past two decades, U.S. manufacturing output has stagnated, and manufacturing employment has declined, while foreign competitors, particularly China, have built significant global production capacity. The erosion of domestic manufacturing capacity has exposed vulnerabilities in critical supply chains, constrained economic growth and created long-term national security risks.

The stagnation of domestic manufacturing developed over several decades as low-cost imports undercut U.S. producers and the cost of building and operating manufacturing facilities in the United States grew rapidly. Over time, the U.S. skilled manufacturing workforce has diminished, U.S. regulatory and compliance regimes have expanded, and competition from heavily subsidized foreign producers has grown, nearly eliminating growth in American manufacturing.

Rejuvenating a thriving domestic manufacturing ecosystem for the 21st century will require sustained, stable economic conditions over decades with predictable, consistent policy support. Business Roundtable urges Congress and the Administration to advance policies that lower the cost of domestic manufacturing and open markets for U.S. exporters. While it may be appropriate to use targeted, strategic tariffs to address unfair trade practices that hurt U.S. manufacturers, broad based tariffs raise costs for U.S. companies and consumers. Efforts to revitalize U.S. manufacturing should focus on highly material sectors, both inputs and end markets, with strategic relevance and clear alignment with U.S. competitive advantage. The first part of this report also outlines foundational policy recommendations, organized across five pillars, without which significant U.S. manufacturing growth will not be possible:

1 Competitive Tax Policy: Maintain a low corporate tax rate with policies that lower the cost of domestic investment, research and development (R&D) and manufacturing.

2 Permitting and Regulatory Reform: Reduce regulatory hurdles, including by streamlining permitting policies, and support innovation by accelerating product approvals where appropriate.

3 Strategic Trade Policy: Promote market access for U.S. exporters and combat unfair trade practices.

4 **Energy and Infrastructure:** Ensure affordable, reliable access to energy and strong public infrastructure.

5 **Workforce Development:** Support the U.S. workforce through skills development, partnerships with education and training providers and legal immigration.

To better understand the array of challenges facing U.S. manufacturing and how to navigate them, Business Roundtable conducted in-depth case studies covering input and end markets of strategic significance for the U.S. economy, based on four factors: (1) materiality to economic activity and American consumers; (2) supply chain vulnerabilities or erosion of domestic capacity leading to national security risks; (3) alignment with U.S. competitive advantage; and (4) feasibility of expanding manufacturing in the United States. This paper focuses on a limited number of manufacturing sectors that fit these four criteria, though there are other strategically relevant manufacturing sectors not addressed here that would also qualify.

Select input/intermediary markets

- Non-Ferrous Metals
- Strategic Chemicals and Polymers
- Semiconductors and Electronic Components
- Motor Vehicle Parts

Select end markets

- Transportation and Heavy Equipment
- Pharmaceuticals and Medical Devices
- Communications and Data Center Equipment
- Food Processing

Each of these sectors require specific, targeted actions to address unique challenges. The second half of this report provides policy recommendations for building capacity and increasing output across the seven strategically important sectors.

State of Play

The American Manufacturing Advantage

The United States has long been a leader in manufacturing, which has been a powerful driver of economic growth, national security and innovation. As the world's second largest manufacturer, behind only China, American manufacturing strength is built on many domestic competitive advantages:

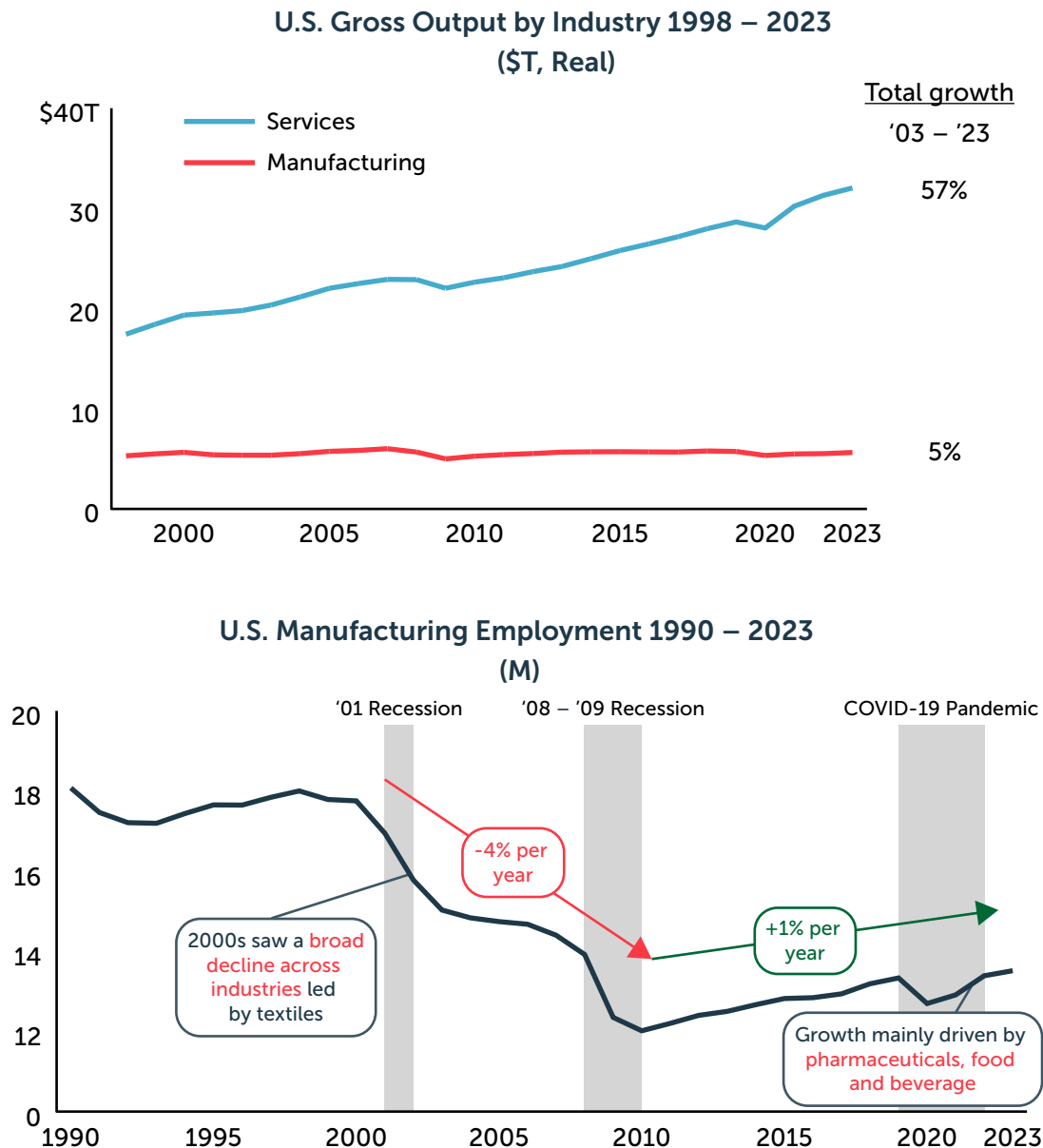
- **Consumer Base:** The United States has a large and unified domestic market with an affluent consumer base. U.S. Purchasing Power Parity per capita is 1.3 times that of Europe and 3.5 times that of China.¹
- **Economic Growth:** U.S. Gross Domestic Product (GDP) grew by about 28% in real terms from 2014 – 2024, compared to about 18% for Europe.²
- **Technology and Innovation Leadership:** America has been a global leader in product innovation in the manufacturing sector. Now, our leadership in revolutionary technologies such as artificial intelligence (AI) provides American manufacturers with access to emerging innovations and cutting-edge tools to fine-tune more efficient and productive manufacturing processes.
- **Energy Abundance:** U.S. energy abundance provides a diverse supply of energy and feedstocks that fuel industrial activity at a lower cost than many of our leading international competitors.
- **Pro-Business Environment:** Strong intellectual property (IP) protections, a competitive corporate tax rate and access to capital encourage investment in U.S. manufacturing.
- **Extensive Infrastructure Network:** Extensive U.S. physical infrastructure systems, including highways, ports, railways and airports, are critical to facilitate collaboration, shorten supply chains and open access to international markets.

Why American Manufacturing Matters

Despite these competitive advantages, the U.S. economy has grown due to a multi-decade transition to a services-based economy while manufacturing growth has stalled. Between 2003 and 2023, U.S. manufacturing output grew by just 5%, compared to 57% for services (see **Figure 1**).³ While this transition has fueled economic growth, it has also imposed significant economic costs and created new security risks that must be mitigated. In 2000, the United States held an estimated 25% of global manufacturing value-add, compared to just 6% for China.⁴ But by 2030, China is projected to hold roughly 45% of global manufacturing value-add, and the United States just 11%.⁵ China's significant expansion of production capacity across key industrial sectors — including electronics, pharmaceuticals, chemicals and critical minerals — and the reversal of the

U.S. and China's global manufacturing position underscore the strategic necessity of rebuilding and diversifying domestic manufacturing capabilities and capacity.

Figure 1: U.S. manufacturing growth has been relatively flat for last 20 years



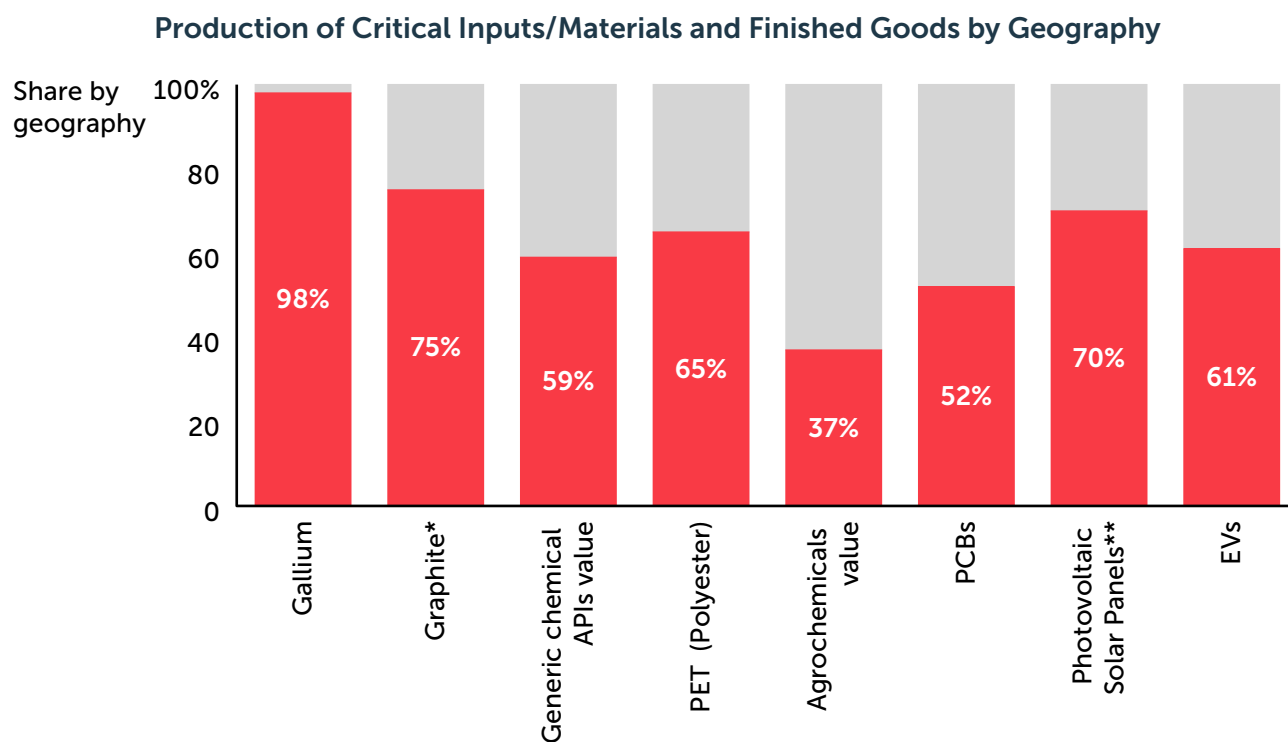
Source: U.S. Census – USA Trade, Bureau of Labor Statistics – Office of Productivity and Technology

Building and maintaining a strong, innovative and world-leading manufacturing sector will unlock new trajectories for U.S. economic competitiveness and international trade, deliver local and national economic benefits, diversify the economy for future growth, and strengthen national leadership and security.

Domestic manufacturing has the power to revitalize local economies and provide good-paying, stable jobs to American workers. The transition to a services-centric economy and away from manufacturing has left manufacturing employment well below 2000-era levels (see **Figure 1**). Reinvesting in U.S. manufacturing can provide high-paying jobs and raise living standards across the country. In 2023, the average U.S. manufacturing employee earned \$102,629 — more than 18% higher than the national average for non-farm industries.⁶

Recent supply chain disruptions have exposed the economic and security vulnerabilities of manufacturing supply chains that are overly reliant on international sources. U.S. businesses have faced severe shortages of critical inputs like semiconductors, as well as final products across the consumer spectrum. Taiwan produces over 60% of the world’s semiconductors and over 90% of the most advanced semiconductors that are critical to national security applications.⁷ Developing more domestic expertise and capacity to manufacture advanced technologies, especially those with significant security implications, is necessary to maintain a resilient and secure technology ecosystem.

Figure 2: China’s share of production of critical inputs and finished goods



Source: USGS Mineral Summaries, Gartner Forecast, IHS, Allied Market Research, Markets & Markets, BeRoe, Prismark Partners, CMB International (2022), Trademap; Euromonitor; CPA, IEA, GlobalData

The U.S. manufacturing industry is at a critical inflection point. Stagnant output, falling employment and widening trade deficits point to a significant decline in historical U.S. manufacturing strength. Meanwhile, the volatility of supply chains and geopolitical tensions demand a reversal of this trend. The United States needs a transformational commitment to revitalizing U.S. manufacturing through strong domestic policies to secure our national leadership and economic prosperity.

Challenges to U.S. Manufacturing Growth

Despite the strategic imperative to revitalize domestic manufacturing, major structural and operational barriers discourage investment in U.S. manufacturing. Domestic manufacturers struggle to build facilities, staff and operate those facilities, and compete internationally with heavily subsidized foreign entities and unfair trade practices. To successfully reshore strategic manufacturing industries, the higher cost of the U.S. market must be addressed. Key challenges include:

Uncompetitive Cost Position

Building equivalent manufacturing facilities in the United States can be triple the cost and take twice as long as in other leading industrial nations. Leading drivers of this challenge include:

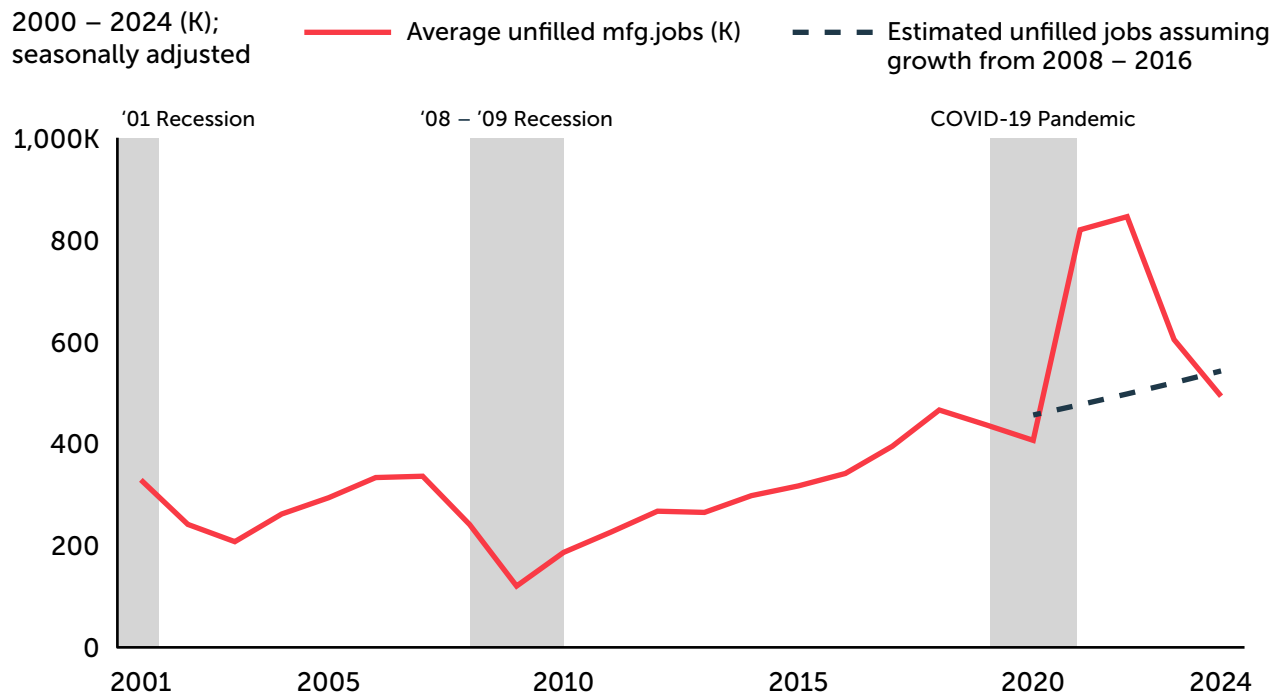
- **High building costs.** Rising labor, regulatory and material costs contribute to mounting construction costs. Since 2020, costs are up significantly for about 83% of construction materials, with an average increase of 19%.⁸
- **High labor costs.** Limited labor availability and higher costs mean that employers must find ways to enable significantly higher productivity.
- **Gaps in supplier ecosystem.** Domestic availability of raw materials and intermediate inputs is limited in many sectors. For example, China controls almost 90% of the supply chain for lithium-ion batteries.⁹
- **High regulatory compliance costs.** The average manufacturer in the United States pays over \$29,000 per employee per year to comply with federal regulations.¹⁰
- **Tariff-induced cost increases.** Over half of U.S. goods imports are non-automotive capital goods or industrial supplies and materials, meaning tariffs significantly raise production costs for domestic manufacturers.¹¹
- **Long permitting timelines.** From 2010 – 2018, the average timeline to complete an environment impact statement was 4.5 years.¹²

Workforce shortages and skills gaps

The manufacturing sector faced a shortage of between 400,000 and 600,000 skilled workers in 2024, a gap that is anticipated to widen over the next decade to 1.9 million unfilled U.S. manufacturing jobs (see **Figure 3**). At the same time, labor cost productivity, a measure of output per labor cost, has declined by roughly 30% over the past decade. Leading drivers of this challenge include:

- **Demographic shifts.** Declining manufacturing workforce participation among workers aged 35-54 reduces training and apprenticeship opportunities and limits generational knowledge transfer. Accelerated retirements during the COVID-19 pandemic further exacerbated this challenge.
- **Extensive training requirements.** 40% of the current skill requirements in advanced manufacturing roles will evolve from 2023 – 2027, requiring continual upskilling.¹³

Figure 3: U.S. annual average unfilled manufacturing jobs



Source: St. Louis Federal Reserve, U.S. Bureau of Labor Statistics

Unfair international competition

U.S. manufacturers are competing against heavily subsidized foreign producers. Leading drivers of this challenge include:

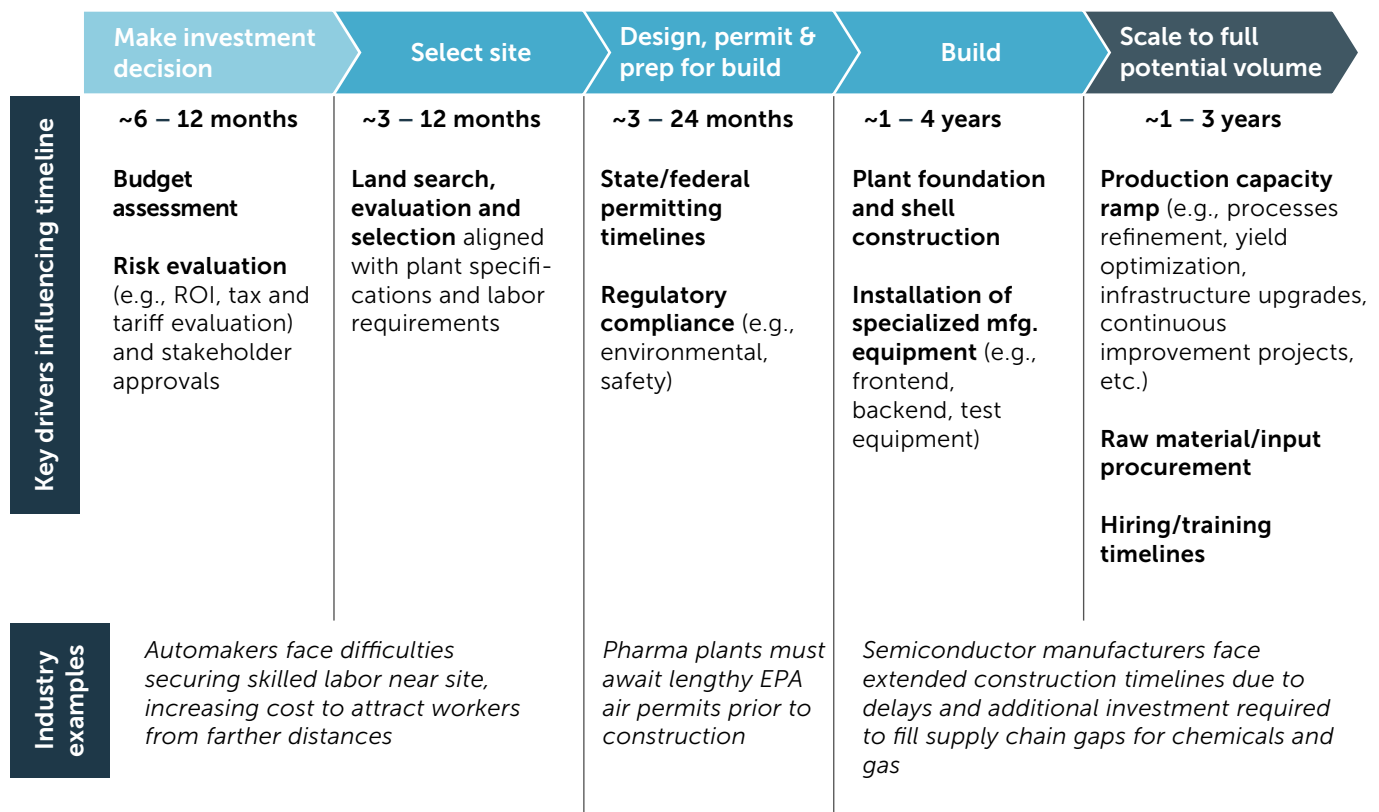
- **Foreign government investment in industrial expansion.** For example, China alone has invested more than \$2.6 trillion in industrial expansion since 2017, distorting global markets.¹⁴
- **Tax breaks and subsidies to support overseas industry.** China spends more through direct grants and tax benefits than any other major economy.¹⁵
- **Unfair trade practices.** China's engagement in IP theft, trade in illicit goods, tariff circumvention, dumping and forced labor practices create unfair competition and state-directed outcomes.¹⁶

Policy Certainty and Economic Stability

Many of these challenges are heavily interrelated, meaning that there is no single solution to wholly revitalize domestic manufacturing. However, sustained efforts to address any of the challenges above will help to create the enabling conditions for a stronger domestic manufacturing ecosystem.

Building domestic manufacturing capacity demands stable economic conditions and consistent policy support over a long-term horizon of at least three to five years (see **Figure 4**). This is essential because manufacturers must navigate a multi-year process that includes planning, designing facilities, permitting, constructing facilities and ramping up to full-scale production.

Figure 4: Building domestic manufacturing capacity requires stability over at least three to five years



Economic and policy stability over long-term planning horizon (5+ years) needed to encourage manufacturing expansion.

Addressing the Challenge: Cross-Cutting U.S. Domestic Policy Recommendations

Unlocking an American manufacturing renaissance and accelerating advanced manufacturing requires stable economic conditions and consistent policy support over decades. Factors that create a foundational ability for companies to invest in and grow the U.S. industrial base include promoting innovation leadership, addressing cost structure and improving international competitiveness.

The best way to address these factors is to deploy cross-cutting policies to address structural barriers and develop domestic capacity through:

1. **Competitive Tax Policy**
2. **Permitting and Regulatory Reform**
3. **Strategic Trade Policy**
4. **Energy and Infrastructure**
5. **Workforce Development**

1

Competitive Tax Policy

A competitive tax code ensures that businesses continue to prioritize the United States as a primary location for investment, production and job creation. As other countries prioritize economic growth, the United States needs to keep pace with global competitors by maintaining a competitive tax environment. The 2025 One Big Beautiful Bill (OBBB) delivered on many of Business Roundtable's strongest tax priorities and provides the strong basis for the U.S. competitive tax environment.

By maintaining the corporate tax rate, the OBBB continued the strong incentive to invest in the United States. The corporate tax rate, the income base against which it is applied, and the way in which the United States taxes income earned in foreign markets, all affect the incentives to invest in manufacturing and create jobs in the United States. A more attractive U.S. tax environment gives both U.S.- and foreign-headquartered companies an incentive to invest more capital — equipment, technology and other facilities — in the United States, boosting productivity, capacity and wages. Reforms in the 2017 Tax Cuts and Jobs Act (TCJA) to align the corporate tax rate with other OECD nations resulted in a 20% increase in domestic investment in the years immediately following, including in workers, equipment, patents and technology. As a result of passing the OBBB, the higher rate of domestic investment should continue.

A competitive tax system also incentivizes innovation in U.S. manufacturing. With passage of the OBBB, the U.S. tax code makes permanent the ability of businesses to fully deduct their R&D expenses in the year in which the spending occurred. R&D investments ensure American manufacturing firms are able to develop more efficient processes and higher-quality, more innovative products than global competitors. Manufacturers in the United States account for about 53% of private-sector spending on R&D, and the manufacturing sector has been awarded more patents than any other sector. This is an important policy to maintain to ensure the private sector conducts R&D in the United States and encourage U.S. manufacturing innovation and growth.

The OBBB also included temporary full and immediate expensing for certain production facilities involved in manufacturing, allowing companies to expense the entire cost of a new plant over four years beginning in the year it is placed in service, rather than depreciating it over many years. This will help companies making investments in critical manufacturing industries with important near-term cash flow and incentivize increased investment.

Recommendations

- Maintain a competitive 21% corporate tax rate.
- Maintain and strengthen the approach to the taxation of international earnings.
- Continue R&D expensing.
- Continue full expensing for facilities, equipment, machinery and technology and a pro-investment interest deductibility standard.
- Utilize targeted incentives to support domestic manufacturing where appropriate.

2 Permitting and Regulatory Reform

Domestic manufacturing is challenged by burdensome regulatory requirements and often fragmented industrial policy at the local, state, federal and international levels. Overlapping regulatory jurisdictions drive higher compliance costs, increase policy uncertainty and pose barriers to entry and reduce competitiveness, which, in turn, stifle job creation, innovation and investment.

Such overlap can inflict actual costs on businesses through repetitive inspections and data collection efforts and is particularly burdensome when agencies issue conflicting rules with inconsistent standards. These costs fall disproportionately to manufacturers. Manufacturers pay \$29,100 per employee on average to comply with federal regulations or nearly double the \$12,800 per employee costs borne by all firms (manufacturers and service industry companies) as a whole.¹⁷

Costs can include internal and external staffing resources dedicated to compliance as well as capital equipment for requirement compliance.

In addition, overly costly, complex and lengthy permitting processes constrain the construction of new domestic manufacturing facilities and the infrastructure necessary to support them. Though down from nearly four years in 2018, the median time to complete an environmental impact statement (EIS) for major infrastructure projects is currently around 26 months (2.2 years).¹⁸ A streamlined permitting process would speed factory construction and grow available energy resources, accelerating manufacturing capacity expansions.

Delayed approval processes for innovation and safety advancements in new products can also inadvertently hamper their deployment and delay improvements in safety and effectiveness for consumers.

Recommendations

- Improve construction speed and reduce costs by streamlining permitting processes to shorten decision timelines, including embracing National Environmental Policy Act (NEPA) reforms.
 - Require agencies to make permitting decisions within 90 days of issuing a final EIS. If an agency has not acted within 90 days of issuing a final EIS, either to approve or deny an application for a permit, the application should be deemed approved by operation of law.
 - Direct agencies to utilize nationwide permits, programmatic EISs, categorical exclusions and permits by rule to the maximum extent permitted by law to reduce redundancy and make reviews more efficient.
 - Differentiate and prioritize projects by revising project permitting requirements in areas with operations and community engagement.
- Ensure regulations are enacted in a manner that achieves needed health, safety or environmental objectives at the lowest possible cost and in the most efficient manner possible to enable facility construction and manufacturing to be globally competitive.
- Require agencies to abide by sound science and efficient, data-driven risk assessment in regulatory planning and analysis, including strengthening stakeholder engagement.
- Improve coordination to harmonize rules and reduce overlap at all levels of government, including international regulatory cooperation, to facilitate innovation and U.S. leadership in advanced manufacturing.

Trade is an important policy lever for opening markets to American manufacturing exports as well as incentivizing domestic investment and innovation. Free trade agreements are the foundation of reciprocal market access and in many cases have enabled U.S. industries to flourish.

For example, the United States-Mexico-Canada Agreement (USMCA) secured important new provisions to protect American jobs, strengthen domestic manufacturing and grow the U.S. economy. The agreement has increased North American trade by 50% since its enactment totaling \$1.9 trillion in goods and services and Mexico and Canada have surpassed China as the United States' top trading partners. Similarly, intra-regional investment has significantly increased, with \$775 billion invested in the United States from Canada and Mexico, a 55% increase from pre-USMCA.

Similarly, the duty-free treatment under the Agreement on Trade in Civil Aircraft advanced U.S. interests, offering a strong example of how zero-for-zero frameworks can drive sustained growth in U.S. manufacturing. In the first 40 years of its implementation, U.S. commercial aerospace exports grew by over 2,177% and the American workforce has more than doubled.¹⁹

When trade policy is used effectively to ensure access to key markets, it supports U.S. export growth, allows companies to integrate cost-effective and safe foreign components, and ensures that American products dominate global sales. However, broad based tariffs for critical manufacturing inputs dramatically increase the cost of these inputs, which include raw materials as well as equipment and machinery.

Recommendations

- Negotiate durable trade agreements that drive fair trade and economic growth by eliminating trade barriers for U.S. exports and removing harmful tariffs.
- Work with trusted trading partners to jointly address Chinese excess capacity, tariff circumvention and other unfair trade practices.
- Strategically deploy targeted tariffs and enforcement actions to counter unfair trade practices.
- Provide transition flexibility for tariffs that raise costs for components and materials that cannot currently be sourced domestically.
- Encourage the use of the Export-Import Bank to promote exports.

4 Energy and Infrastructure

Domestic energy production is necessary to facilitate U.S. economic growth and grow domestic manufacturing capacity. Increasing production and delivery capacity for all types of energy, including traditional resources like oil and natural gas and zero emissions resources, such as renewables and nuclear, will be necessary to support both domestic growth and increased exports.

After roughly 20 years of flat to declining load growth, electrification and the expansion of domestic manufacturing and data centers are dramatically driving up electricity demand. At the same time, in 2024, NERC estimated between 79 GW and 115 GW of coal, natural gas and nuclear generating capacity could be retired from the grid over the next decade. This means the new load growth spurred by a combination of manufacturing and data centers is set to hit a grid that will already be “in the hole” in terms of sufficient generation capacity. Addressing this challenge requires that the United States bring online more — and more diverse — electricity generation quickly.

Investment in U.S. manufacturing includes the infrastructure to enable capital investments in facilities as well as other important factors such as energy availability, affordability and supply chain transportation.

The United States does not have a current sustainable source of transportation infrastructure funding. With the future of government funding for necessary infrastructure investments uncertain, policymakers should also further expand the ability of the private sector to invest in infrastructure. Enabling private capital and public-private solutions creates opportunities to capture new sources of revenue that can reduce taxpayer burden, inject private sector expertise and innovation, and transfer risk.

Recommendations

- Support policies that utilize and enable the full breadth of America’s energy resources, including oil, natural gas, nuclear, geothermal, biofuels, biomass, hydrogen, solar, wind and storage.
 - Support development of conventional and innovative energy assets on on-shore and off-shore federal lands.
 - Accelerate energy infrastructure permitting.
 - Support and expand federal research lab infrastructure and increase support of and improve collaboration with universities and the private sector to accelerate development and deployment of innovative materials, technologies and processes.
- Ensure robust public funding and better enable private financing for infrastructure solutions, including by expanding use of public-private partnerships.

5 Workforce Development

The U.S. manufacturing sector has supported well-paying, high-quality jobs for Americans from all backgrounds, but it now faces challenges in securing the talent required for growth. The workforce gap is significant; over the next decade, 1.9 million manufacturing jobs are expected to go unfilled due to lack of available skilled workers.²⁰

The United States needs a workforce that is ready to fill skills gaps today and in the future. Structural economic and demographic challenges — including a tight labor market, shrinking working-age population and historically low workforce participation — mean that U.S. employers are already fighting an uphill battle to hire and retain enough talent. But the manufacturing sector faces additional hurdles. Skill requirements for manufacturing workers are evolving to require more science, technology, engineering and math (STEM) skills, as technology enables new design, production and testing roles. Developing smart manufacturing and advanced manufacturing talent will be critical to offset retirements and prepare the workforce for increasingly technology-driven roles. A commitment to continuous learning and adaptability will help to meet evolving needs in domestic manufacturing. Unfortunately, public workforce training programs have failed to adequately train employees, especially for the skills employers need, further intensifying workforce shortages in critical roles.

To meet the growing demand for workers in key manufacturing sectors, the United States must pull in and train workers with and without college degrees for roles that include engineers, machinists, welders, fabricators and others across the spectrum. Reforms to the public workforce development system to account for specific industry needs will complement the significant efforts many companies are taking to build a world-class modern workforce.

Recommendations

- Improve the Workforce Innovation and Opportunity Act to direct resources to training programs that focus on in-demand careers, including those requiring STEM-related skills and vocational pathways that do not require traditional four-year college degrees.
- Ensure effective implementation of recently enacted Workforce Pell Grants, which expand Pell Grant eligibility to students pursuing high-quality, short-term education and training programs.
- Incentivize community colleges and other high-quality providers, such as career and technical education centers, to work with local businesses to develop skills-based training programs.

Recommendations (continued)

- Support a broad range of work-based learning opportunities that allow workers to develop skills and gain experience in real-world settings, including modernizing the U.S. Department of Labor's Registered Apprenticeship system.
- Expand tax incentives that promote investments in upskilling and reskilling and lead to increased mobility for workers.
- Adopt changes to the H-1B program that minimize employment disruptions, provide flexible pathways to legal permanent residence in the U.S., and support skills-based employment practices. The current numerical limits and restrictions on the H-1B program make it difficult for employers to hire and retain talent in the U.S.
- Reform current immigration rules for year-round jobs by creating a new visa category to help fill occupation shortages in high-demand industries, such as construction, when U.S. unemployment is low.
- Exempt individuals with advanced U.S. STEM degrees from the employment-based green card limit and preserve programs that allow foreign-born graduates of U.S. colleges and universities, especially those with advanced STEM degrees, to work after graduating, like the F-1 Optional Practical Training program.

Case Studies: Strengthening Strategic Manufacturing Sectors

Scoping Sectors of Strategic Priority

To better understand the array of challenges facing U.S. manufacturing and how to navigate them, Business Roundtable conducted in-depth case studies of sectors that have strategic significance for the U.S. economy and illustrate how the cross-cutting recommendations can be more targeted into sector-specific recommendations to address unique challenges in certain industries.

Efforts to revitalize U.S. manufacturing should focus on highly material sectors with strategic relevance and clear alignment with U.S. competitive advantage. Business Roundtable recognizes that, as the global marketplace has evolved and supply chains have shifted, some manufacturing sectors are associated with low-value add, low-skilled jobs, and have no implications for national security. For these, there is little upside to moving manufacturing activity to the United States. This paper explores case studies of manufacturing sectors that fit these criteria, though there are strategically relevant manufacturing sectors not addressed here:

Select input/intermediary markets

- Non-Ferrous Metals (e.g., critical minerals)
- Strategic Chemicals and Polymers (e.g., fibers, agrochemicals, advanced materials)
- Motor Vehicle Parts (e.g., transmission and gasoline engine components)
- Semiconductors and Electronic Components (e.g., foundational chips, printed circuit boards and printed circuit board assemblies)

Select end markets

- Transportation and Heavy Equipment (e.g., automotive, trucking, commercial aircraft, agriculture, construction and mining machinery)
- Pharmaceuticals (e.g., synthetic active pharma ingredients, ventilators, MRI machines)
- Communications and Data Center Equipment (e.g., routing and switching equipment)
- Food Processing (e.g., seafood processing and grain/oilseed milling)

The strategic importance of manufacturing sectors can be evaluated through two threshold criteria: (1) materiality to economy activity and American consumers; and (2) national security risk due to supply chain vulnerabilities or erosion of domestic capacity. To better focus efforts, further narrowing can be based on two additional practical criteria: (3) alignment with U.S. competitive advantage; and (4) feasibility of expanding manufacturing in the United States.

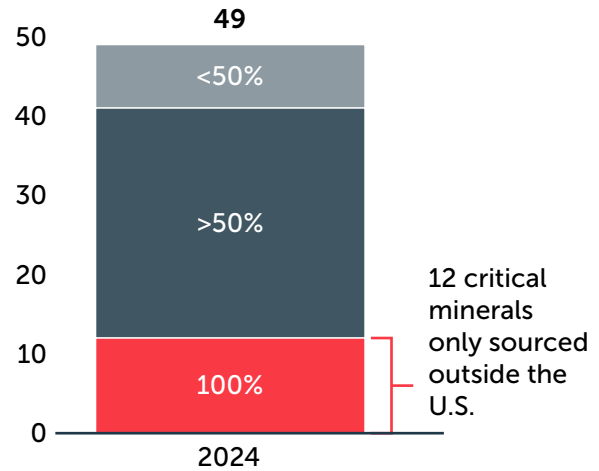
The sectors identified in these case studies satisfy this analysis.

Critical Minerals

The United States faces acute vulnerabilities in critical minerals due to overreliance on imports and constrained domestic mining and processing capacity. Of the 54 mined critical minerals identified by the U.S. government, more than 50% are sourced internationally, and 12 have 100% import dependency.

From 2018 to 2023, domestic output declined by 15% while import value rose 11%, signaling worsening reliance on foreign supply chains. China controls the majority of global production and refinement for several minerals and has enacted export restrictions on more than a dozen of them within the last year.

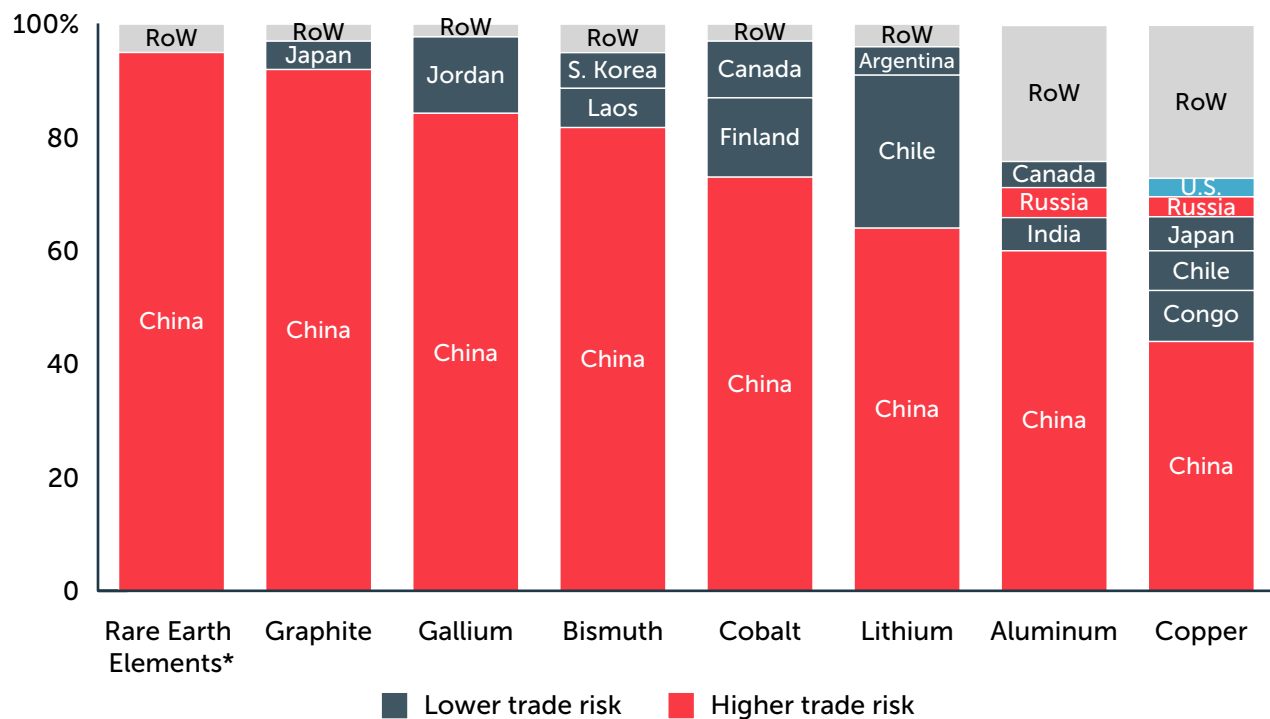
Figure 5: Import reliance for reported U.S.-mined critical minerals (2024)



Source: U.S. Geological Survey Mineral Commodity Summaries 2025

Figure 6: Refining and smelting production of select critical minerals share by geography

Share by geography



Source: U.S. Geological Survey Mineral Commodity Summaries 2025, The International Energy Agency

In addition to geopolitical risks, global demand is outpacing supply for many minerals, with projections of doubling demand growth by 2030 in some cases. U.S. recycling capacity, while a potential lever, is limited and cannot fully substitute the need for expanded primary refining and smelting. Building refineries requires significant capital investment due to the complexity of the infrastructure and machinery involved. Furthermore, permitting delays can stretch timelines to two to five years. Compounding these issues is a workforce gap. Employment in mineral processing has declined by approximately 43% since the 1990s, eroding domestic expertise and hindering the ramp-up of new operations.

The Administration should accelerate efforts to encourage domestic investments in critical mineral reclamation, recycling and manufacturing. This would include competitive tax policies, market-oriented financial incentives and supportive trade policies. Recycling critical mineral scrap, such as aluminum and copper scraps, is necessary to enhance the domestic supply of these minerals and reduce dependence on foreign-sourced minerals. The Administration should support research to enhance recovery of critical minerals, such as the recent funding program under the DOI's Office of Surface Mining Reclamation and Enforcement for research projects to enhance methods to extract critical minerals from mine waste.

Recommendations

Competitive Tax Policy

- Support long-term incentives for domestic mining, processing and recycling of strategic materials and critical minerals of which the United States has sufficient reserves (e.g., lithium, copper graphite).
- Promote research to enhance recoveries of strategic minerals, improve refining and production processes, and develop artificial substitutes to lessen dependence on foreign-sourced critical minerals.
- Encourage investments through competitive tax policies and/or federally backed loans specifically targeting critical mineral processing, manufacturing and recycling.

Permitting and Regulatory Reform

- Reform the permitting process for domestic mining and refining to make available more resources in a safe, expeditious and predictable way.

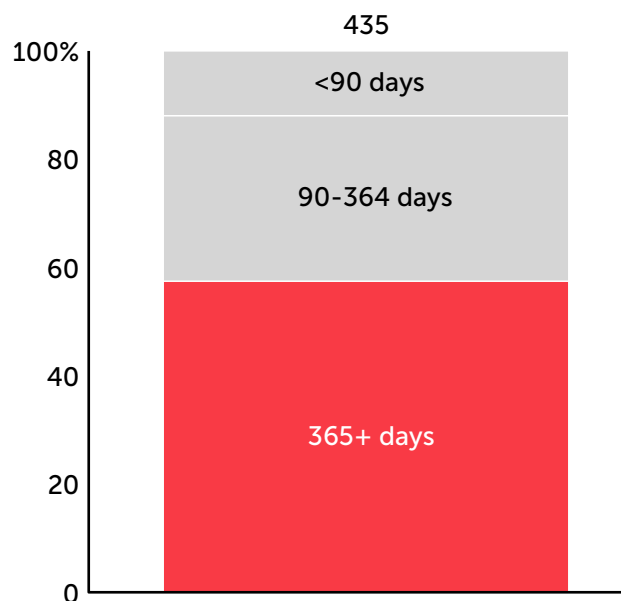
Strategic Trade Policy

- Increase access to critical minerals where the United States lacks domestic availability by developing and strengthening strategic alliances with friendly, mineral-rich countries (e.g., Indo-Pacific and Latin American countries).
- Strengthen cooperation among USMCA partners to significantly bolster critical mineral production and processing in the region.

Strategic Chemicals and Polymers

The strategic chemicals and polymers sector represents 55% of domestic chemical output and employs approximately 400,000 workers. Further, these strategic chemicals and polymers are essential to make most manufactured products. Despite its scale, the sector is grappling with rising global production, primarily from overcapacity from China and transshipping of Chinese products. Capital investment in new and expanded facilities has dropped 14% in recent years, largely redirected toward environmental, health and safety compliance. Lengthy regulatory approvals and permitting delays of nine to 24 months hinder timely construction and expansion. Fifty eight percent of new chemical applications have been under review for over a year, exceeding the EPA's 90-day review benchmark (see **Figure 7**).

Figure 7: Number of applications by processing time under the Toxic Substances Control Act new chemicals review

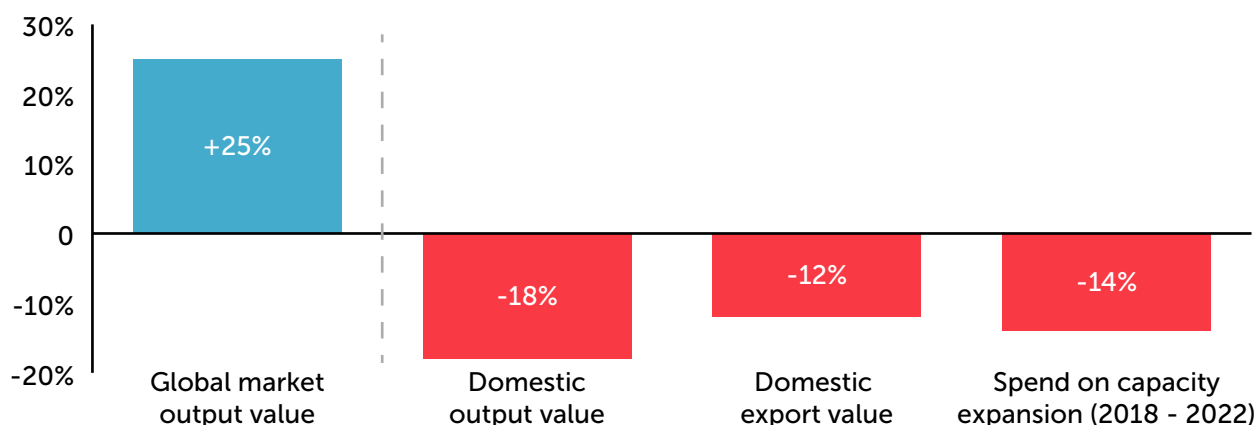


Source: Environmental Protection Agency, American Chemistry Council, as of February 5, 2025

The industry also suffers from unfair trade practices, such as dumping from overcapacity, transshipment and other efforts to evade applicable trade regulations. Additionally, the industry faces the threat of retaliatory tariffs that hurt U.S. export competitiveness. Moreover, high capital requirements for highly automated production lines and a shrinking talent pipeline of chemists, engineers and technicians exacerbate the sector's challenges.

Figure 8: Declining U.S. output amidst global market growth

Aggregate growth/decline in key values (2013 – 2023)



Recommendations

Permitting and Regulatory Reform

- Allow new construction to begin before air permit approvals (which can take nine to 24 months to secure), in line with European standards.
- Reduce delays in new chemical approvals by enforcing 90-day EPA approval timeline for Pre-Manufacture Notifications (PNMs) and 30-day approval timeline for Low Volume Exemptions (LVEs).
- Create an accelerated approval process for new product innovations in relevant agency jurisdictions, including the Environmental Protection Agency (EPA), Food & Drug Administration (FDA) and other agencies.
- Examples of new product innovations include replacing materials of concern with substitutes (in line with EPA guidance) and converting managed waste into useful co-products, both of which require approval under the EPA Toxic Substance Control Act (TSCA).
- Pause compliance deadlines during the rule reconsideration process to prevent facilities from spending capital to comply with rules that are undergoing the revision process

Strategic Trade Policy

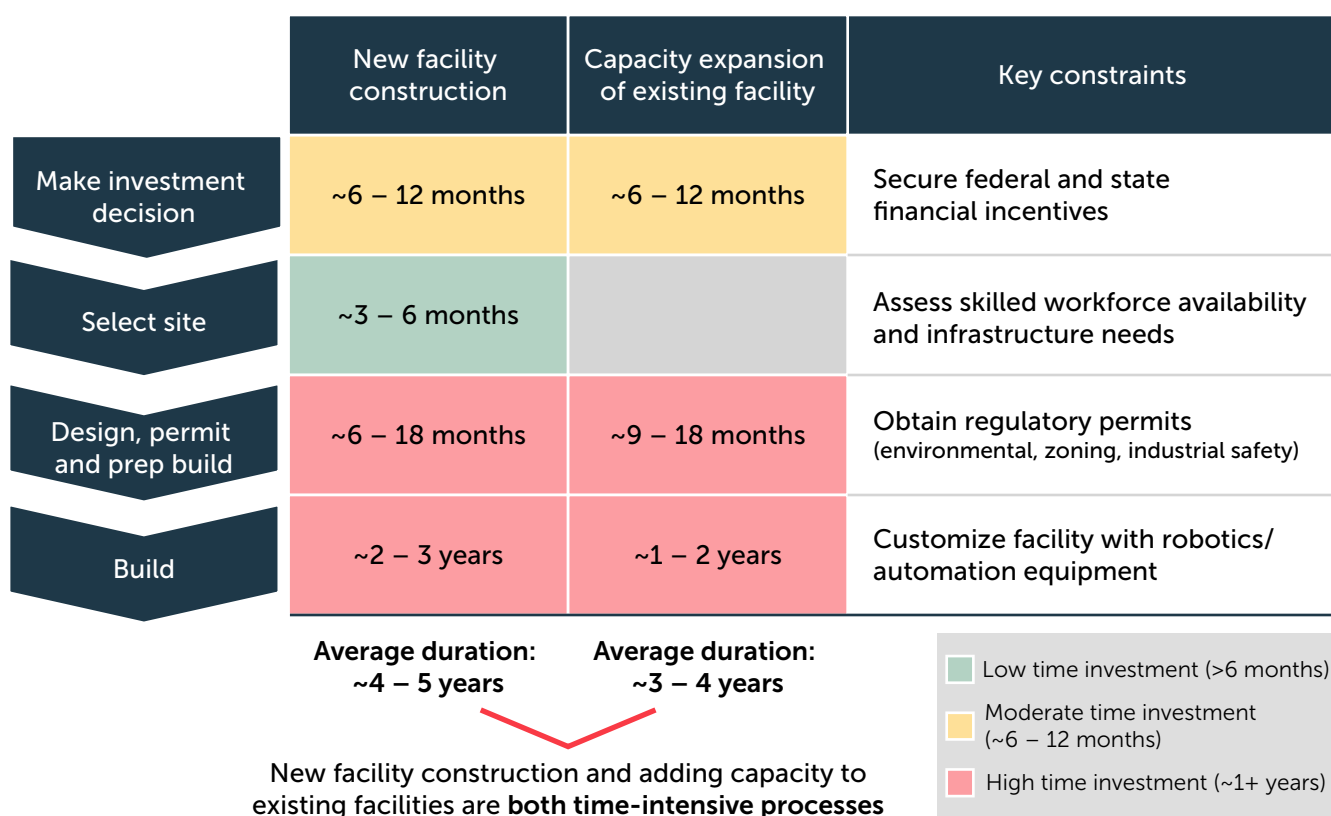
- Support targeted tariffs as a policy tool to combat unfair trade practices (e.g., dumping from overcapacity that is experienced in the chemicals sector, transshipment and other efforts to evade applicable trade regulations), but avoid broad-based tariffs that would harm the domestic economy.
- Negotiate a shift from hazard-based regulations to science-based regulations with trading partners such as Brazil, Mexico and Türkiye to level the playing field for U.S. chemicals exports.
- Secure sectoral trade agreements to advantage trade with trusted partners — especially for raw material sources — as well as export destinations.
- In cases where tariffs are deemed appropriate, provide transition flexibility to help manufacturers build alternative raw material sources.
- Foster U.S. manufacturing and exports by restoring tariff savings opportunities for production activity in U.S. Foreign-Trade Zones.

Automotive Vehicles, Parts and Assembly

The U.S. auto sector includes both assembly and parts manufacturing and is one of the country's largest manufacturing sectors by output and headcount. Yet, the industry faces multiple compounding barriers to domestic growth. High upfront costs, driven by complex permitting and facility builds, and high recurring costs, driven by tariff-inflated input prices, continue to strain expansion efforts.

The time required to build new facilities or production lines can stretch months beyond expectations due to lengthy approval processes and the need for custom infrastructure and equipment.

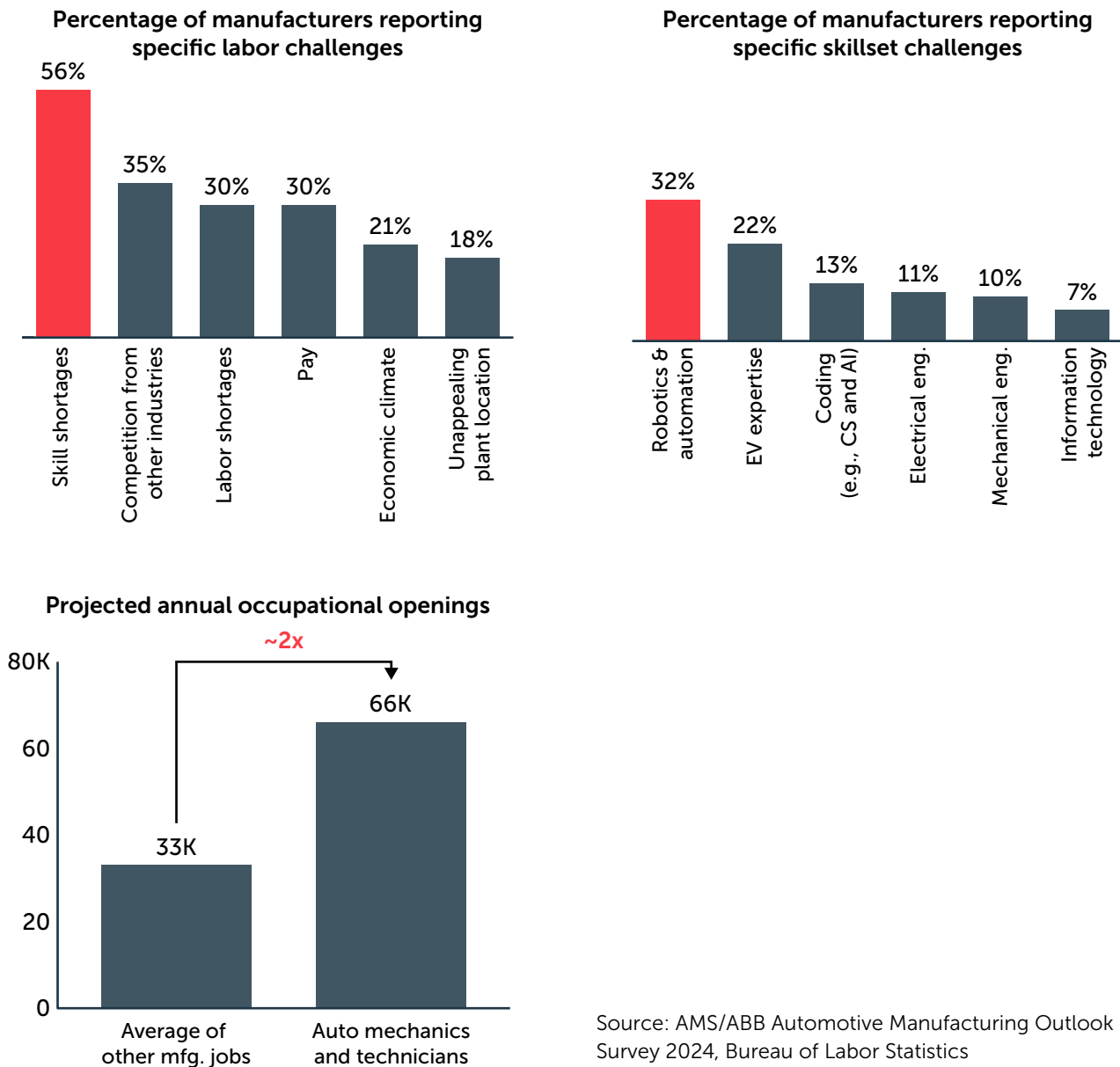
Figure 9: Timelines for new facility construction and adding capacity to existing facilities



Source: Industry participant interviews

Skill and labor shortages further constrain output, particularly in roles like welding and diagnostics, where demand continues to rise. Rapidly evolving market dynamics, including shifts in consumer demand, technological innovation and policy uncertainty, further challenge automakers' ability to plan and invest at scale.

Figure 10: Skill shortages in manufacturing



Recommendations

Competitive Tax Policy

- Enhance capital access for small auto part suppliers by expanding Small Business Administration (SBA) and State Small Business Credit Initiative (SSBCI) programs, facilitating government-backed loans through SBA-approved lenders, and providing both debt and equity via SSBCI-affiliated financial institutions.

Permitting and Regulatory Reform

- Where possible, ensure harmonization between federal and state level regulations (e.g., fuel economy regulations, autonomous vehicle regulations and vehicle safety features differ between Department of Transportation, Department of Energy, Environmental Protection Agency and states).

Strategic Trade Policy

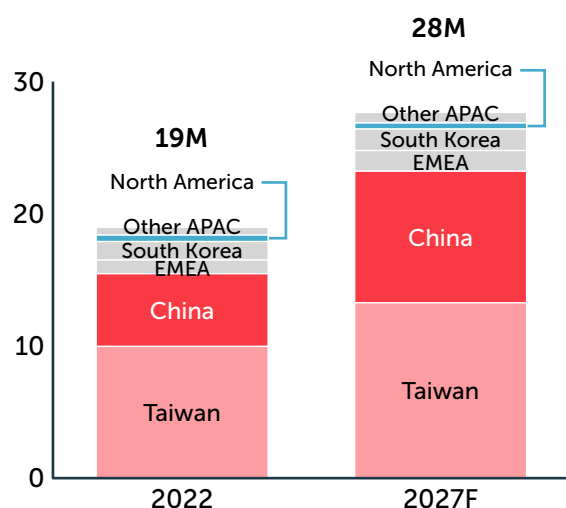
- Clarify current preferential rules of origin in order to enable supply chain planning for manufacturers.
- Restore preferential treatment for USMCA-qualifying products.
- Harmonize trade and security restrictions on subsidized Chinese vehicles with Canada, Mexico and other key allies.

Foundational Semiconductors and Printed Circuit Boards/ Printed Circuit Board Assemblies (PCBs/PCBAs)

Semiconductors and PCBs/PCBAs are essential components of nearly all electronic devices and are critical to sectors such as defense, aerospace, automotive and other advanced manufacturing sectors. Foundational chips (>28nm) represent a significant vulnerability due to their broad application across critical end-markets, limited domestic capacity and lack of current funding.

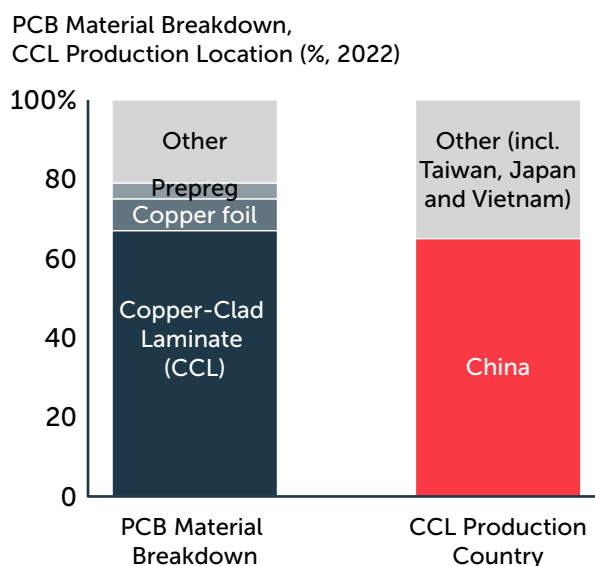
U.S. semiconductor manufacturing is challenged by cost competitiveness issues, with Asian competitors benefiting from long-standing depreciated assets, operational efficiencies, availability of skilled labor and significant government support. Approximately 60% of new U.S. semiconductor jobs are projected to go unfilled by 2030, compounding talent shortages. Regulatory delays and reliance on lengthy supply chains further burden U.S. fab development timelines compared to construction timelines seen in places like Taiwan or China.

Figure 11: Manufacturing capacity, foundational chips (>28nm, Volume, M)



Source: Gartner Semiconductor Forecast Database Q4 2023, Gartner Foundry Forecast Q4 2023

Figure 12: Primary PCB material is primarily sourced from China



Source: U.S. Geological Survey, IBE Electronics, Statista

Recommendations

Competitive Tax Policy

- Ensure PCBA is included in PCB targeted incentives. Expanding the qualifications to PCBA will help prevent PCBs made in the United States from being sent overseas for assembly.
- Through implementation of the CHIPS and Science Act, engage with industry to identify areas of highest need in the innovation ecosystem for foundational chips, increase U.S. competitiveness in the full semiconductor supply chain, and periodically assess the efficacy of these initiatives in expanding the U.S. semiconductor industry and innovation pipeline for foundational chips relative to comparable foreign government industrial policies.

Strategic Trade Policy

- Strengthen federal support for international trusted supplier programs for semiconductors, PCB and PCBA raw materials critical to national security.
- Maintain current preferential and non-preferential rules of origin rather than changing to content-based rules.
- Conduct anti-dumping and countervailing duty investigations on imported PCBs and PCBAs priced below fair market value.

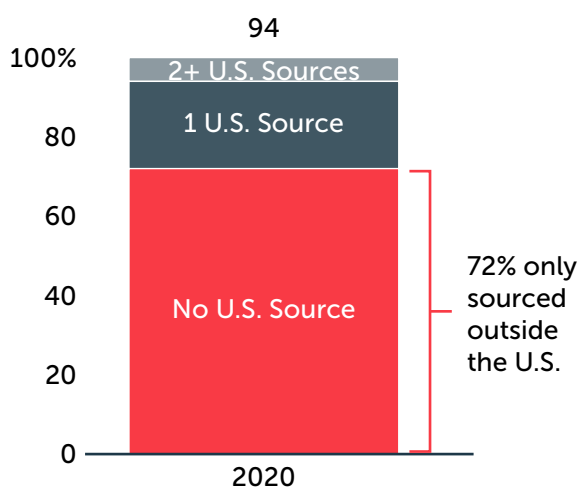
Energy and Infrastructure Investments

- Clarify regulations of behind-the-meter capacity to enable the buildout of onsite generation for large industrial loads.
- Implement public-private partnerships to implement water conservation, reuse of reclaimed water and desalination to ensure water supply for fabs.
- Upgrade and add capacity to power grid in strategic locations to provide necessary power for fabs.

Synthetic Active Pharmaceutical Ingredients (APIs)

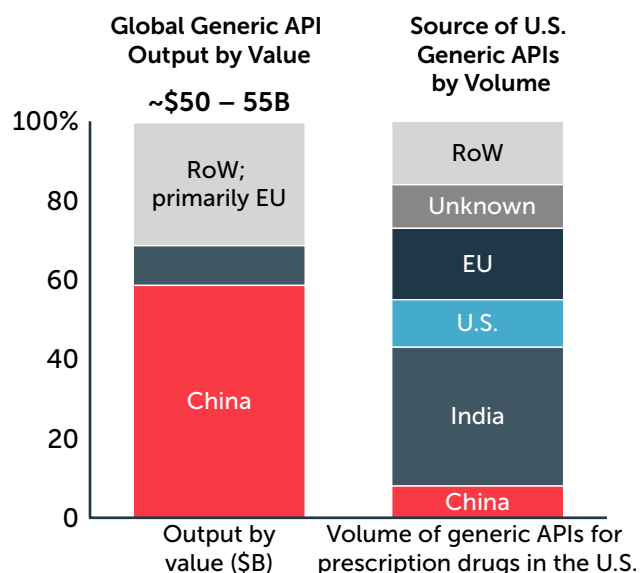
Generic Active Pharmaceutical Ingredients (APIs) represent one of the most vulnerable segments of the pharmaceutical value chain, with China accounting for approximately 59% of global synthetic API production. This concentration creates a critical dependency, especially since around 72% of APIs listed on the FDA's Essential Medicines List are not produced domestically (see **Figure 13**).

Figure 13: Distribution of API sources on FDA 2020 Essential Medicines List



Source: Food and Drug Administration

Figure 14: Majority of generic API production occurs outside the U.S.



Source: Trademap; Euromonitor; CPA; U.S. Pharmacopeia (USP)

China's 40% cost advantage in API production stems from lower costs for raw materials, labor and regulatory compliance, as well as greater economies of scale. Labor availability poses another significant challenge, with domestic production requiring a mix of skilled and manual roles. The U.S. talent pool has diminished due to offshoring and a workforce trend favoring high-growth biopharma over generics. Regulatory barriers compound these difficulties. FDA approval for new or alternate API suppliers can take 12 – 15 months, and interpretation of cGMP guidelines can delay facility startups and complicate project timelines. These challenges collectively increase the cost and complexity of reshoring production.

Recommendations

Competitive Tax Policy

- Leverage grants and tax incentives for manufacturers adopting advanced technologies, automation and continuous manufacturing processes (e.g., flow chemistry).
- Invest in domestic capabilities for pharmaceutical research support (e.g., early-stage API mfg., process engineering) to allow American companies to better match the cost structure and speed of offshore competitors.

Permitting and Regulatory Reform

- Establish FDA review maximums for Abbreviated and New Drug Approval (ANDA) applications; 60 days for inspection determination, 120 days for facility inspections and 30 days from inspection to report.
- Consolidate overlapping FDA approval layers by granting exemption from Pre-Approval/License Inspections (PAI/PLI) inspections if Good Manufacturing Practices (cGMP) and Quality Maturity Model (QMM) standards are met, leveraging self-inspections and audits submitted to FDA for necessary PAI/PLI.
- Prioritize U.S.-based facilities to ensure quality and speed by shifting FDA review to focus on expediting domestic PAI/PLI approvals earlier in the review cycle over non-domestic facilities.
- Enhance management of post-approval changes to support capacity expansions by directing the FDA to provide full regulatory adoption of the global International Council for Harmonization (ICH) Q12 principles.
- Direct FDA to establish a cross-functional team of federal and local regulators for U.S. manufacturing construction sites, streamlining the inspection and approval processes, reducing delays and compliance risks.
- Modify the permitting process to allow construction activities to begin in parallel to the air permit filing process (which can take nine to 24 months to secure), significantly improving the new project timeline and cost while aligning with European standards.
- Ensure funding (e.g., from Generic Drug User Fee Amendments) is deployed to provide agencies with the tools and resources needed to implement timely approval, inspection and permitting programs.
- Direct HHS to build a buffer inventory of essential medicines (e.g., stored APIs) to prevent shortages.

Strategic Trade Policy

- Increase Mutual Recognition Agreements (MRAs) with key U.S. trading partners to streamline inspection requirements and avoid duplicative processes which can restrict input access.

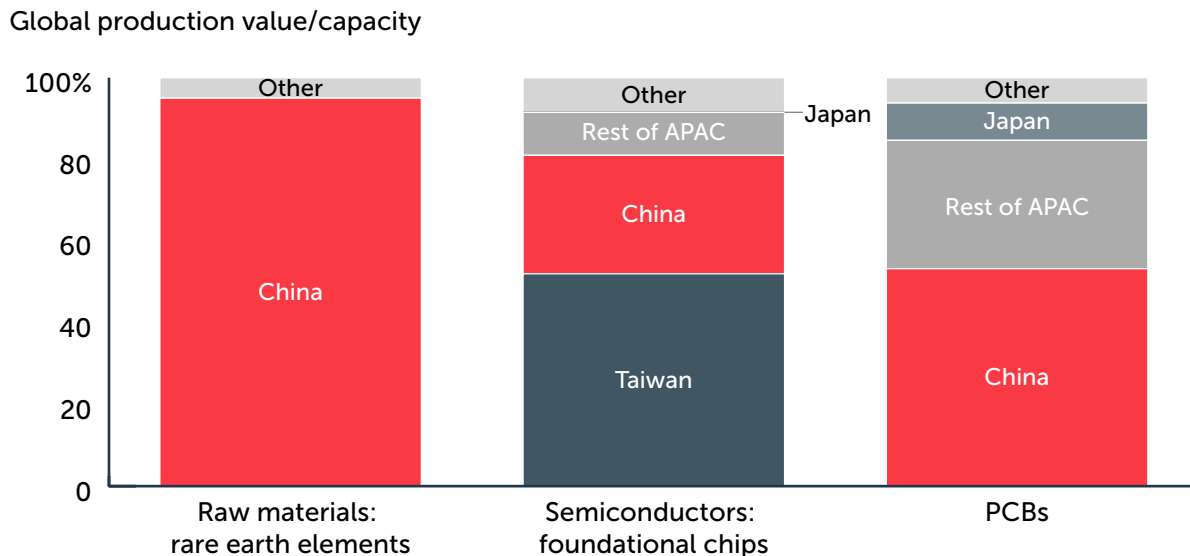
Recommendations (continued)

- Strengthen supply resiliency of government-purchased medicines (e.g., via Medicare) through procurement strategies, such as minimum threshold of medicines with no supply chain reliance on high-risk countries.

Communications Equipment: Routing and Switching Equipment

The U.S. communications equipment sector, particularly in routing and switching devices, faces persistent structural hurdles that limit domestic production growth. Key constraints include the lack of a robust domestic component ecosystem including semiconductors, PCB(A)s and other electronics, the majority of which are produced in Asia (see Figure 15).

Figure 15: Global production of key components



Source: Prismark Partners (2022), Gartner Foundry Forecast (2023), U.S. Geological Survey (2024)

Additionally, the switching manufacturing process is relatively labor-intensive and requires specialized technical skills, yet the domestic labor pool lacks sufficient availability of workers trained in areas such as PCB assembly and router/switch assembly and testing. Compounding these constraints is the relative lack of targeted U.S. government financial support for the routing and switching ecosystem. While countries like Japan offer robust incentives, such as tax credits for 5G infrastructure, the United States has lagged in providing comparable support for domestic manufacturing of routing and switching equipment.

Recommendations

Competitive Tax Policy

- Utilize targeted incentives to support domestic manufacturing.
 - Consider a lower tax rate on profits for domestically produced products to allow businesses to deduct a percentage of income derived from domestic production activities.

Recommendations (continued)

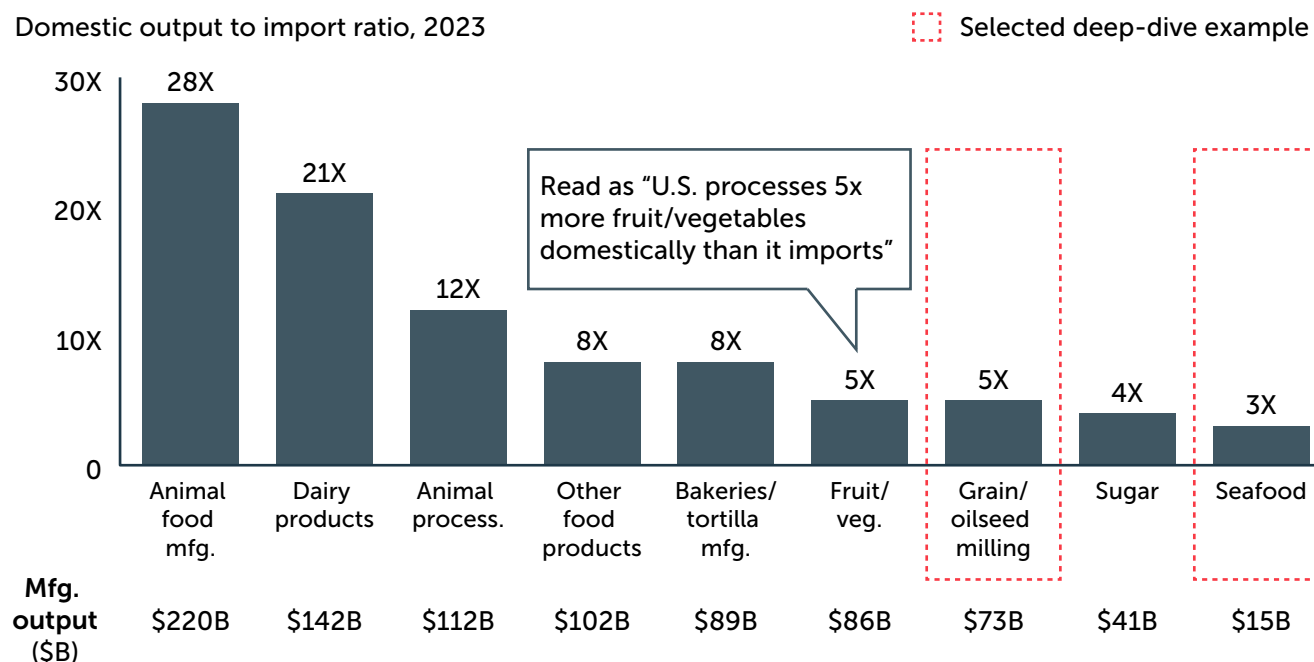
Strategic Trade Policy

- Negotiate economic security agreements with allies and partners to create trusted supply chains, promote U.S. exports and harmonize export controls.
- Provide open market access for intermediate inputs from trusted suppliers to support U.S. manufacturing — e.g., semiconductors from South Korea, critical minerals from Australia, copper from Chile, networking equipment from India/Mexico, etc.
- Negotiate reciprocal market access in government procurement — governments are often largest purchasers of communications equipment in foreign markets.
- Secure commitments from allies and trade partners to use trusted technology in their digital networks, including through the update of existing networks with trusted technology strictly from the United States and its allies.
- Amend Buy American rules to allow U.S. R&D and U.S. manufacturing expenditures to count towards meeting U.S. content thresholds.
- Create national interest waiver at the Export-Import (EXIM) Bank for U.S. content requirements when U.S. firms are competing against companies of concern (e.g., on SDN or Entity List) in priority export markets around the world.

Food Processing: Seafood Processing and Grain and Oilseed Milling

Food processing is a large and diverse sector (roughly \$880 billion in 2023 output) that employs around 1.8 million people. The domestic food processing industry is a uniquely important contributor to American food security and is an often-outsourced portion of the food supply chain. The sector is diverse and faces varied challenges; though broadly the output/export ratio is favorable, pockets of risk remain in specific subsectors including seafood processing and grain and oilseed milling.

Figure 16: Strong food manufacturing base in the U.S., with some areas of concern



Source: U.S. Census – USA Trade, Bureau of Labor Statistics – Office of Productivity and Technology

Seafood processing industry output is steadily declining, mainly due to reduced domestic processing capacity and persistent labor shortages. The grain and oilseed milling industry output has stagnated compared to imports, largely because of limited milling capacity and aging infrastructure, with no clear plans for modernization or replacement.

Recommendations

Competitive Tax Policy

- Expand USDA risk management and subsidy programs for farmers and producers of inputs to food processing (e.g., mimic subsidy programs for grain/soybeans).
- Utilize targeted manufacturing incentives to, for example, encourage capacity expansion in areas of long-term concern.

Permitting and Regulatory Reform

- Where possible, expedite product approval process in strategic areas.

Conclusion

While the United States retains powerful advantages in its consumer base, innovation ecosystem and energy resources, those strengths must be matched by purposeful policy choices that reduce investment barriers, encourage domestic production and enable workforce readiness. Revitalizing a world-class manufacturing base will require comprehensive and coordinated action from government in close coordination with the private sector.

To ensure long-term economic and national security, the United States must pursue a strategic and sustained effort to rebuild its manufacturing capacity. This includes eliminating systemic barriers to growth, fostering innovation and enacting forward-looking policies that enable businesses to invest, scale and hire in the United States.

Five Key Policy Pillars to Help Expand Domestic Manufacturing Capacity

1. Globally competitive tax system	• Maintain a competitive 21% corporate tax rate. • Maintain and strengthen the approach to the taxation of international earnings. • Continue R&D expensing and full expensing for capital equipment. • Utilize targeted incentives to support domestic manufacturing.
2. Permitting and regulatory hurdles	• Reform permitting processes to shorten decision timelines, including embracing NEPA reforms. • Improve coordination among regulatory agencies to harmonize rules and reduce overlap at all levels of government, including internationally. • Ensure regulations are enacted in an efficient manner that achieves needed health, safety or environmental objectives at the lowest possible cost. • Require agencies to abide by sound science and efficient, data-driven risk assessment in regulatory planning and analysis, including strengthening stakeholder engagement.
3. Strategic trade actions	• Negotiate durable trade agreements that drive fair trade and economic growth by eliminating trade barriers for U.S. exports and removing harmful tariffs. • Work with trusted trading partners to jointly address Chinese excess capacity, tariff circumvention and other unfair trade practices. • Strategically deploy targeted tariffs and enforcement actions to counter unfair trade practices. • Provide transition flexibility for tariffs that raise costs for components and materials that cannot currently be sourced domestically. • Encourage the use of the Export-Import Bank to promote exports.
4. Energy and infrastructure	• Support policies that utilize and enable the full breadth of America's energy resources, including oil, natural gas, nuclear, geothermal, biofuels, biomass, hydrogen, solar, wind and storage. • Ensure continued public funding and better enable private financing for infrastructure, including by expanding use of public-private partnerships.
5. Workforce development	• Improve the Workforce Innovation and Opportunity Act to direct resources to training programs that focus on in-demand careers. • Incentivize community colleges and other high-quality providers to work with local businesses to develop skills-based training programs. • Expand tax incentives that promote investments in upskilling and reskilling and lead to increased mobility for workers. • Support a broad range of work-based learning opportunities that allow workers to develop skills and gain experience, including modernizing the U.S. Department of Labor's Registered Apprenticeship System. • Adopt H-1B program changes that minimize employment disruptions and provide flexible pathways to legal permanent residence. • Reform the current system for year-round jobs by creating a new visa category to help fill occupation shortages in high-demand industries, such as construction. • Preserve programs that allow foreign-born graduates of U.S. colleges and universities to work after graduating, like Optional Practical Training, and exempt individuals with advanced U.S. STEM degrees from the employment-based green card limit.

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