





# Accelerating the resurgence of American manufacturing

Manufacturing is growing in America, and continued government attention focused on innovation, supply chains, and workforce can help it thrive into the 2030s

*John Coykendall, Kate Hardin, Adam Routh, John Morehouse, and Matt Sloane*

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## KEY TAKEAWAYS

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- **American manufacturing is growing and is poised for continued growth as new markets, industrial policies, and customer demands are helping to expand US manufacturing.**
  - **A sustained focus on industrial policy at the federal level and cooperation with industry will provide opportunities to improve US manufacturing competitiveness while overcoming existing challenges.**
  - **Local and state governments may also impact American manufacturing by centering policy and activity on innovation, supply chain, and workforce.**
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**M**anufacturing has long been the yardstick by which greatness is assessed in measuring a nation's economic prowess. It's a realm where size matters, productivity reigns supreme, and the United States has historically held its own, standing tall as a global leader in gross domestic product and labor efficiency. The United States boasts a formidable manufacturing presence, accounting for a significant slice of its gross domestic product. It ranks fourth in manufacturing growth among the top 10 largest manufacturing countries for value added (the extra value a firm creates by subtracting input costs from the value of its outputs),<sup>1</sup> and 10th among 49 nations on manufacturing brand competitiveness.<sup>2</sup>

With a focus on bolstering domestic manufacturing, the United States has an opportunity to advance its global standing and enhance Americans' flourishing through job growth, greater industrial resiliency, and innovation. Underpinning this transformation most recently have been legislative initiatives, which incentivize investments in US manufacturing. Yet, more is needed to foster continued growth. A sustained effort to de-risk supply chains and establish facilities closer to US customers also continues to drive investment.<sup>3</sup> Meanwhile, the National Defense Industrial Strategy, recently announced by the Department of Defense, provides an opportunity to elevate the technical preparedness of the US defense industrial base over the next five years.<sup>4</sup>

**"We're finally over the hump in terms of prioritizing manufacturing. We're headed in the right direction, establishing a stronger manufacturing foundation, and now we need to continue the momentum by doing the hard collaborative work of accelerating our pace of progress."**

– Matt Bogoshian, executive director, American Manufacturing Communities Collaborative

However, geopolitical challenges are impacting supply chains and altering market demands, which, in turn, could slow progress, such as in the domestic production of important aerospace, defense, energy, telecom, and transportation technologies that depend on highly concentrated sources of critical minerals.<sup>5</sup> Equally, continued digitalization in manufacturing will help elevate US manufacturing on the global stage.<sup>6</sup> Finally, US manufacturing is predicated on the talent the industry can attract, which has been challenging to develop and retain in recent years for various reasons, including tight labor markets, a skills gap, and changing expectations for an improved talent experience.<sup>7</sup>

The journey toward an even more competitive manufacturing nation is well worth undertaking. In the crucible of global competition, American manufacturing must continue to adapt, innovate, and thrive in an ever-evolving landscape. This journey demands collaboration between government and industry and a shared commitment to surmounting the hurdles that could lie ahead.

### **What's now: An opportunity to increase manufacturing competitiveness**

The United States is the second-largest manufacturing nation for real value added behind China.<sup>8</sup> In 2022, manufacturing represented 11.4% of the total US GDP, amounting to \$2.3 trillion.<sup>9</sup> Matt

Bogoshian, executive director, American Manufacturing Communities Collaborative, explains, "We're finally over the hump in terms of prioritizing manufacturing. We're headed in the right direction, establishing a stronger manufacturing foundation, and now we need to continue the momentum by doing the hard collaborative work of accelerating our pace of progress."<sup>10</sup>

For major sectors, like chemicals and high-tech manufacturing, the United States is second behind China in all categories except textiles and clothing, where it is fourth (figure 1).<sup>11</sup> The top 10 largest subsectors in the United States are shown in figure 2. The United States ranks 10th among 49 countries in terms of distinct national manufacturing identity (or brand). According to the National Institute of Standards and Technology, the US manufacturing brand is competitive as a differentiator rather than a cost saver.<sup>12</sup> In all, American manufacturing remains competitive, which is important for preserving American prosperity as the manufacturing landscape evolves.

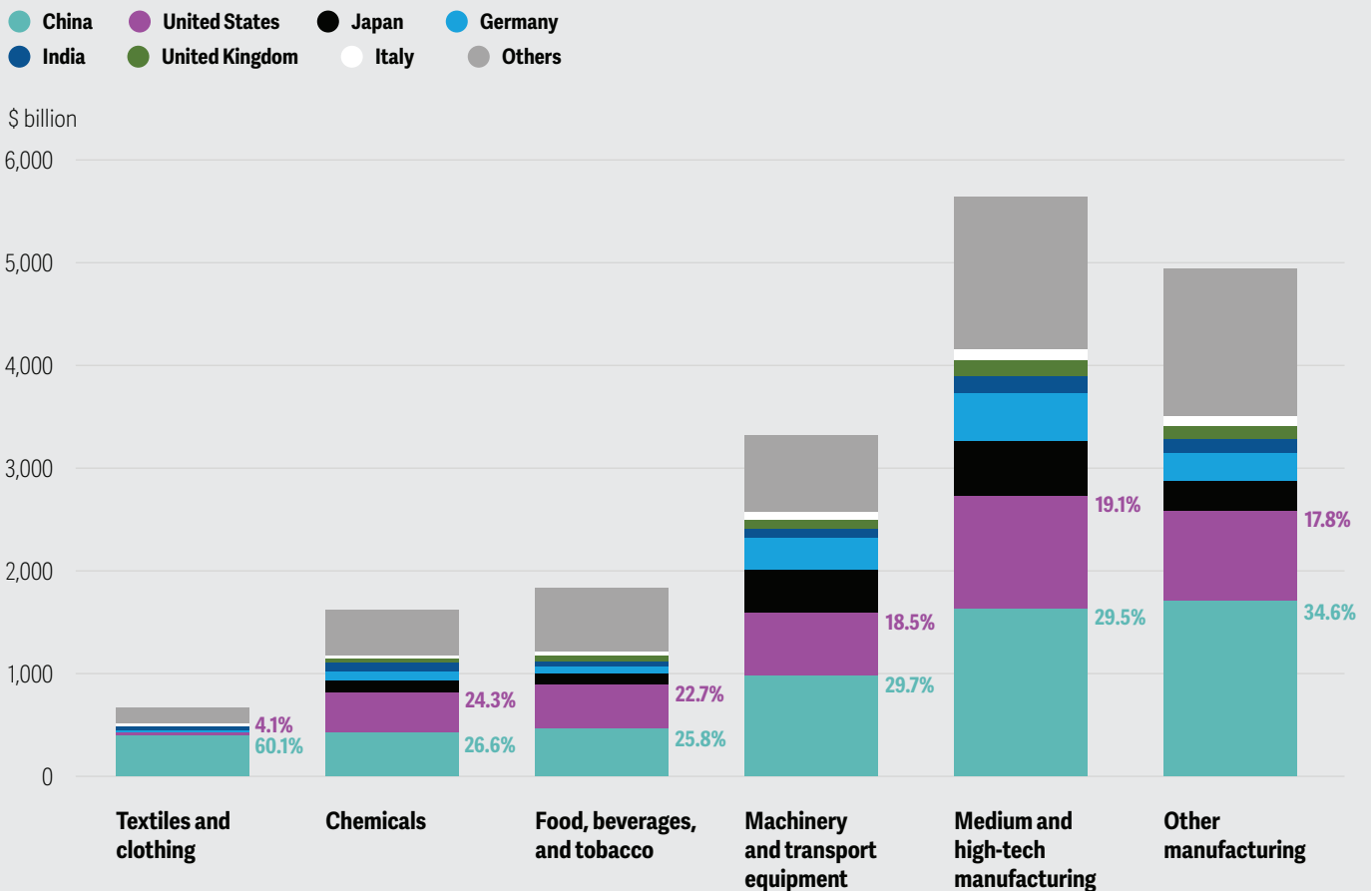
### **Increasing investment has helped to boost manufacturing growth**

The Infrastructure Investment and Jobs Act, Creating Helpful Incentives to Produce Semiconductors and Science Act, and Inflation Reduction Act—that were passed in 2021 and 2022—have already impacted US manufacturing.<sup>13</sup>



Figure 1

## The United States maintains its position as the second-largest manufacturing powerhouse globally, ranking just behind China across most major manufacturing sectors



Source: US Bureau of Economic Analysis, "Interactive data: Value added by industry," accessed July 2024.

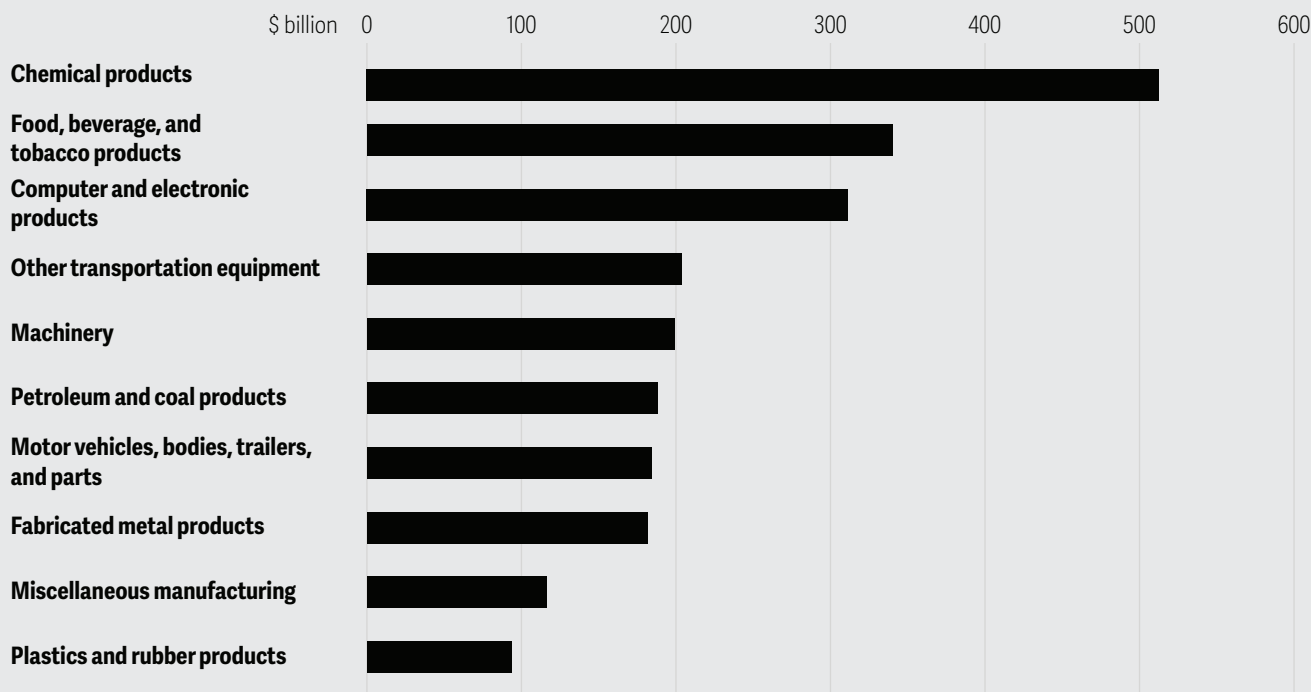
Investments in manufacturing critical technologies, like semiconductors and clean technology, have nearly doubled since these pieces of legislation were passed.<sup>14</sup> The infusion of focus and funding has led to \$132 billion in investments into clean technology manufacturing facilities across 42 US states, promising more than 116,000 new jobs and helping drive a nearly threefold increase in construction spending (money used to build or upgrade manufacturing facilities) since 2020 (figure 3).<sup>15</sup> Additional government focus on improving

manufacturing in defense, energy, and certain critical technology sectors is likely to further growth. Indeed, private equity and venture capital firms are already increasing investments in defense companies with disruptive technology and manufacturing models.<sup>16</sup>

These policies have created the potential for sustained growth and improved US manufacturing competitiveness, but obstacles remain, from geopolitical instability to talent shortages.

Figure 2

## Top 10 US manufacturing subsectors by value added in 2023



Source: US Bureau of Economic Analysis, "U.Value added by industry," accessed May 23, 2024.

**The Inflation Reduction Act provides more than \$270 billion in climate and clean energy-related incentives, with some \$40 billion focused on manufacturing specifically.**

– US Department Of The Treasury and BlueGreen Alliance

### What's next: Adjusting for a new era of American manufacturing

Improving American manufacturing competitiveness will not happen on its own. It will require the adoption of innovative digital tools and business practices. All levels of government can also play a crucial role in facilitating this advancement by providing the necessary support.

#### Digital technologies promise a transformation in productivity

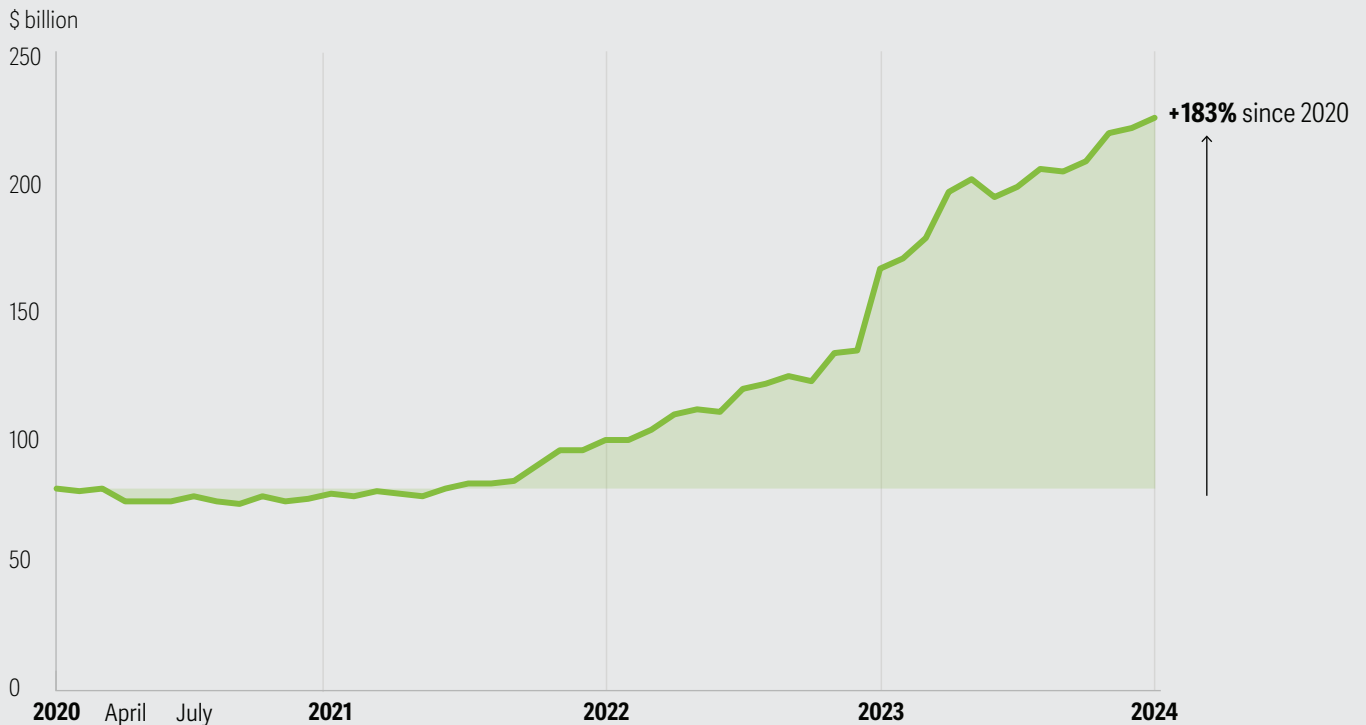
As the spotlight on manufacturing intensifies, growth in Industry 4.0 adoption holds great promise. With digital tools at their disposal, manufacturers gain unprecedented flexibility and insight, empowering them to make decisions with newfound intelligence and foresight.<sup>17</sup>

The impact of digital tools extends far beyond the factory floor. In an era where the workforce is increasingly composed of tech-savvy millennials and Generation Z, these high-tech environments can be a magnet for talent. Moreover, tools like augmented reality and virtual reality can not only enhance worker performance but also serve as invaluable training aids, saving time and money while enriching the overall worker experience (figure 4).<sup>18</sup>

Industry 4.0 transformation is already well underway. One study of over 800 manufacturers found that 98% have started their digital transformation to improve the customer experience and operational efficiency, optimize costs, and enhance products.<sup>19</sup> Similarly, a Deloitte study found that 92% of surveyed manufacturers were experimenting with or had already implemented metaverse-related use cases, and many had plans to increase their use of industrial metaverse initiatives because they believed

Figure 3

### Total construction spending in manufacturing has grown significantly in recent years



Source: Deloitte analysis of data from US Census Bureau.

it would improve performance across sales, quality, throughput, and labor productivity.<sup>20</sup> As the adoption of digital tools transforms manufacturing, the industry's competitiveness will also continue to be transformed.

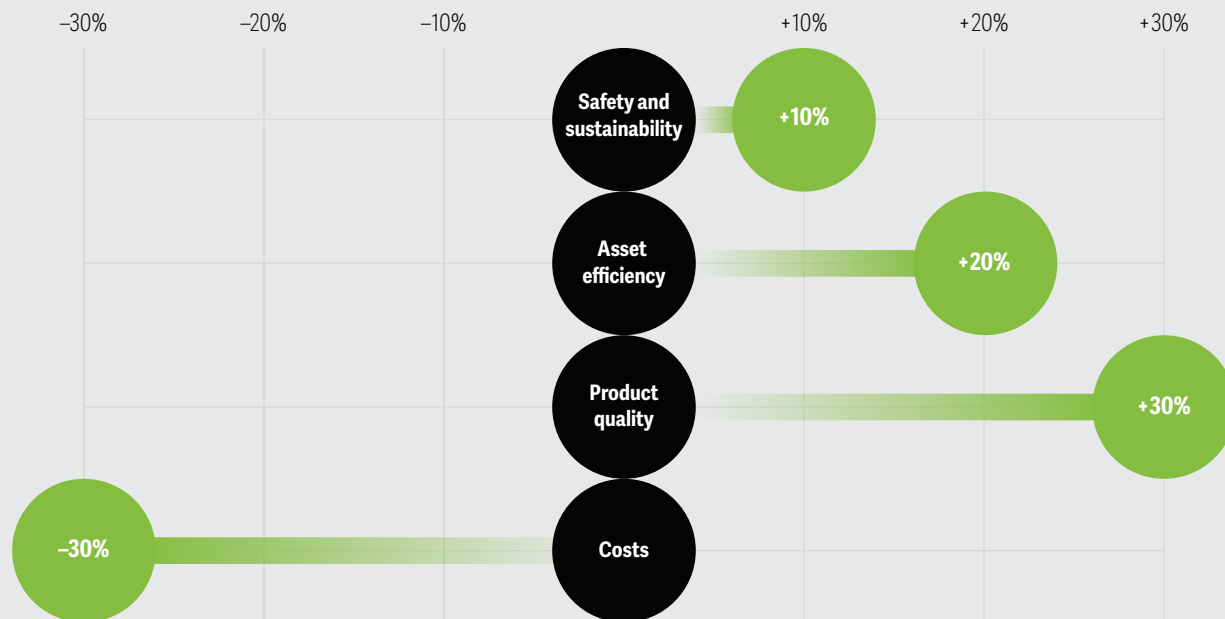
And the government has a role in this process. More than just facilitating this evolution across industry, government-owned manufacturing facilities require it as well. Indeed, the US military has also gained from the digital renaissance by embracing the transformative potential of advanced manufacturing techniques. Recognizing the critical role of digital tools in meeting the nation's defense needs, investment has poured into programs aimed at bolstering the use of cutting-edge technologies across the defense industrial base.<sup>21</sup> Government entities can encourage the adoption of digital manufacturing tools by investing in key technologies, regional ecosystems, public-private partnerships, and tax incentives.

#### Data-driven business practices are helping to increase supply chain resilience and flexibility

In the dynamic manufacturing realm, digitalization is one tool helping to usher in a new era of supply chain resilience and efficiency.<sup>22</sup> With digital tools, companies can de-risk their supply chains and gain invaluable insights into the intricacies of material sourcing and shipping logistics.<sup>23</sup> From maintaining strategic reserves of critical materials to exploring alternative supply sources, from bulk purchasing to digitizing operations, each decision can be informed by a deeper understanding of risk and reward.<sup>24</sup> These approaches not only promise to help improve US manufacturing competitiveness but will also be important to support future industry growth.

Figure 4

## Surveyed manufacturers have benefitted from undertaking smart factory initiatives



Source: Data taken from Deloitte, "Smart factory for smart manufacturing."

### New markets offer growth opportunities for the sector

Growing demand for low-carbon technologies globally presents another opportunity for the industry. The Inflation Reduction Act provides more than \$270 billion in climate and clean energy-related incentives, with some \$40 billion focused on manufacturing specifically.<sup>25</sup> Since the Inflation Reduction Act was passed in August 2022, 362 new clean energy projects have been announced across the nation (figure 5).<sup>26</sup> These projects provide a host of opportunities for manufacturers, including new market demand, funds for modernization activities, and more.

The call for domestic production across various sectors—from computers to steel to automobiles—is intensifying as corporations prioritize reshoring to mitigate vulnerabilities and reduce costs within their supply chains.<sup>27</sup> A sustained resurgence of American manufacturing, along with a broader movement among many countries to repatriate production, is driving manufacturing competition between the United States and other major manufacturing countries, like China. This heightened competition could potentially lead to a significant shift in global manufacturing dynamics.<sup>28</sup>

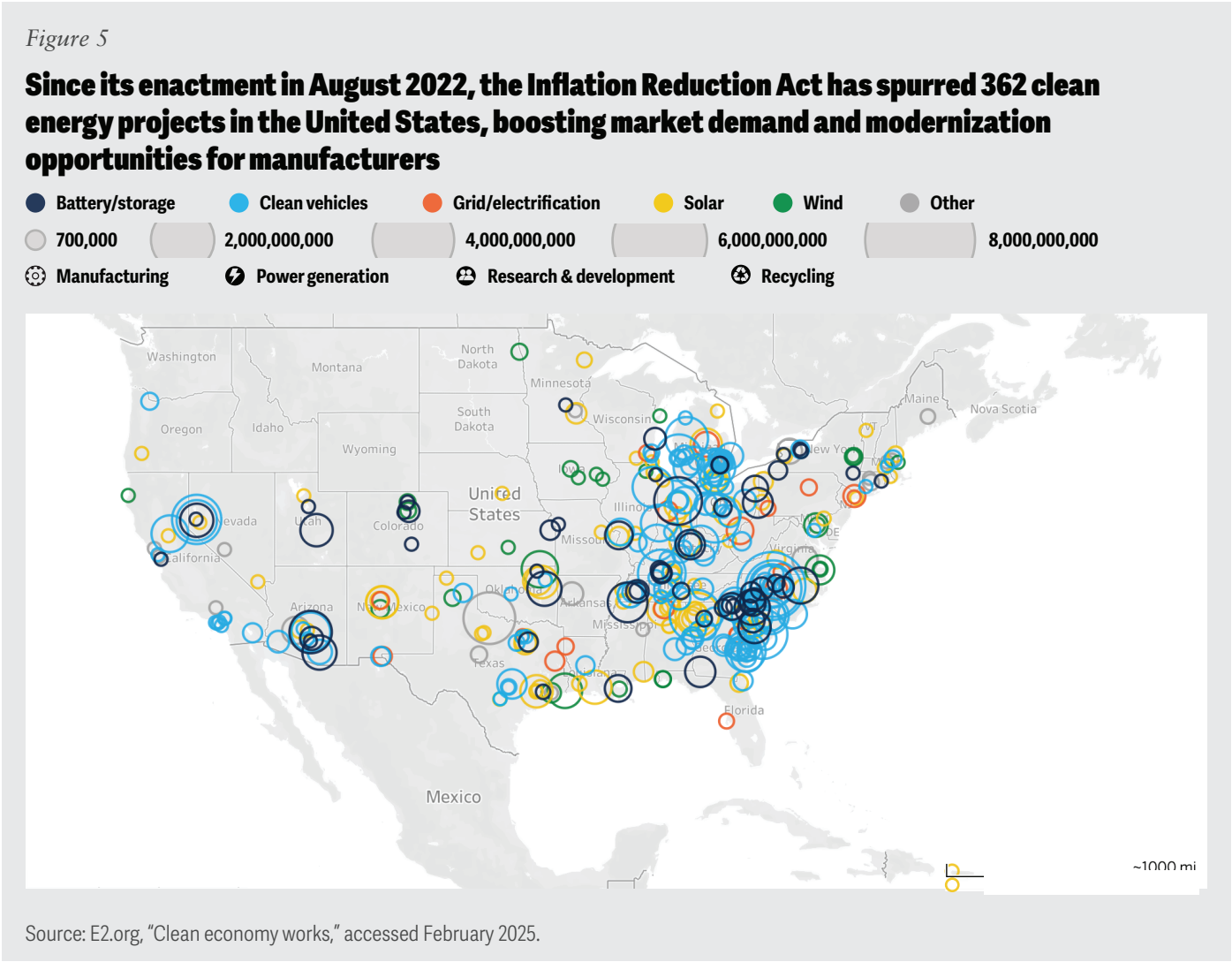
NEW TECHNOLOGIES WILL DRIVE FUTURE MANUFACTURING GROWTH AND NATIONAL SECURITY DEMANDS

Looking ahead to the coming decades, breakthroughs in fundamental technologies will give rise to a host of new industries. Areas such as quantum technologies, space exploration and development, and biotechnologies, to name a few, will become more important and present further opportunities to grow the manufacturing sector. These technologies will be important not

just economically but also for national security. It is important that the US manufacturing sector is well prepared to embrace these opportunities to further flourish.

New technologies will not only drive the creation of advanced manufacturing needs but also necessitate higher skill levels, particularly in producing high-

tech products. Additionally, advancing the US manufacturing sector to accommodate emerging technologies will demand as much innovation in the production processes as in the technologies themselves.



### Persistent global disruptions continue to hinder manufacturing growth

Global disruptions, such as geopolitical competition, supply chain vulnerabilities, and natural disasters, have significantly impacted US manufacturing. For much of 2024, these factors contributed to the sector's contraction.<sup>29</sup> Additionally, average lead times for production materials remain above pre-COVID-19 pandemic levels, although they are inching back to normal.<sup>30</sup>

### Innovative talent strategies can help overcome workforce shortages and skills gaps

Navigating a tight labor market is another constraint impacting US manufacturing competitiveness. A Deloitte analysis depicted in figure 6 shows that, since April 2021, the manufacturing labor market has been crunched,

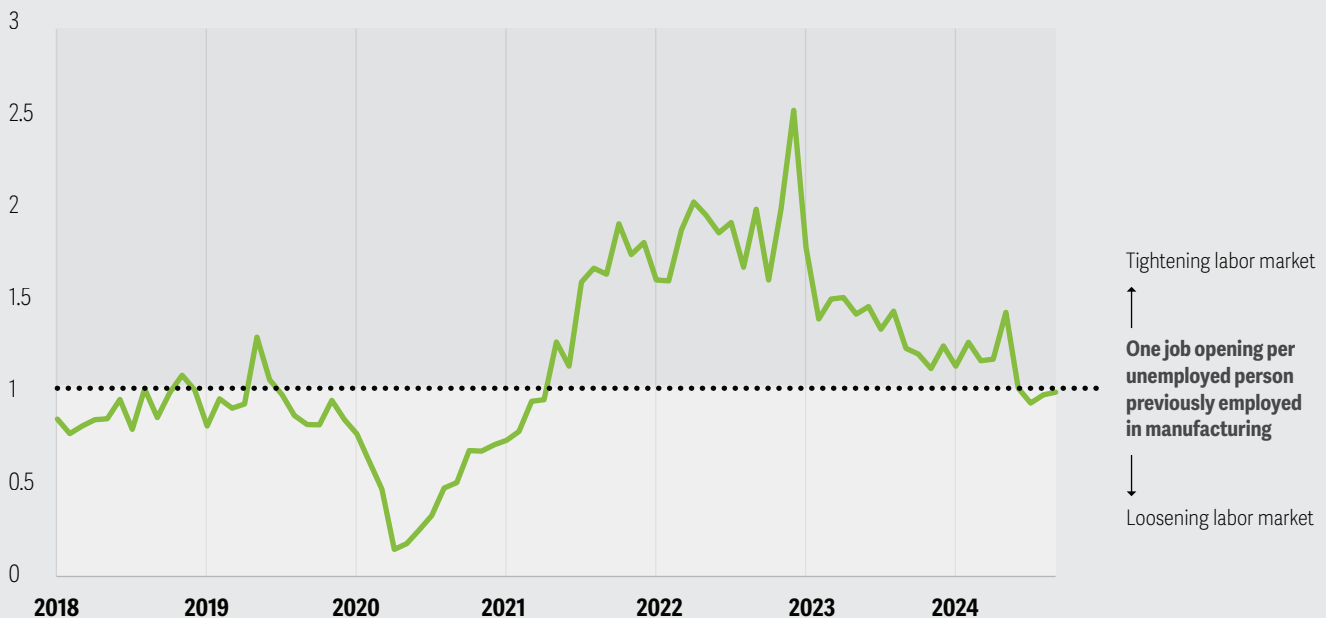
with more job openings than job seekers until a better balance was reached in 2024. However, if demand for manufactured goods or reshoring activity increases, the supply of workers could once again fall short of demand creating a tighter labor market.<sup>31</sup> Moreover, according to one survey, 67% of surveyed manufacturing executives reported that their biggest challenge was attracting and retaining a quality workforce.<sup>32</sup>

With thousands of current manufacturing job open<sup>33</sup> and more investment flowing into defense and technology manufacturing,<sup>34</sup> it will be difficult to fill these jobs without new ways of developing and retaining the necessary workforce. In fact, a recent Deloitte study found that 1.9 million jobs could remain unfilled in manufacturing between 2024 and 2033 if manufacturers are not able to address talent challenges.<sup>35</sup>

Figure 6

## The manufacturing labor market loosened in 2024

Ratio of job openings to unemployment



Source: US Bureau of Labor Statistics.

## **Pathways to flourishing: Delivering new opportunities through manufacturing**

**Government entities can encourage the adoption of digital manufacturing tools by investing in key technologies, regional ecosystems, public-private partnerships, and tax incentives.**

**Strategic investments and partnerships:** While digital tools offer specific advantages to individual manufacturers, their true potential lies in their capacity to foster connectivity, understanding, and adaptability across the entire industry. Therefore, government entities at various levels should leverage several mechanisms that bring manufacturers, ideas, and incentives together. For example, partnerships between the Department of Energy and Manufacturing USA help companies invest in advanced manufacturing through collaboration while reducing costs and company risk.<sup>36</sup> The Georgia AI Manufacturing coalition is another example of government investment in manufacturing cooperation intended to improve the adoption of artificial intelligence in legacy industrial manufacturing.<sup>37</sup>

**Public-private collaboration and incentives:** The National Institute of Standards and Technology's Manufacturing Extension Partnership provides cost-sharing that creates new opportunities for growth for manufacturers while generating positive returns for taxpayers.<sup>38</sup> Tax incentives, like the research and development tax credits, can provide manufacturers with resources to invest in talent, new products, modernization, and more.<sup>39</sup> Each of these programs can provide a needed boost in resources, knowledge, and opportunity to make critical investments into innovations that further US manufacturing competitiveness.

**Setting standards to accelerate technology adoption while managing risks:** Government entities should consider working closely with manufacturers to enable the private sector to mitigate risks and expedite the adoption of new technologies and manufacturing processes. By developing unified standards and working jointly with the industrial sector to set acceptance criteria for emerging technologies, these partnerships can significantly streamline development timelines. This collaborative approach allows companies to navigate certification and qualification processes more swiftly, accelerating development timelines.

**Government initiatives can help companies prepare for these disruptions and growth opportunities by providing incentives and fostering supply chain visibility or expansion.**

**Work with allied nations and trusted partners to ensure access to critical minerals and other production materials:** Collaboration is emerging as a potent antidote to supply chain vulnerability. Raw materials necessary to build everything from spacecraft to batteries and semiconductors are often confined to a few geographies or require complex production processes, which can lead to constrained supply chains.<sup>40</sup> By continuing to expand access and production through strategic partnerships with trusted allies and partners through new policies and programs, governments can help manufacturers mitigate risk while simultaneously unlocking new avenues for market growth. Such policies and programs should consider what's best for America's manufacturing competitiveness when evaluating options to source critical minerals and other materials abroad. This may require continued reevaluation of domestic mining regulations in some situations. Similarly, programs like the US Department of Defense's 'Mine-to-Magnet' program can bolster all phases of domestic critical mineral supply chains.<sup>41</sup>

**Leverage trade agreements and tax incentives to improve supply chain resilience:** The manufacturing sector continues to be a top industry for foreign direct investment, and trade agreements like the Trump administration's 2018 US-Mexico-Canada Agreement can help.<sup>42</sup> These agreements provide manufacturers with more favorable financial incentives (for example, reduced tariffs), which can expand access to materials and goods. These incentives can also drive the restructuring of supply chains toward more favorable trading partners.

Similarly, federal and state governments can use tax incentives to accelerate the development of essential mines or production techniques needed to diversify sources of supply for critical minerals and products.<sup>43</sup> One example is the percentage depletion allowance for lithium, cobalt, manganese, nickel, and graphite, which can create more favorable financial returns for companies that qualify.<sup>44</sup> As supply chains continue to evolve, so too should trade agreements and tax incentives. For example, extending tax credits for innovation, such as next-generation battery designs, could lessen the demand for some critical minerals that cause supply chain challenges.

**Ensure transportation infrastructure complements supply chain changes:** A critical piece of improving supply chains is logistics—the movement of products and materials from their origin to the point of sale is crucial to manufacturers. States that invest in the ports, highway systems, and airports that facilitate the flow of goods and products will likely be more attractive to manufacturers due to cost savings and other efficiencies afforded by modern transportation infrastructure. Continued federal investment in infrastructure through legislation like the Infrastructure Investment and Jobs Act can also help improve the nation’s manufacturing competitiveness more broadly.

**Public-private partnerships and a continued focus on policy innovation can create opportunities for government to work with industry to solve the talent conundrum.**

**Optimizing the workforce experience:** By fostering a workplace culture that nurtures purpose, harnesses technology, and prioritizes health and safety, manufacturers can cultivate an environment where talent thrives. Through meaningful engagement and empowerment, the industry can attract diverse talent, including the growing Gen Z cohort, while retaining the skilled workforce already in its ranks.<sup>45</sup> By transforming the perception of manufacturing to one of high-tech smart factories, the industry can entice prospective applicants with the promise of exciting careers and meaningful impact.<sup>46</sup>

The Creating Helpful Incentives to Produce Semiconductors and Science Act and the Georgia Childcare Tax Credit are examples of government efforts at the state or local level aiming to help improve the workforce experience by encouraging or requiring (in the case of Creating Helpful Incentives to Produce Semiconductors and Science Act) manufacturers or employers to develop child care facilities for their employees.<sup>47</sup> Adapting similar programs around work/life balance, remote work opportunities, accessible training, upskilling opportunities, or other programs that attempt to meet worker expectations can also improve the manufacturing workforce experience and draw in much-needed talent.<sup>48</sup> Sustained federal investment in innovation through programs like the Manufacturing USA Smart Manufacturing Institute can not only improve the efficiency of US manufacturers but also help create the high-tech environments and training opportunities that workers seek.<sup>49</sup>

**Take an ecosystem approach to talent development:** No longer can manufacturers afford to passively await ready-made talent; instead, proactive measures should be taken to cultivate and nurture talent pipelines from early education through career progression. Talent ecosystems, comprising a symbiotic network of organizations, from K-12 schools to technical colleges to workforce programs and beyond, offer a framework for collaboration and innovation. Through earlier initiatives like the multi-agency Investing in Manufacturing Communities Partnership and newer ones like the Department of Defense’s Manufacturing Communities Support Program, Department of Commerce’s Tech Hubs, Economic Development Administration’s Good Jobs Challenge, Recompete, and Building Better Regions Community of Practice programs, the National Science Foundation Engines initiative, and complementary efforts by the Departments of Energy, Labor, and others, governments and industry alike can foster the development of robust talent ecosystems, ensuring a steady influx of skilled workers and a workforce experience tailored to their needs. States are also instituting tax credits to enable manufacturers to adopt new technologies and retrain their workforce.<sup>50</sup> Similarly, programs like Alabama’s Industrial Development Training<sup>51</sup> and the Virginia Talent Accelerator Program<sup>52</sup> focus on education and training through strategic partnerships between government and industry. Each program represents an effort to develop the manufacturing talent the country needs today and into the future. State and federal governments should expand opportunities to collaborate across public and private sectors to develop the necessary talent that will underwrite much of America’s manufacturing competitiveness.

## **An economic engine that warrants attention**

While America is a global leader in manufacturing and the future of US manufacturing looks brighter still, it is not a foregone conclusion. Through public-private partnerships, funding, and incentives, state and federal governments should continue to help strengthen US manufacturing competitiveness in the coming years by further addressing supply chains, talent, and manufacturing innovation.

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# About the authors

## **John Coykendall**

jcoykendall@deloitte.com

John Coykendall is a vice chair, Deloitte LLP, and the leader of the US Industrial Products & Construction practice. He has more than 25 years of consulting experience focusing on global companies with highly-engineered products in the aerospace and defense, industrial products, and automotive industries. He advises senior executives on driving impactful and sustained performance improvement, through both top-line growth and margin improvement initiatives.

## **Kate Hardin**

khardin@deloitte.com

Kate Hardin leads Deloitte's research team focused on the implications of the energy transition for the industrial, oil, gas, and power sectors and has an experience of more than 25 years in the energy industry. Before that, she led IHS Markit Ltd's integrated coverage of transportation decarbonization and the implications for automotive and energy companies.

## **Adam Routh**

adrouth@deloitte.com

Adam Routh is the defense and space research lead for Deloitte's Center for Government Insights and the eminence lead for Deloitte's space practice. His research areas include the future of warfare and emerging space activities. Prior to Deloitte, he worked at the Center for a New American Security, and served as a team leader with the US Army's 75th Ranger Regiment. He received a PhD in defense studies from King's College London.

## **John Morehouse**

jmorehouse@deloitte.com

John Morehouse is the industrial products manufacturing research leader in the Deloitte Research Center for Energy & Industrials. With more than 25 years of experience in manufacturing-related roles across industry, academia, and government, Morehouse enjoys leveraging his expertise in research, engineering, and business to assist companies in innovating their products, processes, and workforce, and fostering the development of manufacturing ecosystems.

## **Matt Sloane**

msloane@deloitte.com

Matt Sloane is the research lead for both Aerospace & Defense and Engineering & Construction in Deloitte's Research Center for Energy and Industrials. He has more than 15 years of experience split between the two sectors with roles in industry, academia, and government. He holds a PhD in civil engineering and engineering mechanics from Columbia University.

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# Acknowledgments

The authors would like to thank their Deloitte Insights colleagues, **Aparna Prusty** and **Kavita Majumdar**, for their expertise and editorial support.

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### William D. Eggers

Executive director | Deloitte Center for Government Insights | Deloitte Services LP  
+1 571 882 6585 | weggers@deloitte.com

William D. Eggers is the executive director of Deloitte's Center for Government Insights where he is responsible for the firm's public sector thought leadership.

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## Contributors

**Editorial:** Kavita Majumdar, Aparna Prusty, Pubali Dey, and Arpan Kr. Saha

**Creative:** Jim Slatton, Sofia Sergi, Molly Piersol, and Natalie Pfaff

**Cover artwork:** Jim Slatton and Sofia Sergi



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Published in collaboration with Deloitte Insights.

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