DUCKER CARLISLE

E-BOOK

Reshoring Manufacturing

A Rebirth for US Manufacturing?

February 2025

www.duckercarlisle.com

Reshoring Outlook Highlights

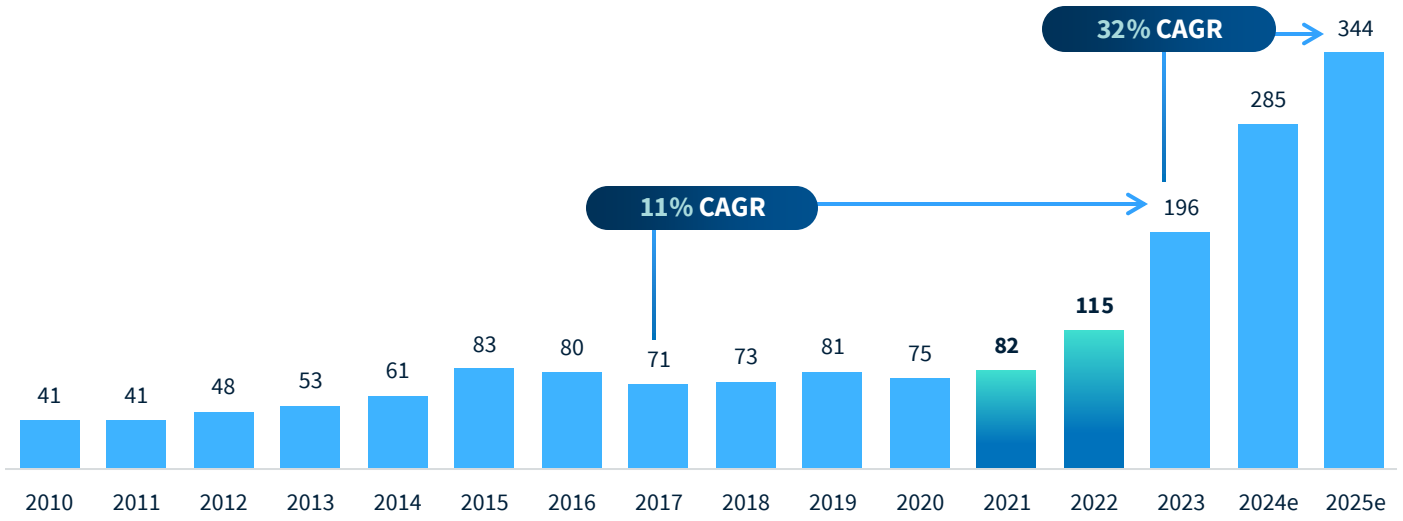
- **US construction spending on manufacturing facilities is forecasted to grow 32% annually going forward**
  - Nearly half of this spending (48%) will be on facilities producing computer and electronic products, electrical equipment, appliances, and components
- **Reshored + FDI jobs have increased from ~100k-150k per year before the pandemic, to ~400k per year post-pandemic**
  - Most reshored jobs are from China (51%)
  - FDI jobs led by Japan (16%), Germany (15%), China (13%), and Korea (10%)
  - Reshoring & FDI jobs are concentrated in electrical equipment (41%), computers & electronics (23%), chemicals (14%), and transportation equipment (11%) sectors
  - 92% of reshored jobs, and 86% of FDI jobs, are classified as high tech or medium-high tech
- **Key drivers of reshoring include US government policies, geopolitical risks, and declining total manufacturing cost differences between the US and typical offshoring locations (especially China)**
- **The reelection of Donald Trump will further accelerate this trend due to increased geopolitical uncertainty and increased costs to offshoring (tariffs)**
  - Executives interviewed are accelerating their reshoring plans in response to US Presidential Election results
- **Lack of skilled manufacturing labor in the US is main barrier to increased reshoring**
  - Increased automation investment, especially in automation solutions which are designed to complement and enhance human operator productivity, will be critical to ameliorating this barrier

A massive increase in manufacturing construction began in 2022 and is forecasted to persist, concentrated in computers, electronics, and electrical

Significant increase in spending on manufacturing construction

US Manufacturing Construction Spending

Not Seasonally Adjusted, Billion US Dollars



US government stimulus is a significant contributor to investment

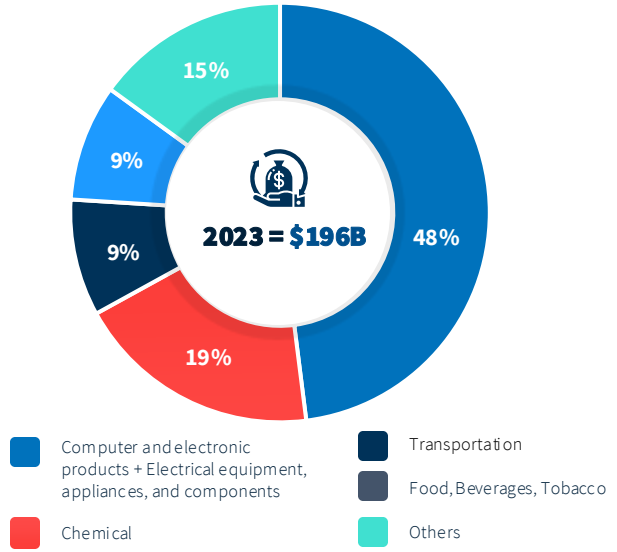
- CHIPS & Science Act
- The Infrastructure Investment and Jobs Act

Inflation Reduction Act

Concentrated in computers, electronics, and electrical

Manufacturing Construction Spend*

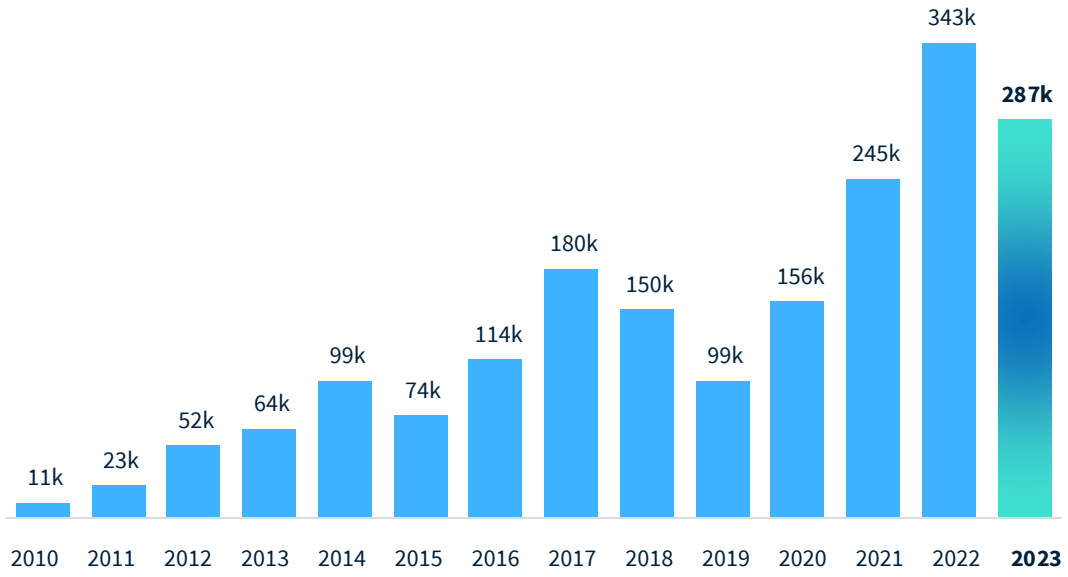
By Industry type, 2023



- US Bureau of Census, US Department of the Treasury, Ducker Carlisle Analysis, e – estimated
- *Manufacturing construction* – includes all buildings and structures at manufacturing sites. Office buildings and warehouses owned by manufacturing companies but not constructed at a manufacturing site are excluded.
- *Construction spending* – includes new buildings and structures, additions, alterations, conversions, expansions, reconstruction, renovations, rehabilitations, and major replacements, site preparation and outside construction of fixed structures, installation of equipment (boilers, overhead hoists and cranes, and blast furnaces), etc.
- ** Manufacturing construction spend by industry type, 2023* – considers private spending only; Jan – Apr 2023 average data is projected for the year 2023.

Following manufacturing construction investment, significant increase in re-shored and foreign direct investment (FDI) jobs is occurring

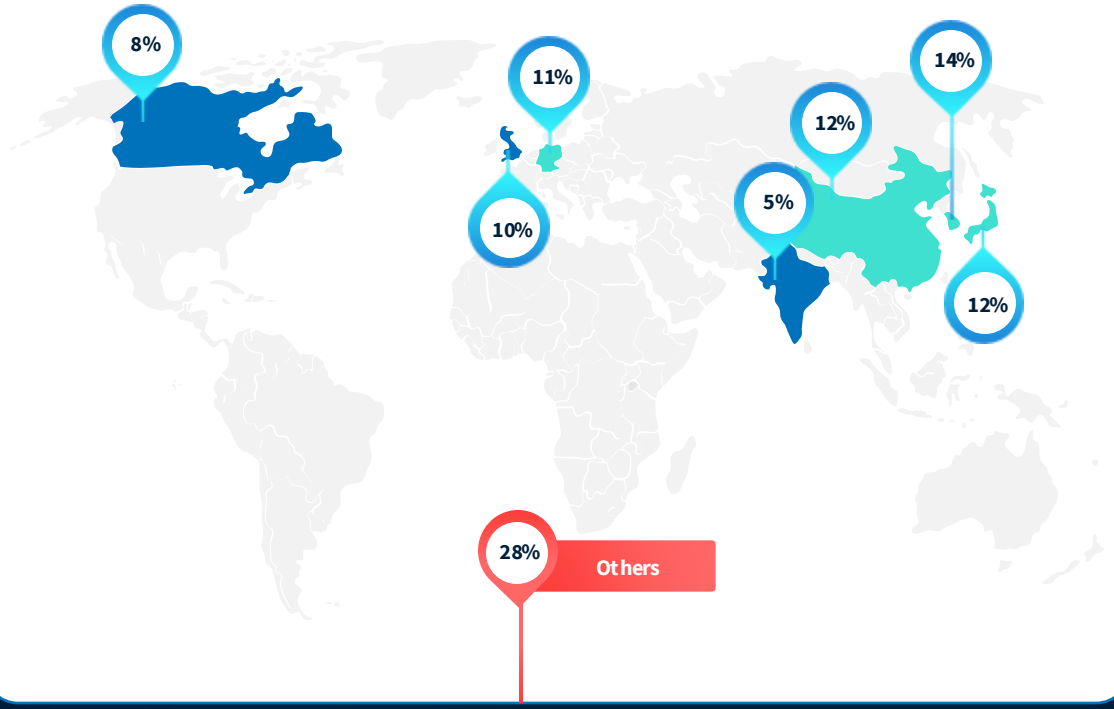
Reshoring + FDI Jobs Announced (Thousands)



Economic slowdown in Q3-Q4 of 2023 slowed reshoring employment growth

Reshoring + FDI Jobs by Country, 2023

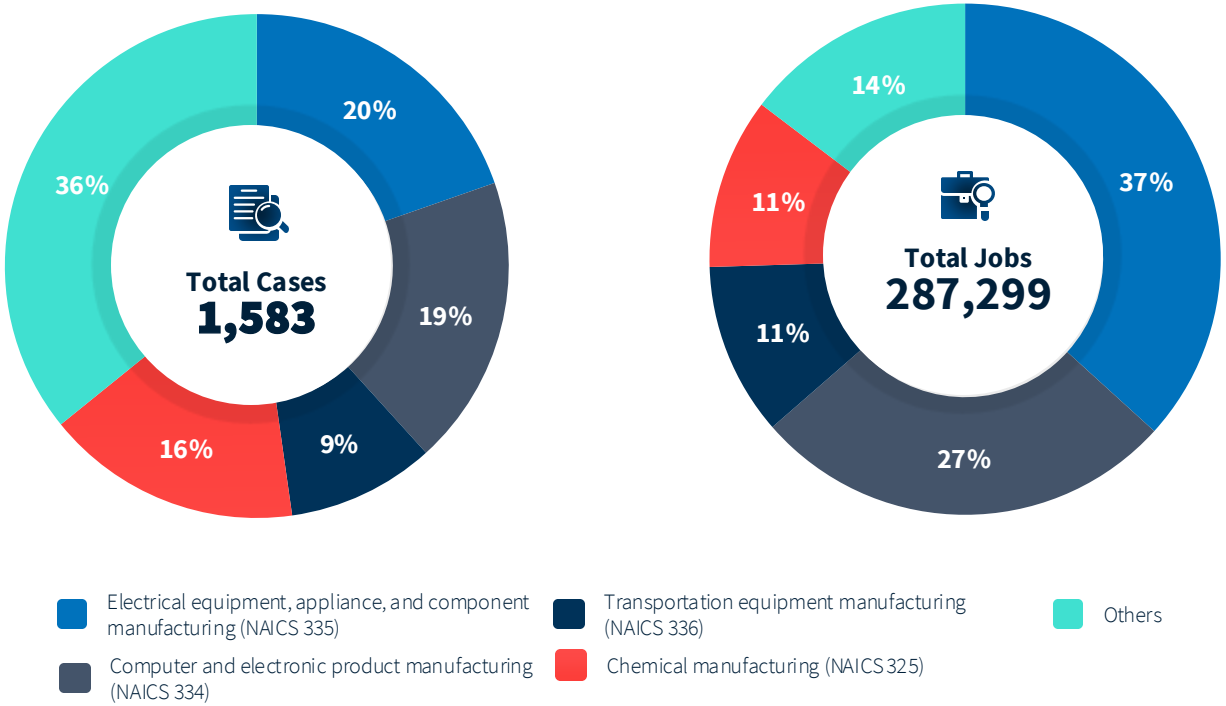
In 2023, significant reshoring + FDI from leading Asian and European economies



Reshoring Initiative, Ducker Carlisle Analysis

Reshoring & FDI jobs are concentrated in electrical equipment, computers & electronics, transportation equipment, and chemicals sectors

Reshoring + FDI Cases and Total Jobs Announced, 2023



Product Focus of Leading Sectors

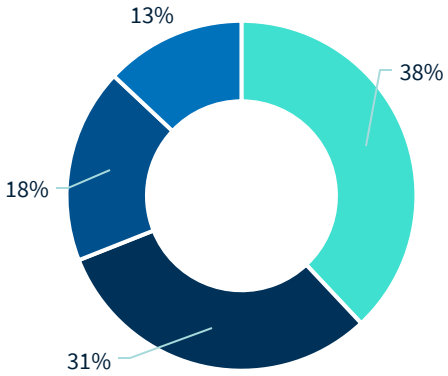
- EV batteries
- Semiconductor chips
- Solar panels
- Robotics
- Pharmaceuticals, specialty vaccines
- Clean / green hydrogen
- Rare earth-based chemicals for batteries
- Drones
- Electrical vehicles / EV charging stations

Electrical equipment, computers & electronics, transportation equipment, and chemicals sectors account for **64% of reshoring + FDI cases** and **86% of reshoring + FDI jobs announced for 2023**

Reshoring Initiative, Ducker Carlisle analysis
Others – remianing sectors of NAICS 31 - 33

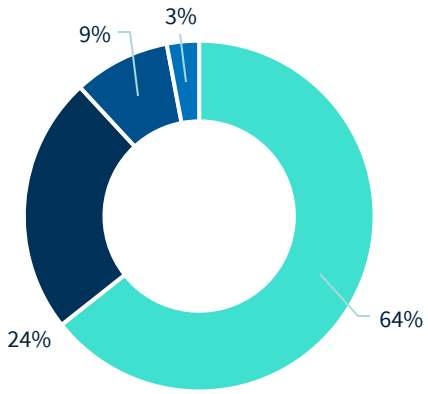
Vast majority of re-shored & FDI jobs are in higher technology sectors

Reshoring Announcements - # Companies and Jobs, 2023



Companies by Product Technology Level

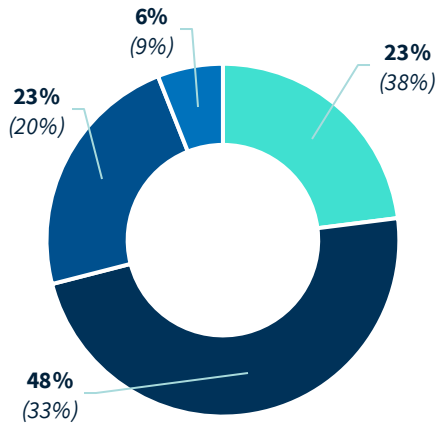
69%
Higher Tech



Jobs by Product Technology Level

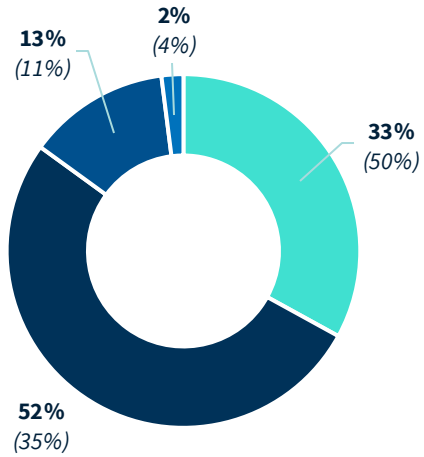
88%
Higher Tech

FDI Announcements - # Companies and Jobs, 2023



Companies by Product Technology Level

71%
Higher Tech



Jobs by Product Technology Level

85%
Higher Tech

High | Medium-High | Medium-Low | Low

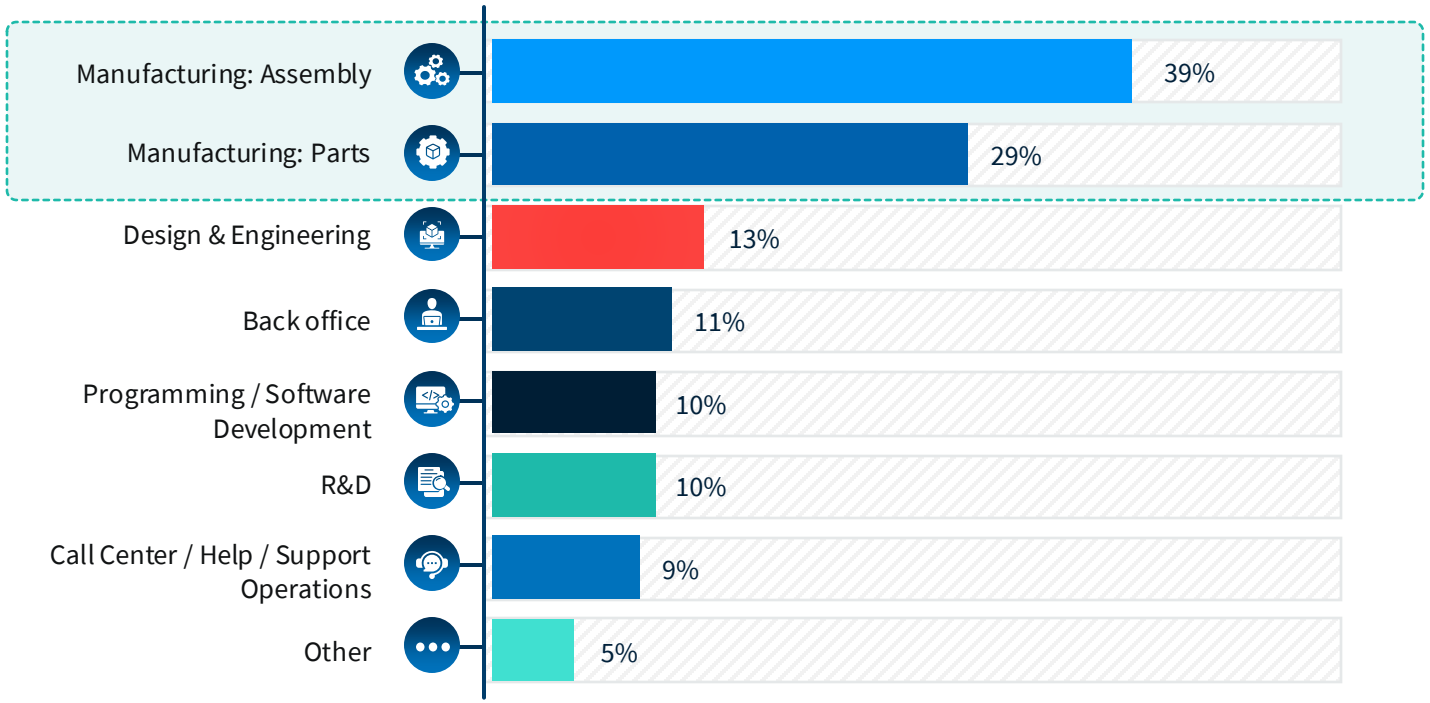
Reshoring Initiative, Ducker Carlisle analysis
Product technology level is based on the classificxaiotn from OECD STI working paper on revision of high technology sector and product classification – SEE APPENDIX

Manufacturing parts & assembly are the focus of CEOs for re-shoring

2023 Chief Executive / IEDC Survey of CEOs

Survey of CEOs of manufacturing companies nationwide, % respondents

Q: Which type of operations are you considering reshoring, if any? Select all that apply



68%

of CEOs are considering re-shoring manufacturing parts & assembly

Federal incentive programs announced in 2021 and 2022 are helping to drive reshoring

To secure and strengthen domestic supply chains for critical minerals and products, support domestic manufacturing, enhancing competitiveness of US manufacturing and supply chain resilience

CHIPS and Science Act, 2021

- To promote domestic semiconductor manufacturing capacity and capabilities plus jump-start innovation, R&D and commercialization of cutting-edge technologies, like, AI, quantum computing.
- USD 52.7 billion in funding, over five years, for developing domestic semiconductor manufacturing (USD 39 Billion), R&D and workforce development (USD 11 billion).
- Advanced manufacturing and investment tax credit of 25% for investments in semiconductor manufacturing and processing equipment, an estimated outlay of USD 24 to 25 billion.

Infrastructure Investment and Jobs Act (IIJA), 2021

- Authorizes USD 1.2 trillion for transportation and infrastructure (termed as "public infrastructure") spending.
- Preference on usage of goods, products, materials and services made or provided for in the US through buy America and build America (BABA) act, which is a part of IIJA.
- Aims to strengthen the US industrial base broadly.

Inflation Reduction Act, 2022

- To promote the economic competitiveness, innovation and industrial productivity of the country.
- USD 394 billion funding, in the form of tax credits, for energy and climate sector to promote private investments in clean energy, transportation and manufacturing.
- Focus is to encourage investments in domestic manufacturing capacity, procuring critical supplies domestically or from free trade partners and jump-start innovation and commercialization of cutting-edge technologies in clean energy, like, carbon capture and storage, clean hydrogen.

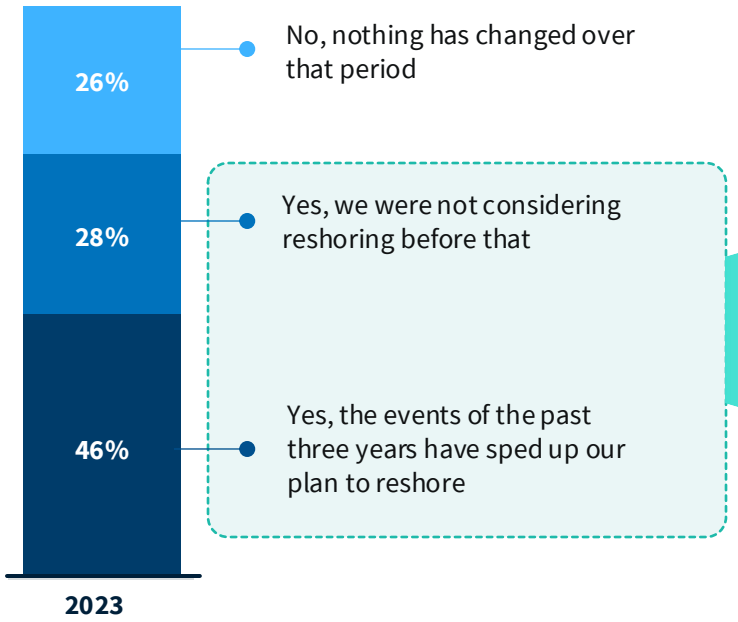
These federal programs and incentives have a clear impact on reshoring manufacturing

White House, McKinsey, Ducker Carlisle analysis

CEOs report increased focus on reshoring, driven by geopolitical risks, supply-chain issues, and stronger oversight

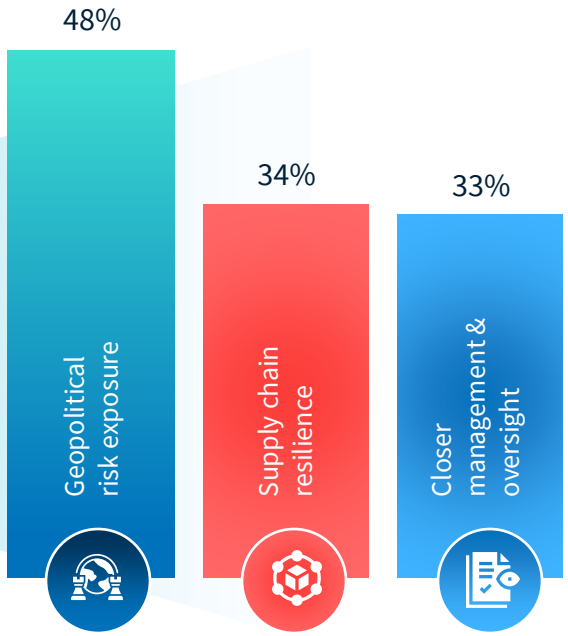
2023 Chief Executive / IEDC Survey of CEOs

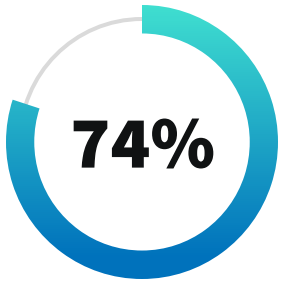
Has your decision to reshore changed over the past three years?
% of respondents



Why re-shore now?

What do you see as the main drivers for reshoring operations? (Select only the top 3)
% of respondents



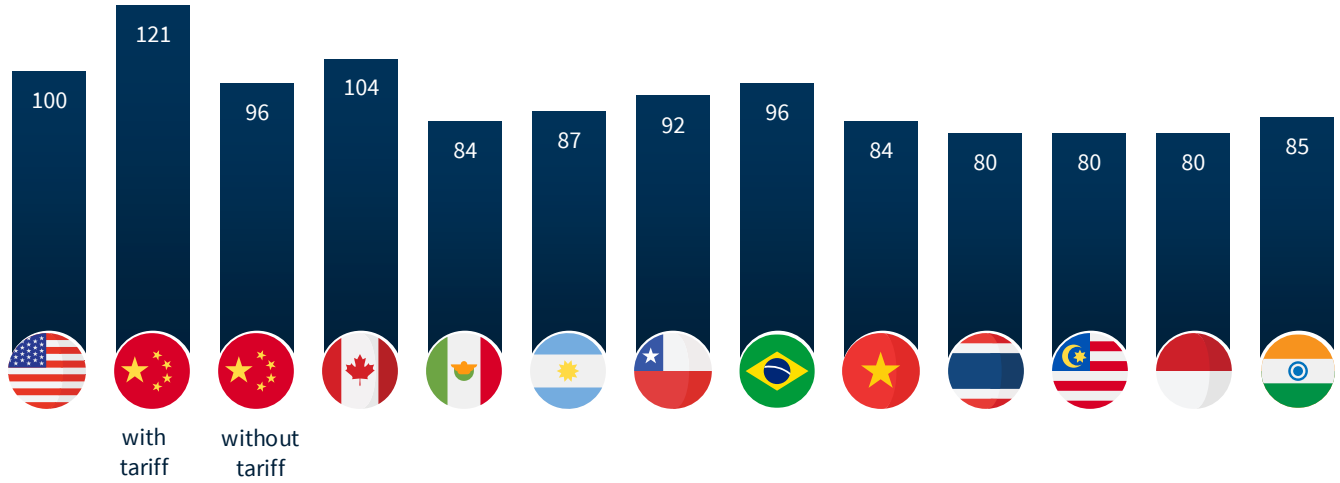


of CEOs report that focus on reshoring has increased in past 3 years given disruptive events

2023 Chief Executive / IEDC survey of CEOs, Ducker Carlisle Analysis

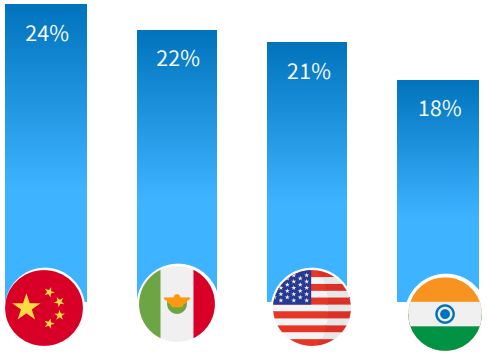
Decreasing cost differences between the US and other countries have lowered barriers to reshoring

2022 Landed Cost (US = 100)



Fully-loaded, “landed” costs of operating in China **now significantly exceed that of the US with tariffs**, and are only slightly cheaper without tariffs

Productivity Adjusted Labor Cost Increase 2018 through 2022



Labor costs have been **increasing in China at a faster rate** than in the US since 2018

BCG, Satista, Ducker Carlisle Analysis
Lnaded Cost = manufcaturing cost + logisitics cost + tariff as and if applicable
* Others – South Korea, France, Hong Kong, Brazil, etc.

Executives expect the Trump Administration to implement policies which will further accelerate the reshoring trend in the US

It's pretty clear that there will be a very strong push to reward companies to keep things in the US by whatever means to make it more challenging to import items. There will be an increase in reshoring starting in the next 6-12 months. You could say the tariff numbers floated are a negotiating trick, whether the number is 10%, 25%, or whatever, imported goods will get more expensive. There's no way around that."

– VP Manufacturing, Ops, Supply Chain

This whole year (2024) with the possibility of Trump being reelected, we started looking for places to produce away from China. We may discontinue some products with high tariffs. We've looked to move some product lines to Vietnam and India. Our expectation is that China sooner or later will be out of our supply chain."

– EVP, Procurement & Supply Chain

Because of everything we've been hearing this year, we're starting to actually reshore production, not just talk about it, due to expected tariffs from Trump. We see other benefits, including faster lead time and faster customer service. It is more expensive, but we compare that to the tariff we'll have to pay later."

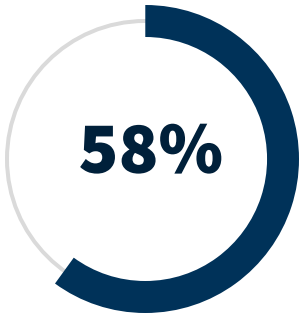
– SVP, Operations & Supply Chain

Skilled workforce availability is the main barrier to reshoring

2023 Chief Executive / IEDC Survey of CEOs

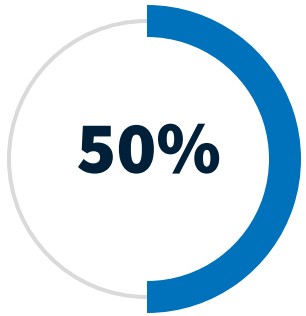
Survey of CEOs of manufacturing companies nationwide, % respondents

What do you perceive as obstacles or reservations to reshoring operations?
(Select only the top 3)



Labor Availability

What is most important to you when looking for a reshoring location for your operations in the U.S.?
(Select only the top 3)

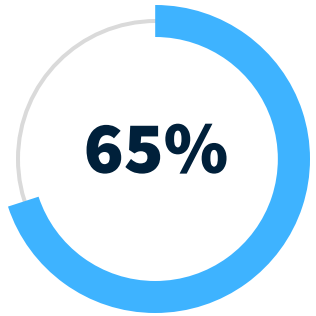


Skill and availability of workforce

National Association of Manufacturers' Outlook Survey, Q1 2024

% respondents

Primary Current Business Challenges
(Multiple responses)



Attracting and retaining a quality workforce

of CEOs across the US note shortage of skilled labor as an obstacle to overcome in reshoring

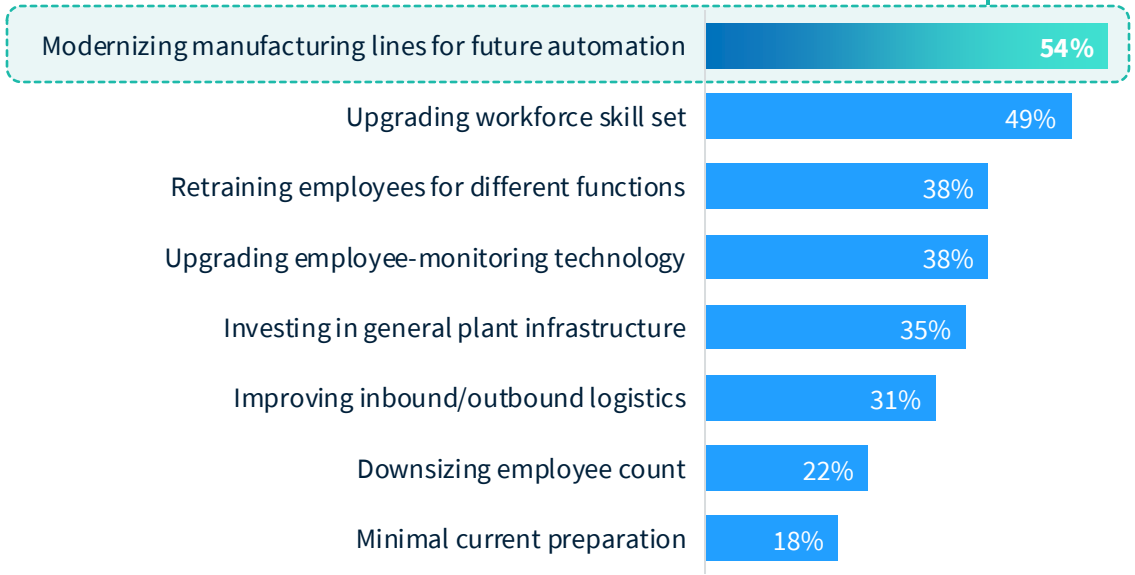
The Chief Executive Group, National Association of Manufacturers, Ducker Carlisle analysis

Companies are investing more in automation to mitigate the lack of skilled labor required for higher-tech manufacturing

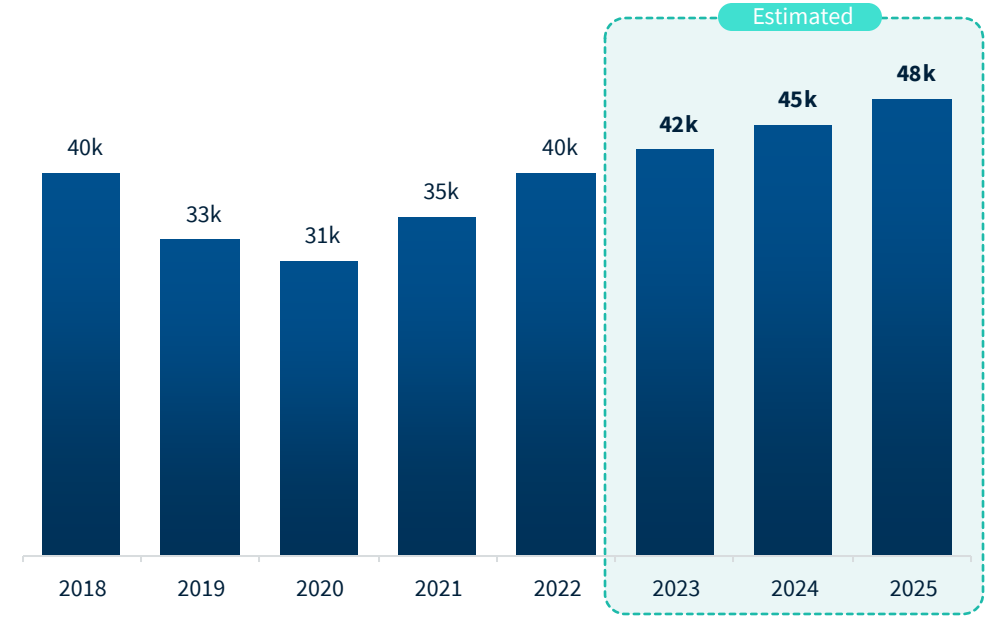
Strategic Priorities of US Manufacturing Executives

Manufacturing Priorities Survey, % of Respondents

96% of survey respondents anticipate increased investment in robotics to supplant workforce



Annual Installation of Industrial Robots (Thousands)



Investment in automation will be critical to realizing the benefits of reshoring; **manufacturers expect to use automation to supplement labor shortage**

International Federation of Robotics, Ducker Carlisle Analysis
L.E.K. Survey - Manufacturing Priorities Survey of US manufacturing senior managers and executives on their perspectives and near-term outlook. It involved around 200 decision makers cross industrial, automotive, consumer products, electronics, electrical equipment, aerospace and defense, and construction equipment manufacturing sectors.

Synergies across both workforce training and automation system design will be critical to realizing productivity and therefore reshoring benefits

Workforce Training

Investments in training both from education system and manufacturers

Labor does not have the right skills. You need to know how to operate the computer to run the machine tools. Our labor force is not skilled, not engineering bent, and cannot handle the work that is available. **If not analytically natured, you won't make it in manufacturing going forward.**

Sr. Executive, Various Supply Chain & Logistics Roles

Automation

Increased investment and advances in technology & flexible capabilities

China's manufacturing labor productivity is **growing at 6% per year**, while the US is growing less than 0.5% per year. To keep up, we'll need a huge amount of robots.

Former President, Various Manufacturing Corporations

Productivity Synergies

Significantly enhanced productivity from automation solutions designed with worker experience and skills in mind, along with smart recruiting and training for these roles

Programming a new high-end vision system for inspection equipment took less than half of a day using an iPad. Any 16yr old who knows their xBox could program this easily. I think there is a skill there, and a lot more attraction to these areas, and they pay well. There will be a whole new category of employee between the engineer, a super tech school graduate. It will be someone who wants to go out and do stuff, wants to create. We're creating positions like this, where if you have a tech school degree, want to learn, and we focus their training on certain aspects. We also have examples of people coming up from the floor, showing interest, and then training them.

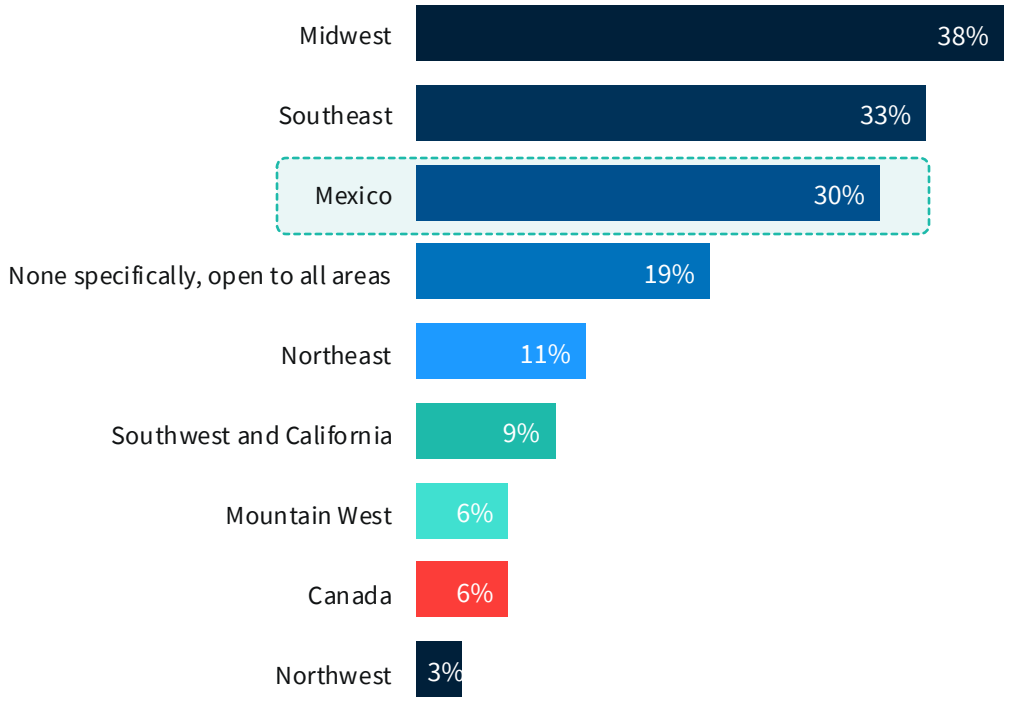
VP Manufacturing, Ops, Supply Chain

Ducker Carlisle Market Research, Ducker Carlisle Analysis

Mexico is also becoming an attractive location to "nearshore" manufacturing for US companies

Which regions of the United States or Canada/Mexico are you primarily focusing on for potential location/expansion?

Select all that apply



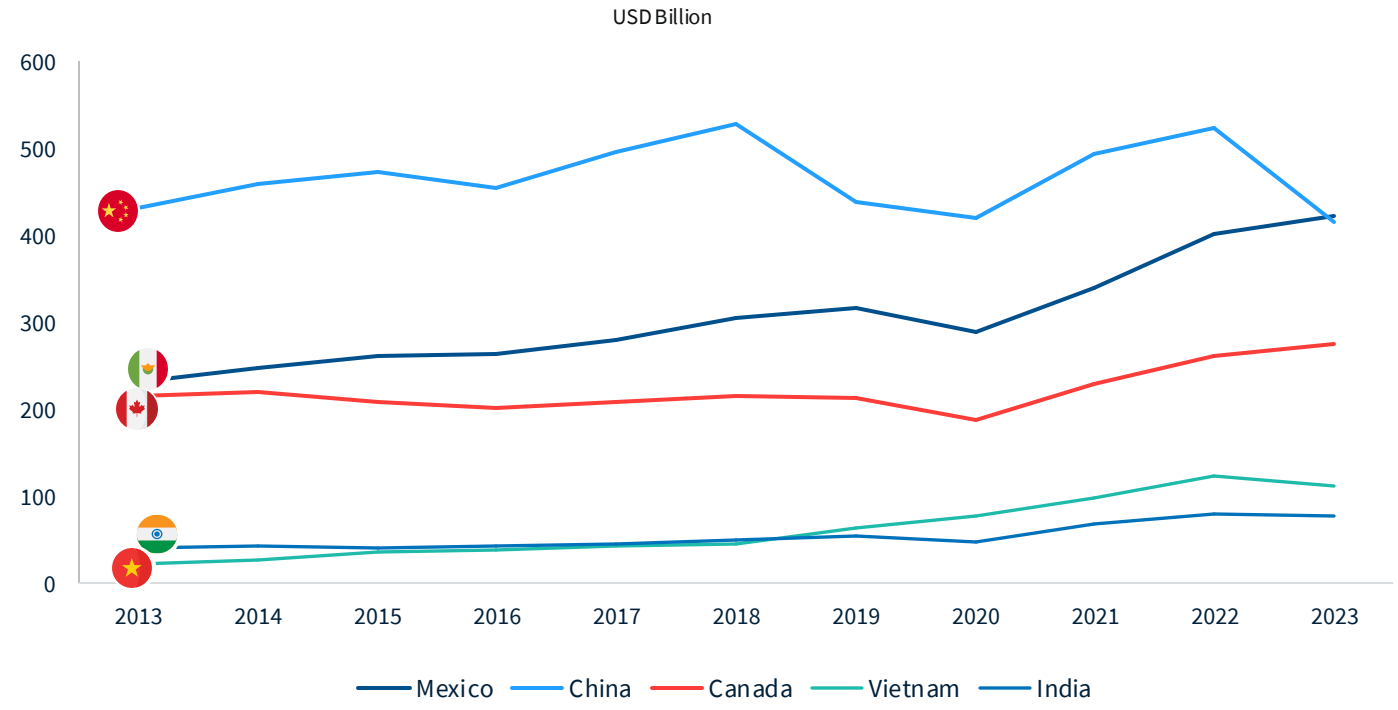
Why Mexico is an Attractive Investment Destination?

In your opinion, how would you rate the importance of the following factors in Mexico in making it a more competitive destination for international companies?

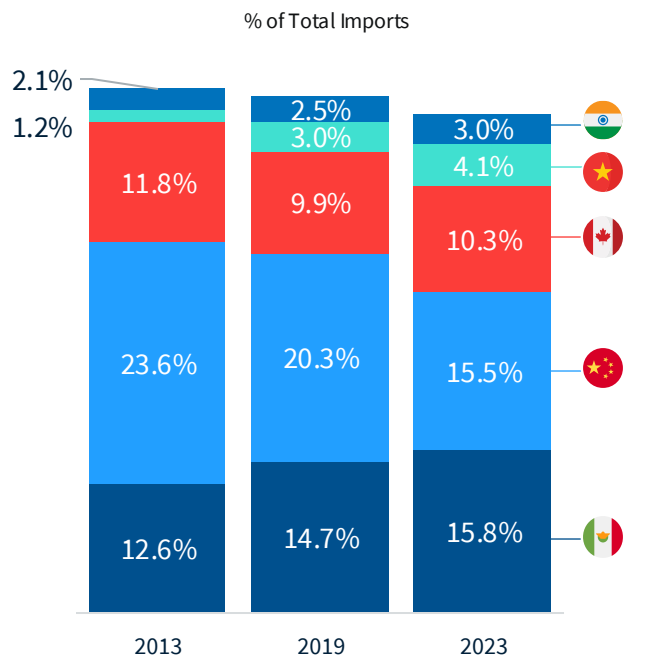
*% of companies**

In 2023, Mexico surpassed China in manufacturing imports to the US

Manufacturing (NAICS 31-33) Import of US



Share in US Manufacturing Import

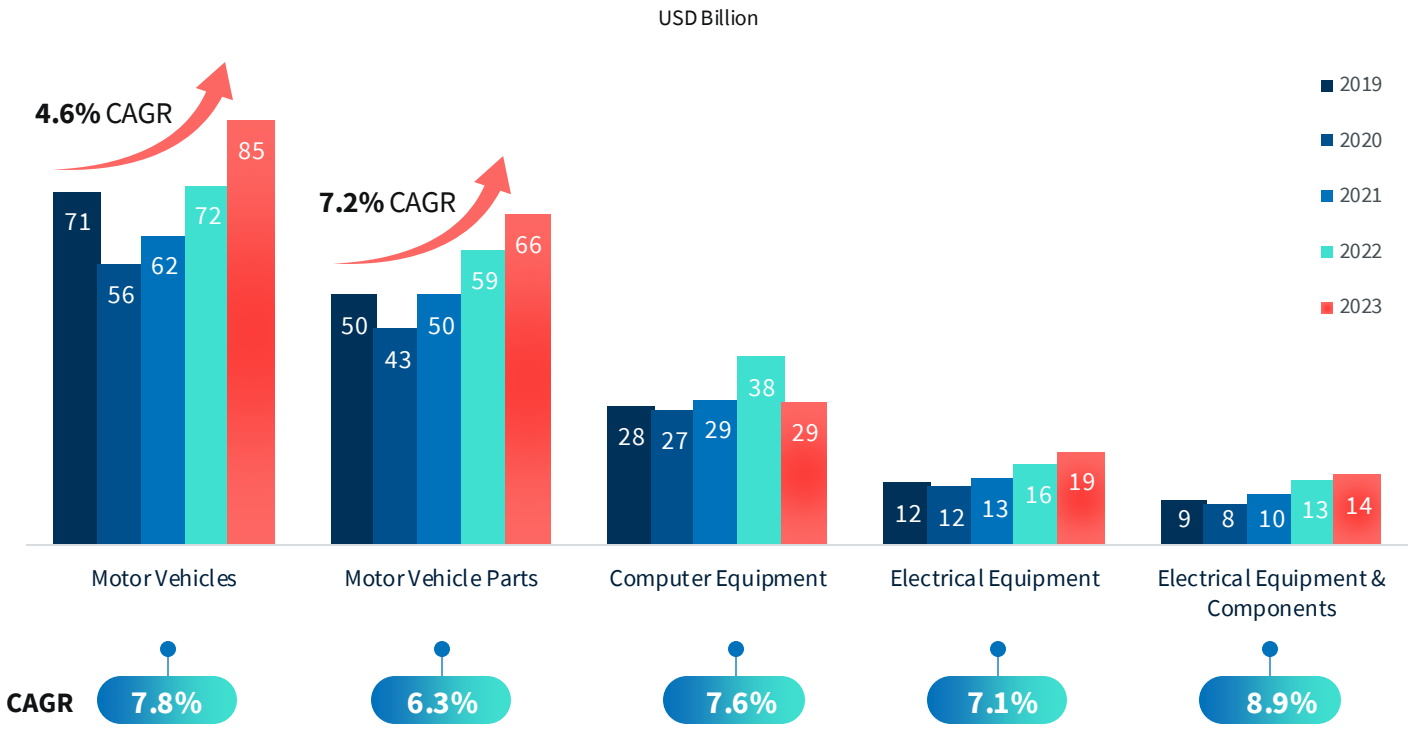


Share of manufacturing imports from China have been declining;
Mexico, Canada, Vietnam, and India have captured share of imports

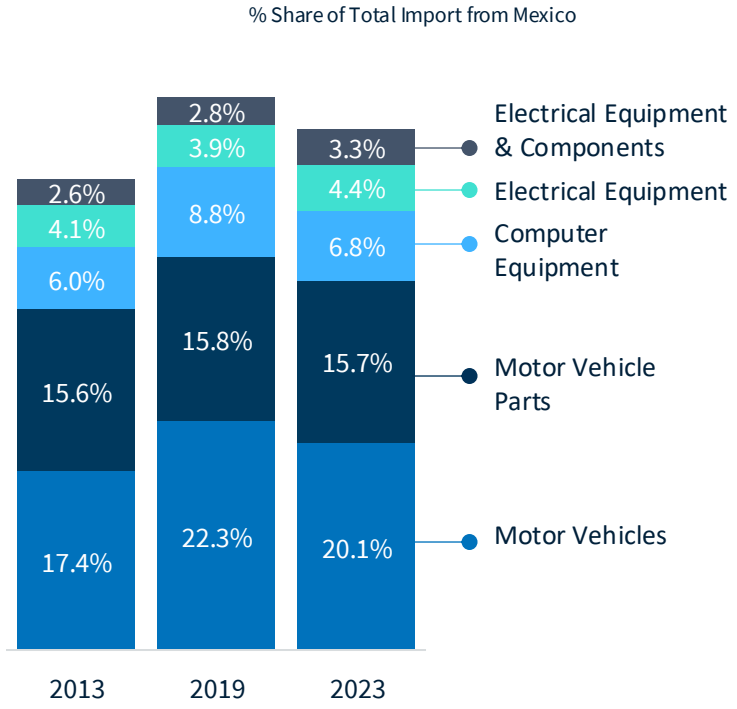
The International Trade Administration, U.S. Department of Commerce, Ducker Carlisle Analysis

Manufacturing imports from Mexico are heavily weighted towards motor vehicles & motor vehicle parts

Top Manufacturing (NAICS-4) Import From Mexico US



Share of Top Products in Manufacturing Import



In addition to motor vehicles & motor vehicle parts, computer equipment, electrical equipment, and components **make up the lion's share of imports** to the US from Mexico

The International Trade Administration, U.S. Department of Commerce, Ducker Carlisle Analysis

Keys to positioning your company to win the reshoring battle

Talent & Automation Synergies

As described earlier, consider investments in talent development and automation solutions in concert; how will each complement the other to improve productivity by a significant magnitude?

"We talked with some high school kids to learn what keeps them from working in manufacturing. They said they don't want to be on an assembly line doing the same thing every day, they want their opinions and ideas heard, they want to create. We need to consider how our automation systems complement and take advantage of this."

VP Manufacturing, Ops, Supply Chain

Focus on Quality

If you can demonstrate outstanding, consistent quality and delivery, this will outweigh the higher costs of labor in the US and ensure customer confidence that you will deliver and save them costs

"Are you confident in your quality? People know Asian factories, they're dirty and dingy. So, you bring the customer to your facility and make them confident in your processes, professionalism, and quality."

VP Manufacturing, Ops, Supply Chain

Proactive Customer Targeting

Stay on top of industry issues and risks, communicate consistently with potential customers, and be ready to pounce when the opportunity presents itself; typically, a company makes a reshoring decision because of a significant, perhaps disastrous issue overseas

"Usually if someone is reshoring, it is prompted by a bad experience causing them to go shopping. No procurement person wants to be on a plane to China to fix a problem."

VP Manufacturing, Ops, Supply Chain

Total Cost Calculator

Build capability to calculate total cost of your offering vs. offshored offering, considering all potential aspects of cost (labor, materials, parts, freight, tariffs, regulations, productivity, etc.); supplement with tool which can easily communicate this with potential customers

Our total cost calculator is based on data complied over 13 years. We are now incorporating geopolitical risk factors. We consider costs of not receiving certain components, and how much product will I sell unless I can find another source of those components, and put that in as a cost"

Former President, Various Manufacturing Corporations

Companies should evaluate multiple factors as part of their reshoring, right-shoring strategy to effectively manage competing priorities

Parameters	Key Consideration
Customer Demand	→ With advances in innovation and technology such as flexible manufacturing, 3D printing, etc. customer preferences are shifting to "mass customization" with the end users leaning towards personalized products. → Products with unpredictable demand require proximity to markets to enable alignment with market shifts
Products	→ Short product lifecycles require closer proximity between manufacturing and customers to enable faster time to market → Product complexity requires close collaboration between product development, manufacturing and supply network to enable rapid "ramp to volume"
Supply Network	→ Having a diversified mix of suppliers can help manufacturing companies spread the risk by reducing over dependence and the ability to respond better to supply disruptions → Clear understanding of links and constraints including coupling and de-coupling points with the ability to flex supply chains to respond to shocks
Operations Flexibility	→ Understanding the degree of product change to process change is critical as it can have a direct impact on production rates, quality, and lead times → Focusing on modular product and process designs can help manage and respond to supply chain disruptions effectively
Integrated Business Planning (IBP)	→ Instituting a robust IBP process creates a unified forecast that adapts to changing market conditions and customer demands, and provides a comprehensive view that enables companies to quickly and effectively to disruptions → IBP ensures that capital and operational capacities are prioritized based on strategic goals and current market needs, including proactively identifying potential risks and developing contingency plans to address them
Total Landed Cost	→ Companies need to transition from traditional piece price mindset to comprehensive evaluation of total landed cost to include the materials and component costs, labor, overhead, packaging, freight, customs & duty, taxes, insurance, and other expenses. → This has to be combined with the product lifecycle stage including time-to-market considerations to understand impact on production scheduling and inventory build.

How to Get Started with Ducker Carlisle:

DIAGNOSTIC

Current state assessment of entire supply chain through competitive benchmarking, expert interviews, and performance data analysis to develop a future-state execution roadmap

APPROXIMATE TIMING
4-6 WEEKS

Robust roadmap & execution plan for highest-impact supply-chain improvements

TCO ASSESSMENT

Evaluation of total cost (including all risks, shipping challenges, geopolitical challenges) of sourcing and manufacturing in various global geographies to inform sourcing strategy

APPROXIMATE TIMING
4-6 WEEKS

Total cost differential for sourcing your product(s) and/or components from various geographies to inform strategy

SUPPLY CHAIN OPTIMIZATION

Develop future-state network based on current performance, benchmarking insights, and relevant industry trends; conduct complex supply chain modeling and “what-if” scenario simulations

APPROXIMATE TIMING
3-6 MONTHS

Optimized supply chain strategy and execution to drive significant **cost improvements, enhanced customer satisfaction, and market share growth**

STRATEGIC POSITIONING FOR RESHORING

Market-backed through extensive primary & secondary research evaluation of keys to positioning your business to capture reshored manufacturing opportunities, along with strategy and roadmap for execution

APPROXIMATE TIMING
2-6 MONTHS

Critical capabilities and go-to-market strategy needed to capture excess share of reshored manufacturing demand and **drive step-change growth**

Contact us

For additional inquiries and further research & analysis on the global energy transition, please contact **Korin Hasegawa-John** or **Kevin Sarb**

Korin Hasegawa-John

MANAGING PRINCIPAL

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Korin is a Managing Principal at Ducker Carlisle where he leads the Heavy Truck and Heavy Equipment strategy practice and specializes in aftersales parts and service strategy and operations. Korin holds a B.A. in Economics and Classics from Tufts University. He has led, managed, and staffed critical engagements across all areas of the aftersales business at Ducker Carlisle for over 12 years. Clients value Korin's strategic perspective and collaborative, cross-functional approach to sustainably improve aftersales profitability through customer value generation.

Kevin G. Sarb

MANAGING DIRECTOR

Industrials Practice Lead

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Kevin is a Managing Director at Ducker Carlisle, leading the Industrials Practice. He has nearly 20 years of management consulting experience and has led a multitude of engagements focused on profitable revenue growth across several industrial sectors, including building products, chemicals, climate technologies, electrical products and services, manufacturing equipment, materials processing, security solutions, and water management. Clients value Kevin's capabilities devising market- and customer-backed growth strategies and building leading commercial capabilities to maximize profitable growth and market share gains. Kevin holds a B.S. in Medical Science and History from the University of Notre Dame, an M.A. in Applied Economics from the University of Michigan, and an MBA from the University of Chicago Booth School of Business. Kevin is an active member of the Association for Corporate Growth (ACG).

A Valued Partner

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Appendix

Onshoring / reshoring / nearshoring in manufacturing

Relocating manufacturing activities of a company from an offshore location back to the home country of the company where products are sold is reshoring. **Whereas Nearshoring is relocating to a nearby country**.

Reshoring Options

	In-house	Outsourced
In-house	**In-house Reshoring** Relocating manufacturing activities from wholly owned offshore facilities back to wholly owned facilities in the home country	**Reshoring for Outsourcing** Relocating manufacturing activities from wholly owned offshore facilities back to home-based suppliers
Outsourced	**Reshoring for Insourcing** Relocating manufacturing activities from offshore suppliers back to wholly owned facilities in the home country	**Outsourced Reshoring** Relocating manufacturing activities from offshore suppliers back to home-based suppliers

Reshoring Institute / Makers Europe

Product classification by technology level

This is OECD's International Standard Industrial Classification (ISIC) of industries based on technology.

This classification of manufacturing industries into categories is based on R&D intensities.

R&D Intensity is defined as direct R&D expenditures as a percentage of production (gross output), calculated after converting countries' R&D expenditures and production using GDP PPPs.

Reshoring Initiative's tracking of reshoring and FDI (cases, jobs) data by product technology level is based on this classification.

Industry	OECD ISIC Classification Rev. 3, 2011
• Aircraft & spacecraft and related machinery • Pharmaceuticals • Office, accounting and computing machinery • Radio, TV and communications equipment • Medical, precision and optical instruments	High technology industries
• Electrical machinery and apparatus, n.e.c. • Motor vehicles, trailers and semi-trailers • Chemicals excluding pharmaceuticals • Railroad equipment and transport equipment, n.e.c. • Machinery and equipment, n.e.c.	Medium-high technology industries
• Building and repairing of ships and boats • Rubber and plastics products • Coke, refined petroleum products and nuclear fuel • Other non-metallic mineral products • Basic metals and fabricated metal products	Medium-low-technology industries
• Manufacturing, n.e.c.; Recycling • Wood, pulp, paper, paper products, printing and publishing • Food products, beverages and tobacco • Textiles, textile products, leather and footwear	Low-technology industries