



NAC Executive Insights

Supply Chain Management and the Impacts of Tariffs and Trade Sanctions

Key Points

- Understanding tariffs vs. trade sanctions and how they affect the engineering and construction sectors, highlighting unique challenges and financial implications.
- Impacts on the engineering and construction industry.
- Broader supply chain effects considering the wider implications of tariffs and trade sanctions on global supply chains, including potential disruptions and changes in material availability.
- Historical context into how previous tariffs have led to trade wars, which can help contextualize current events and their potential outcomes.
- Mitigation and adaptation strategies for mitigating the impacts of tariffs and trade sanctions, which include diversifying suppliers and employing flexible contracts.
- Role of technology including the use of supply chain management software and AI to enhance resilience and assess tariff impacts, emphasizing the importance of technology in modern supply chain management.

Introduction

The global supply chain disruptions caused by COVID-19 served as a wakeup call to industry broadly, and the engineering and construction industry more specifically. The evolving global situation makes the prospect of tariffs and potentially expanded trade sanctions regimes more likely. This Executive Insight takes a deeper look at both tariffs and trade sanctions and the strategies and tools available to manage potential impacts.

Specifically, we will look at:

1. Differences between trade sanctions and tariffs
2. Impacts on the US engineering and construction industry
3. Broader supply chain impacts
4. Historical context of tariffs leading to trade wars
5. Impacts on domestic production and the economy
6. Impacts of the US-China Trade War on the engineering and construction industry, including retaliatory measures by China
7. Potential impacts of tariffs on the engineering and construction industry
8. Mitigation and adaptation strategies for both tariffs and trade sanctions
9. Mitigation strategies for supply chain participants
10. Supply chain management software to aid the engineering and construction industry in assessing tariff impacts

11. Enhancing supply chains with AI

1. Differences between trade sanctions and tariffs

Any discussion of the management of potential tariff impacts on the engineering and construction supply chain must begin by understanding the differences between tariffs and sanctions. This understanding is important since sanctions, in whole or in part, may result from the application of tariffs.

Tariffs are taxes imposed on imported goods, making them more expensive compared to domestic products. They are primarily used to protect domestic industries from foreign competition and generate government revenue. They are generally applied to specific categories of goods rather than entire sectors or countries of origin.

Trade sanctions, by contrast, are legal restrictions imposed by one country (or a group of countries) on another to achieve foreign policy objectives. They can include embargoes, export/import bans, and other non-tariff barriers. Typically, they are used to punish or pressure a country to change its policies or behavior. The scope can be broad (affecting entire sectors) or targeted (specific individuals, companies, or products). We have seen trade sanctions employed with various scopes with respect to Russia, North Korea and Iran.

2. Impacts on the US engineering and construction industry

Tariffs and trade sanctions can have a range of significant impacts on the engineering and construction industry.

Tariffs bring both cost and supply chain impacts to the industry. Cost impacts include higher material costs such as directly increasing the cost of imported materials like steel and aluminum, leading to higher project costs. Projects may face budget overruns as increased material costs are often difficult to absorb.

Supply chain impacts include pricing volatility and delays. Tariffs can cause significant fluctuations in material prices, complicating project planning and budgeting and also can lead to longer processing times at ports and customs, causing delays in material delivery.

Trade sanctions also bring cost, supply chain and financial impacts to the industry. Cost impacts arise from material shortages (sanctions can lead to shortages of critical materials, driving up costs due to scarcity) and increased costs as alternative sources may be more expensive, with higher transportation costs, increasing overall project costs.

Supply chain impacts from trade sanctions include disruptions and compliance costs. Sanctions can disrupt established supply chains, causing delays, disrupted shipping routes and other logistical challenges (and costs) and navigating the legal complexities of sanctions can be resource intensive. Legal and compliance risks include those arising from contractual disputes (sanctions can lead to disputes over contract terms, especially regarding force majeure and frustration clauses) and regulatory compliance. Companies must navigate complex legal frameworks to ensure compliance with sanctions.

Financial impacts from trade sanctions arise as the result of constraints such as those associated with funding issues (sanctions can limit access to international financing and investment, making it harder to fund large projects) and currency fluctuations (sanctions can cause currency instability, affecting the cost of imported goods and overall project budgets).

3. Broader supply chain impacts

Tariffs and trade sanctions have broader supply chain impacts than those just described.

For tariffs these include:

- Supply Chain Adjustments - Companies may need to adjust their supply chains to source materials from non-tariffed regions.
- Inventory Management - Maintaining higher inventory levels to buffer against supply chain disruptions can increase storage costs.

Trade Sanctions impacts include:

- Global Market Access - Sanctions can limit access to global markets, affecting the availability of materials and components (such as computer chips that are embedded into much of what we design).
- Alternative Sourcing - Companies may need to find new suppliers, which can be time-consuming and costly. Note, new suppliers may require additional need for more intensive quality control procedures.

4. Historical context of tariffs leading to trade wars

While much of the conversation today is focused on addressing and managing potential, yet unspecified, tariffs, we must recognize the potential to lead to a broader trade sanction regime. Two points of historical context are worth recalling:

- Smoot-Hawley Tariff Act (1930) - Historically, the Smoot-Hawley Tariff Act in the 1930s led to a significant increase in tariffs on imported goods in the US. This act contributed to a global trade war, with other countries imposing retaliatory tariffs, which exacerbated the Great Depression.
- US-China Trade War - One of the most notable recent examples is the US-China trade war that began in 2018. The US imposed tariffs on Chinese goods, and China retaliated with tariffs on US goods. This escalation led to broader trade tensions and affected global trade patterns

5. Impacts on domestic production and the economy

Impacts on domestic production and the economy from each of these historical examples can be summarized as follows:

Smoot-Hawley Tariff Act

- Domestic Production: Initially intended to protect US farmers and manufacturers, the act led to a sharp decline in international trade. The reduction in trade volumes hurt both domestic and global economies.

- **Economic Impact:** The tariffs contributed to a severe contraction in global trade, worsening the economic downturn of the Great Depression. The act is widely regarded as a policy failure that deepened the economic crisis.

US-China Trade War

- **Domestic Production:** The tariffs aimed to boost domestic production by making imported goods more expensive. While there was some increase in domestic manufacturing, the overall impact was mixed. Some industries benefited, but others faced higher costs for imported components.
- **Economic Impact:** The trade war led to increased costs for consumers and businesses, disruptions in supply chains, and uncertainty in the market. Studies suggest that the tariffs resulted in a net economic loss for the US, with limited success in achieving the intended policy goals.

6. Impacts of US-China Trade War on the engineering and construction industry including retaliatory measures by China

Looking more closely at the impacts of the US-China trade war on the engineering and construction industry we see:

- **Increased Material Costs:**
 - **Tariffs on Key Materials:** The US imposed tariffs on Chinese steel and aluminum, which are critical materials for construction. This led to increased costs for these materials, impacting project budgets and timelines.
 - **Higher Project Costs:** The increased cost of materials resulted in higher overall project costs, making it more expensive to complete construction projects.
- **Supply Chain Disruptions:**
 - **Delays and Uncertainty:** The tariffs caused delays in the supply chain as companies had to navigate new trade barriers and find alternative suppliers.
 - **Logistical Challenges:** The need to source materials from non-tariffed regions led to logistical challenges and increased lead times.
- **Reduced Investment:**
 - **Investment Hesitation:** The uncertainty caused by the trade war led to hesitation in investment, particularly in large-scale infrastructure projects.
 - **Project Delays:** Some projects were delayed or canceled due to the increased costs and uncertainty surrounding material availability.
- **Unrecoverable Project Costs**
 - **Force Majeure provisions** vary widely across the industry, and we saw inconsistent use during COVID-19.

China took a range of retaliatory measures in response to US actions. These included:

- **Tariffs on US Goods:**
 - **Targeted Sectors:** China imposed retaliatory tariffs on a range of US goods, including construction-related products and machinery.
 - **Impact on Exports:** These tariffs made it more expensive for US companies to export construction materials and equipment to China, reducing their competitiveness in the Chinese market.

- **Limiting Opportunities for US Firms:**
 - **Market Access Restrictions:** China implemented measures that limited market access for US engineering and construction firms. This included stricter regulations and increased scrutiny of US companies operating in China.
 - **Reduced Contracts:** US firms faced difficulties in securing contracts for construction projects in China, as the trade tensions made Chinese clients wary of engaging with US companies.

Broader impacts from the US-China trade war include:

- **Global Trade Shifts:**
 - **Reallocation of Trade:** The trade war led to a reallocation of global trade, with other countries stepping in to fill the gaps left by reduced US-China trade.
 - **Increased Costs for Consumers:** The increased costs of materials and goods due to tariffs were often passed on to consumers, leading to higher prices for construction projects.
- **Long-term Economic Effects:**
 - **Economic Slowdown:** The trade war contributed to a slowdown in economic growth in both the US and China, affecting the overall demand for construction and engineering services.
 - **Policy Adjustments:** Both countries had to adjust their economic policies to mitigate the impact of the trade war, which included seeking new trade partners and diversifying supply chains.

Overall, the US-China trade war had significant impacts on the engineering and construction industry, leading to increased costs, supply chain disruptions, and reduced investment. The retaliatory measures imposed by China further complicated the situation for US firms, limiting their opportunities in the Chinese market.

7. Potential impacts of tariffs on the engineering and construction industry

The prospect of a future tariff regime affecting the engineering and construction industry requires us to be cognizant of the potential impacts we may face and to prepare ourselves to address them head on. While many of these impacts have been touched upon in a historical perspective, they are worth summarizing here as a risk checklist going forward. These potential impacts include:

- **Increased Material Costs:**
 - **Direct Cost Increases:** Tariffs act as an additional tax on imported materials, such as steel and aluminum, leading to higher costs for these essential inputs.
 - **Budget Overruns:** Projects may face budget overruns as the increased costs of materials are often difficult to absorb or pass on to clients.
- **Volatility in Pricing:**
 - **Unpredictable Costs:** Tariffs can cause significant fluctuations in material prices, making it challenging to predict costs accurately during project planning.
 - **Contractual Challenges:** Fixed-price contracts may become less viable, leading to potential disputes and renegotiations.
- **Supply Chain Disruptions:**
 - **Delays in Material Delivery:** Tariffs can lead to longer processing times at ports and customs, causing delays in the receipt of materials.

- Limited Material Availability: Some materials may become scarce or unavailable, forcing companies to seek alternative suppliers.
- Increased Risk of Contractor (and subcontractor) default:
 - Financial Strain: The increased costs and delays can strain contractors' (and subcontractors) finances, increasing the risk of default.
 - Project Delays: Delays in material delivery can lead to project delays, impacting overall project timelines and costs.
- Reduced Investment:
 - Lower Margins: Higher costs and tighter margins may lead to reduced investment in other areas of the business, such as technology and workforce development.

8. Mitigation and adaptation strategies for both tariffs and trade sanctions

The engineering and construction industry must consider and, as appropriate, put in place mitigation and adaptation strategies for both potential tariff and trade sanction regimes. Mitigation strategies for tariffs include hedging strategies, where financial instruments are used to hedge against price volatility, and flexible contracts that include escalation clauses to adjust for cost increases. Companies can diversify their supply chains to reduce dependency on tariff-affected imports and increase the use of locally sourced materials that can help mitigate the impact of tariffs.

Mitigation strategies for trade sanctions include diversifying suppliers by establishing relationships with suppliers in non-sanctioned countries and strengthening legal compliance efforts by engaging legal experts to navigate the complexities of sanctions.

Overall, while tariffs and trade sanctions can be tools for achieving specific policy goals, their broader economic impacts often include increased costs, supply chain disruptions, and potential retaliatory measures from other countries. The success of such measures in boosting domestic production and minimizing adverse impacts has historically been limited and context dependent.

9. Mitigation strategies for supply chain participants

Mitigating the effects of tariffs or trade sanctions requires actions up and down the supply chain with actions by intermediate processors potentially even more important than a contractor's final stage actions. The importance of visibility into the entirety of the supply chain cannot be overstated. At each stage in the supply chain the following mitigating strategies should be evaluated and employed as appropriate. Many of these strategies have been described as available to contractors but are included in this discussion of strategies available to the broader set of supply chain participants for completeness.

Diversifying Suppliers:

- Alternative Sources: Identify and establish relationships with suppliers in non-sanctioned countries to ensure a steady supply of materials.
- Local Sourcing: Increase the use of locally sourced materials to reduce dependency on international suppliers.
- Financial Planning:

- Hedging Strategies: Use financial instruments to hedge against currency fluctuations and commodity price increases.
- Escalation Clauses: Include escalation clauses in contracts to adjust for fluctuations in material costs due to tariffs.
- Flexible Financing: Explore alternative financing options, such as local banks or private investors, to mitigate the impact of restricted international funding.
- Inventory Management:
 - Stockpiling: Maintain higher inventory levels of critical materials to buffer against supply chain disruptions.
 - Just-in-Time Adjustments: Adjust just-in-time inventory practices to account for potential delays and ensure timely project completion.
- Contract Management:
 - Flexible Contracts: Negotiate flexible contracts that allow for adjustments in case of significant cost increases or delays.
 - Review and Revise Contracts: Ensure contracts include clear terms for handling tariffs and sanctions-related disruptions, such as force majeure and material adverse change clauses.
 - Legal Counsel: Engage legal experts to navigate the complexities of sanctions and ensure compliance.
- Risk Management:
 - Scenario Planning: Develop contingency plans for various sanction scenarios to minimize disruptions.
 - Review risk models to appropriately account for uncertainty and correlation resulting from common usage of tariffed materials.
 - Insurance: Obtain insurance coverage for political and trade risks to protect against potential losses.

By implementing these strategies, supply chain participants in the engineering and construction industry can better manage and mitigate the impacts of tariffs, ensuring smoother project execution and financial stability.

10. Supply chain management software to aid the engineering and construction industry in assessing tariff impacts

There are several supply chain management software products designed specifically for the engineering and construction industry that can help assess the potential impacts of tariffs and outline mitigation strategies. A few examples, to illustrate the availability of this software, are described below; others exist.

- Access Construction Supply Chain Management Software
 - Features: This software offers comprehensive tools for managing procurement, logistics, and supplier relationships. It includes demand forecasting, compliance management, and robust reporting/analytics to assess the impact of tariffs.
 - Mitigation Strategies: It helps in identifying alternative suppliers, managing inventory levels, and optimizing shipping routes to mitigate the effects of tariffs.
- COINS (Construction Industry Solutions)

- Features: COINS provides real-time data and automated workflows to ensure visibility across the supply chain. It includes modules for project management, financial management, and procurement.
- Mitigation Strategies: The software supports scenario planning and risk management, helping companies develop contingency plans and adjust procurement strategies in response to tariffs.
- **Magaya Supply Chain**
 - Features: Known for its automation capabilities, Magaya Supply Chain offers tools for managing inventory, orders, and transportation. It provides real-time tracking and cost management features.
 - Mitigation Strategies: It includes features for hedging against price volatility and managing supplier performance, which are crucial for mitigating tariff impacts.
- **Precoro**
 - Features: Precoro focuses on procurement and approval workflows, offering integrations with various ERP and e-commerce systems. It provides detailed reporting and analytics to track procurement trends and supplier performance.
 - Mitigation Strategies: The software helps in negotiating better terms with suppliers and managing purchase orders efficiently to reduce the impact of tariffs.
- **Shippabo**
 - Features: Shippabo is an all-in-one supply chain management software that offers cost management, SKU-level visibility, and trade services. It is designed to streamline supply chain operations and ensure compliance.
 - Mitigation Strategies: It supports flexible contract management and scenario planning to help companies navigate the complexities of tariffs.

These software solutions provide a high degree of fidelity in assessing the potential impacts of tariffs and offer actionable insights to manage and mitigate these impacts effectively. By leveraging these tools, supply chain participants in the engineering and construction industry can better navigate the challenges posed by tariffs and maintain project timelines and budgets.

11. Enhancing Supply Chains with AI (Artificial Intelligence)

AI can boost agility in supply chains. It can predict disruptions, such as those caused by tariffs or trade sanctions, by analyzing economic data and news patterns, and it can recommend alternative suppliers and routes to bypass affected areas. AI-driven simulations can also help prepare for various sanction scenarios and adjust strategies accordingly.

AI enhances supply chain management in several crucial ways:

- **Demand Forecasting:** AI can predict changes in demand by analyzing historical data, market trends, and company and consumer behavior. This helps companies adjust their production and inventory levels ahead of potential trade sanctions.
- **Risk Management:** AI can identify and assess risks related to trade sanctions by continuously monitoring global news, economic indicators, and political events. This allows companies to proactively identify vulnerabilities in their supply chain and develop contingency plans.
- **Supplier Diversification:** AI algorithms can analyze supplier performance, financial stability, and geopolitical factors to recommend alternative sources. This mitigates reliance on any single supplier or region that might be affected by sanctions.

- **Route Optimization:** AI-powered tools can optimize shipping routes and logistics in response to trade barriers, ensuring faster and more cost-effective delivery despite sanctions.
- **Inventory Management:** Predictive analytics help businesses maintain optimal inventory levels by anticipating supply and demand fluctuations. This minimizes the impact of sudden changes due to sanctions.
- **Compliance Monitoring:** AI can automate the tracking of regulatory changes and ensure compliance with evolving trade policies, reducing the risk of legal repercussions.

AI's ability to analyze vast amounts of data and generate actionable insights makes it invaluable for navigating the complexities of supply chain management, especially in the face of tariffs or trade sanctions.

Conclusion

This Executive Insight provides critical insights that construction companies must consider as they navigate the complexities of an evolving global trade environment. Here are the key insights that readers should take away and how they can be effectively employed by construction firms facing the prospect of tariffs:

- **Differentiation Between Tariffs and Trade Sanctions:** Understanding the distinctions between tariffs, which are taxes on imported goods, and trade sanctions, which are legal restrictions aimed at achieving foreign policy objectives, is essential. This knowledge allows companies to anticipate the specific challenges each may pose to their supply chains and financial planning.
- **Impact Assessment:** Construction companies should recognize the significant cost implications of tariffs, including increased material prices and potential project budget overruns. Additionally, the risk of supply chain disruptions, such as delays in material delivery and limited availability of critical resources, must be assessed to inform project timelines and financial forecasts.
- **Mitigation Strategies:** Several effective strategies for mitigating the impacts of tariffs are outlined. Companies should prioritize diversifying their supplier base by establishing relationships with suppliers in non-sanctioned countries and increasing local sourcing to reduce dependency on international suppliers. Implementing flexible contracts with escalation clauses can also help manage cost fluctuations due to tariffs.
- **Financial Planning and Risk Management:** Construction firms should adopt robust financial planning practices, including hedging strategies to protect against currency fluctuations and commodity price increases. Additionally, scenario planning and risk assessment models should be developed to prepare for various tariff-related scenarios, ensuring that companies can respond swiftly to changes in the market.
- **Legal Compliance and Contract Management:** Engaging legal experts to navigate the complexities of trade sanctions and ensure compliance is crucial. Contracts should be reviewed and revised to include clear terms for handling disruptions caused by tariffs, such as force majeure clauses, to minimize potential disputes and financial losses.
- **Leveraging Technology:** Finally, construction companies should consider investing in supply chain management software and AI tools to enhance visibility and assess the potential impacts of tariffs. These technologies can provide valuable insights into supply chain dynamics, enabling firms to make informed decisions and adapt their strategies proactively.

By employing these key strategies and insights, construction companies can better position themselves to manage the challenges posed by tariffs and trade sanctions. Proactive planning, diversification, and the use of technology will not only help mitigate risks but also enhance overall supply chain resilience, ensuring smoother project execution and financial stability in an uncertain global landscape.

For Further Reading – Executive Insights

- Artificial Intelligence-Enabled Supply Chain

About the Author

Bob Prieto was elected to the National Academy of Construction in 2011. He is a senior executive who is effective in shaping and executing business strategy and a recognized leader within the infrastructure, engineering, and construction industries.

Although the author and NAC have made every effort to ensure accuracy and completeness of the advice or information presented within, NAC and the author assume no responsibility for any errors, inaccuracies, omissions or inconsistencies it may contain, or for any results obtained from the use of this information. The information is provided on an “as is” basis with no guarantees of completeness, accuracy, usefulness or timeliness, and without any warranties of any kind whatsoever, express or implied. Reliance on any information provided by NAC or the author is solely at your own risk.