Article

Trade, tariffs, and supply chain shocks: Risk engineers as strategic lookouts for the energy and power sector

The recent imposition of tariffs and reciprocal tariffs by the US and other trading nations, even with exemptions for certain commodities, has created uncertainty across the energy and power sectors. Key inputs such as steel, aluminum, and machinery are facing price surges in some economies and supply reductions in others, leading to a substantial shift in the cost structure of capital-intensive projects. Additionally, trade diversion is causing supply gluts in some markets, leading to price decreases and further complicating the landscape.

While the direct effects of tariffs can be modeled, anticipating indirect effects — such as changes in construction costs, equipment pricing, profit margins,

investment behaviors, and market reactions — remains complex. As macroeconomic risks evolve into physical risks, energy and power companies can benefit from risk engineering insights and strategies to effectively manage their exposures, assess their insurance coverage limits, and understand potential premium impacts.

How tariffs and trade uncertainty are changing the risk landscape for the energy and power sector

Today's macroeconomic landscape presents several complex challenges for the energy and power sector and the risk engineers supporting it, including:

- Equipment supply chain delays, which may increase rebuild times and business interruption (BI) indemnity periods.
- Changes in asset valuation due to fluctuating input prices, which may increase re/build estimates and final costs.
- Reduced project viability as cost increases pressure return on investment models, especially for refining, hydrogen, and chemical projects.
- Extended project timelines, affecting assumptions in delay in start-up (DSU) and BI limits.
- Recalibration of loss prediction models to account for turnaround deferrals and latent risks that may arise years later.

Many of today's risks associated with supply chain disruptions, cost increases, and potential legal, insurance, and contractual issues, are not new. Insights from risk engineers, drawing on experience during previous periods of macroeconomic volatility, can provide valuable guidance for addressing the challenges faced by the energy and power sector today.

What risk engineers learned from past macroeconomic volatility

Previous crises, such as the 2014 oil price crash, the 2008 financial collapse, and the 2020 COVID-19 pandemic, illustrated how systemic shocks can undermine operational continuity in the energy and power sector. For example:

- The oil price collapse in 2014 led to widespread reductions in engineering budgets, particularly in the oil and gas industry, accelerating the demand for cost-effective, data-driven engineering approaches.
- The 2008-2009 financial crisis saw many energy and power companies increase their BI coverage after experiencing liquidity challenges.
- During the COVID-19 pandemic, deferred maintenance and project postponements initially reduced loss frequency. However, over time this led to an increase in mechanical failures and breakdowns due to degraded asset performance.

These past events underscore the importance of sustained collaboration between risk engineers, brokers, and underwriters throughout the lifecycle of an insured asset, rather than limiting engagement to initial placements. Today's supply chain challenges could potentially have broader and more persistent consequences than previous financial crises.

Revisiting business interruption and supply chain risk models

Today's logistical disruptions, cost constraints, and scarcity of critical components may lead to a mismatch between modeled reinstatement durations, BI indemnity periods, and rebuild timelines.

In both conventional and renewable energy technologies, emerging focus areas for risk engineers may include:

- Uncertain rebuild times resulting from the temporary unavailability of specific original equipment manufacturer (OEM) components, particularly those with few substitutes, could extend outage periods beyond current assumptions.
- Supply chain rerouting, especially away from the US or China, may initially reduce prices, but could increase lead times and uncertainty, particularly for companies sourcing specialized transformers, turbines, compressors, or control systems.
- Outdated asset valuations may no longer reflect current replacement costs.
- Business interruption timelines may be longer than expected due to procurement delays.
- Tariff-induced foreign direct investment (FDI) shifts that may lead companies to pursue regional manufacturing options. This could take time and create a near-term gap in reliable sourcing, although political risk insurance could be useful depending on the political risk level in any new jurisdiction.

Furthermore, there is the potential for deferred losses. Reduced loss frequency, due to idle capacity or postponed operations, may create a false sense of security. Historical trends, as noted above, suggest that this could lead to concentrated loss activity once operations resume without full mechanical integrity restoration.

The effects extend beyond equipment. Changes in global commodity flows are likely to alter supply chains, potentially creating new vulnerabilities and a need to reassess contingent business interruption coverage. Changes in profitability stemming from macroeconomic shifts directly influence BI

values, making it key to assess the impacts on insurance coverage.

Risk engineers can assist in analyzing the business impacts and help reframe BI planning with updated assumptions. Sharing these findings with insurers can help make desired adjustments to coverage.

Navigating financial pressures and operational risks

Refining and petrochemical operators are particularly vulnerable to fluctuations in feedstock costs and demand for end products. If tariffs suppress demand for downstream goods or energy end-use sectors, such as transportation and manufacturing, plant utilization can suffer. In response, operators may choose to:

- Defer capital investments.
- Delay critical maintenance turnarounds.
- Operate with minimal staffing levels.
- Acquire cheaper feedstocks.

Any operational adjustment will require risk engineers to adapt their assessments of fire protection, mechanical integrity, and emergency response planning, while applying a robust management of change (MoC) system.

Downstream maintenance deferrals

When equipment strategies and risk-based inspection (RBI) plans are optimized for a specific cycle, making last-minute changes due to financial pressures can jeopardize overall business health. The potential for unexpected equipment failures or accumulation of functional failures can result in significant costs down the line.

For smaller operators facing financial constraints, deferring turnarounds may seem unavoidable. However, it is crucial to implement robust deferral mitigation plans and carefully consider any scope reductions to minimize adverse impacts. This process should involve a cross-functional team, including operations, to gain a comprehensive understanding of the risks involved.

Balancing capacity, cost, and complexity in power generation

Mothballing older or less reliable power plant units can yield risk management and operational efficiency benefits. By temporarily taking these units offline, operators can reduce the frequency of losses associated with equipment failures and operational stress. This strategic approach can enhance the overall reliability of remaining active units and allow for refocused allocation of resources towards maintaining and optimizing more dependable assets.

Renewables projects face additional complexity from rapid changes in equipment prices and global political uncertainty, which can impact project schedules and financing.

In the context of renewables, maintaining the supply-demand balance between operating renewable energy sources and traditional power generation can help mitigate strategic risks. Unlike previous challenging periods, the current environment may limit options for rapid adjustments in energy sourcing, highlighting the importance of a diverse energy portfolio that can adapt to demand fluctuations while promoting reliability.

How risk engineers can help mitigate risk

Today’s risk engineers operate at the intersection of technical integrity, financial viability, and strategic foresight. Their role can extend beyond traditional inspections to include:

- Advising on asset valuations using current market indices and global cost trends.
- Developing realistic rebuild timelines and inflation risks.
- Contributing technical insights to enterprise-level risk assessments.
- Supporting companies and their teams in pursuing more favorable insurance outcomes by articulating risk improvements and resilience strategies.

In this way, risk engineers have become vital partners in shaping the future of risk management across specialty markets.

To respond effectively to emerging macroeconomic risks, risk engineers can collaborate with companies and their insurance teams across five key areas:

1. **Proactive engagement:** Initiate early discussions around valuation accuracy, equipment lead times, and the potential impact of deferral strategies.
2. **Enhanced BI modeling:** Refine BI assumptions to account for extended downtime, temporary fixes, and inflationary pressures.
3. **Scenario-based dialogue:** Help to illustrate to key stakeholders how economic volatility may affect plant availability and asset risk.
4. **Technical review:** Develop engineering risk reports that can be used to highlight operational resilience and assist in pursuing desired coverage.
5. **Investment in predictive tools:** Develop risk heatmaps, maintenance datasets, and early indicators to flag deteriorating asset conditions.

These actions can equip energy and power companies to pursue insurance placements that are structured for resilience amid uncertain conditions.

Determining your own risk mitigation strategies

Energy and power companies face various challenges and risks as the macroeconomic environment remains volatile. By involving risk engineers as early as possible in the design, construction, operation, and decommissioning of assets, and using their expertise effectively, you can better mitigate and manage your cost of risk.

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