## Navigating The New Normal:

Climate Risk & Supply Chains



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Climate change is reshaping the global economy. In recent years climate change-driven disasters have closed trade routes and ports from Vancouver to Taiwan to France, causing billions of dollars in damages. And just last year, the Panama Canal upped its anticipated drought losses by 300%.

## We know the future will be worse.

Within the lifetime of every container ship built today, maritime shipping stands to lose tens of billions of dollars a year from climate hazards, while downstream and upstream trade disruptions can multiply financial losses 3X. Meanwhile, governments are racing to contain future damage, with new emissions regulations and climate risk disclosure rules coming online globally every year.

While other highly exposed industries like real estate rush to integrate climate risk data into due diligence and operations, **the logistics and supply chain industry is woefully behind.** Where solutions do exist, they focus on either climate or supply chain information but ignore their messy intersection. More worrying, today's analytic tools are fundamentally ill-equipped to capture the complex, emergent dynamics of supply chains. As a result, companies, governments, and investors are flying blind into the coming storm.

To begin to address this crucial gap, ENES starts from the premise that motivates our work: Supply chain leaders must optimize for a hotter world characterized by more conflict, more regulation, and more disruption.

We know there is no more business as usual, only the new normal.

## WHAT IS CLIMATE RISK IN SUPPLY CHAINS?

Climate change risk is complex, arising from multiple drivers that can impact an organization across its operations, balance sheet, and P/L. These risks come in two distinct flavors.

**PHYSICAL RISKS:** potential losses from physical climate hazards like droughts, floods, and heatwaves. In contrast to other industries, where physical risks can be analyzed at an asset-by-asset level using tools like heat maps, supply chain leaders must also consider how risks propagate across shipping routes and ports. In other words, for supply chains, physical risks can be:

» Asset-specific

 (e.g. disruptions to particular factories, ports, or suppliers)
 » Systemic

(e.g. upstream and downstream effects from port shutdowns or trade route disruptions)

**TRANSITION RISKS**: changes in regulation, technology, or market conditions (e.g. reputational scrutiny, demand for cleaner ships) that can affect a firm's business model. Transition risks to logistics and supply chains include:

- » Emissions regulations like the EU's CBAM and the IMO's EEXI and CII. These regulations raise the cost of shipping emissions and provide economic incentives for efficiency.
- » New technology like low-carbon fuels and emissions monitoring services that increase competitive pressure to innovate and reduce emissions.
- Increased demand for transparency and disclosure from regulators, investors, and civil society.

Because the impacts of climate change are just starting to materialize, the subsequent risks to supply chains are emergent – they represent a new and complex challenge for organizations to tackle. Physical and transition risks can intersect, and multiply enterprise risk. Addressing your organization's climate risk means understanding how port disruptions from drought will increase shipping times and raise emissions costs, a phenomenon we're already seeing in the Suez Canal.

Additionally, climate risks have complex second and third-order effects that are hard to anticipate, including increased geopolitical instability.

And while the future is uncertain, we know that climate and supply chain risks can materialize as:

OPERATIONAL IMPACTS	increased costs from damage and business disruptions, lower productivity, and weakened revenues
FINANCIAL IMPACTS	higher capital costs, increased insurance costs
STRATEGIC ERRORS	stranded assets and sunk costs

## **HOW CAN LEADERS RESPOND TO CLIMATE RISK?**

Key steps can be taken to reduce climate risk through a temporal response framework that we use at ENES. This framework helps identify (a) what kinds of responses are appropriate based on business needs, and (b) what kinds of outcomes are relevant for which business unit.

	Tactical	Strategic
Time-frame	Tactical responses include anticipating near-term risks to operations & real time reaction	Strategic responses include planning and optimizing supply chain investments over years to decades
Intervention	KPIs monitor vessel and port activity so ships can react to weather or labor disruptions	Climate-informed scenario analysis and risk assessment to evaluate port and shipping route viability
Outcome	Reduced costs, improved business visibility, and business continuity	Resilient trade networks, sound investments, and better risk pricing

While climate risks lead to loss and damage, there are also profound opportunities in monitoring, anticipating, and planning for the future – from more efficient trade networks to cleaner technologies. When leaders act now, we all benefit from a more reslient economy that protects capital, jobs, and human flourishing. At ENES, we're uncovering hidden risks in supply chains by building tools that capture unseen value and unlock a more resilient future. Using cutting-edge complexity science powered by advanced computing infrastructure, we're developing solutions that optimize and manage supply chain risk over tactical and strategic timelines.

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