DP WORLD

WITHOUT LOGISTICS

Unlocking the hidden value of chemical logistics

FOREWORD

Chemicals are behind every industry. Whether it's the coatings on your phone or the fertiliser in the field, 96% of all manufactured goods rely on chemicals that cannot be replaced with alternative materials.[1] At its best, the sector is invisible to consumers – that is how it should be. But when logistics fails in chemicals, dominos start falling across the entire value chain.

Today, the risk of things going wrong is higher than it has been for some time. Return on capital is at its lowest point in more than 25 years as the sector finds itself under pressure on several fronts.[2] Geopolitical tension is reshaping trade flows, US tariffs and Red Sea volatility are stimulating reshoring, while energy and feedstock markets remain volatile.

At the same time, the sector is under pressure to cut its emissions (the industry accounts for around 5-6% of global greenhouse gas emissions) and scale the materials that enable the energy transition.[3] This is expected to be a significant challenge, as according to an analysis by the Rocky Mountain Institute, emissions are on track to more than double by 2050 without intervention.[4]

This combination of dependence and disruption creates a new kind of exposure for chemical cargo owners – and in this fragile environment, supply chain visibility and flexibility have become non-negotiable. The problem many chemical organisations are still wrestling with is what this actually looks like in practice. What is the right balance between inventory and responsiveness? What is the right level of diversification in routes and suppliers? What digital tools can be used to better anticipate and manage disruption?

The first step to addressing such questions is to quantify what disruption really costs, in money, in time and in reputation – and that's what this report does. It is our hope that, with the findings of Without Logistics, cargo owners, logistics partners and policymakers can see more precisely where the work now needs to happen. Now is the time to design for a world defined by disruption. The companies already investing in forecasting, visibility and multi-route design are the ones protecting margin and proving that resilience can be a competitive advantage.

MARKUS KANIS
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1 Outlook for Chemicals Manufacturing, International Finance Corporation (IFC), September 2021
2 2026 Chemical Industry Outlook, Deloitte Research Center for Energy & Industrials, November 03, 2025
3 'Chemicals', International Energy Agency, 2025
4 'Chemistry in Transition: Charting solutions for a low-emissions chemical industry', RMI, January 17, 2025

EXECUTIVE SUMMARY

Disruption in the supply chain for chemicals is an early signal for global trade, as the effects can travel quickly into manufacturing, construction, agriculture and consumer goods. This research shows a sector where such incidents are a common occurrence – and come at a cost that extends well beyond the balance sheet.

There are **17,500** incidents of disruption per year, costing companies an average of **US$700,000.**

PERSISTENT DISRUPTION, ESPECIALLY AT BORDERS

Almost nine in ten chemicals cargo owners have faced Covid-19 legacy disruption, and large majorities report impacts from the Russia–Ukraine war, US tariffs and congestion at major ports. Customs and border delays are the most widespread problem of all, affecting 92% of respondents. Climate events, labour issues and container shortages add further layers of volatility, with many companies experiencing the same disruption type multiple times in three years.

THE COST OF FAILURE IS SIGNIFICANT

On average, a logistics incident in the chemicals sector costs around US$700,000, adding up to more than US$12.2 billion in annual disruption costs. Almost a third of businesses report losses above US$1 million in disrupted years. More than half lose over a month of operational time, and during major events transit and product lead times typically lengthen by at least 11%. For a sector handling hazardous and time-sensitive cargo, these are not marginal overruns.

CONFIDENCE AHEAD OF CAPABILITIES

Perceptions of performance are broadly positive. Close to nine in ten chemicals cargo owners say they are confident in their ability to scale efficiently over the next three years, and most describe their operations as agile and more resilient than peers. Yet forecasting, visibility and supplier reliability remain persistent challenges, and 97% have had to escalate at least one logistics incident to senior leadership or crisis teams in the past three years. Disruption has become a board-level issue.

INVESTMENT TURNING TOWARDS RESILIENCE AND DATA

Most chemicals businesses expect to increase logistics spending, with the strongest expected returns coming from supply chain digitisation. A large majority believe that logistics improvements will have the greatest impact on customer retention and that geopolitical volatility will remain the dominant threat. As a bellwether sector, chemicals will show early whether new, more digital and resilient logistics models can reduce disruption costs and strengthen the wider economy that depends on them.

METHODOLOGY

This report is based primarily on survey data from cargo owners across the chemicals sector, supported where appropriate by verified external sources. The survey captured data on the frequency and financial impact of logistics disruptions, as well as the level of investment made across different logistics areas.

To build the model, cost ranges were converted into single values using midpoints, enabling calculation of both total annual costs and average cost per disruption. These were then linked to other variables such as investment levels, company size, and reported reputational impacts. Correlations were calculated to identify the relationship between investment in specific logistics areas and cost reduction, while also examining how reputational damage compounds financial losses.

HEIGHTENED UNCERTAINTY IN CHEMICALS

This report is based primarily on survey data from cargo owners across the chemicals sector, supported where appropriate by verified external sources. The survey captured data on the frequency and financial impact of logistics disruptions, as well as the level of investment made across different logistics areas.

TOTAL DISRUPTION EXPOSURE (2022–2025)

92%	Customs or border clearance delays
91%	Geopolitical disruption (e.g. trade restrictions, conflict)
90%	Port congestion or delays
89%	Climate
86%	Container shortages, misallocation or carrier capacity constraints

At the beginning of 2025, the chemicals industry anticipated a gradual recovery, with global chemical production projected to grow 3.5%.[5] Instead, the industry entered a prolonged downcycle, with forecasts dropping to 1.9% for 2025 and 2% for 2026.[6] Myriad disruptions compound in this challenging market – and the majority of cargo owners have, to some extent, experienced them all.

Almost nine in ten (89%) report that Covid-19 legacy issues affected their business between 2022 and 2023, from sudden demand swings to missed sailings and plant outages. Eight in ten (83%) were hit by congestion in major global ports over the same period, while seven in ten (70%) have felt the impact of the Russia-Ukraine war on routes, availability and energy costs. 63% say US tariffs have also disrupted their flows.

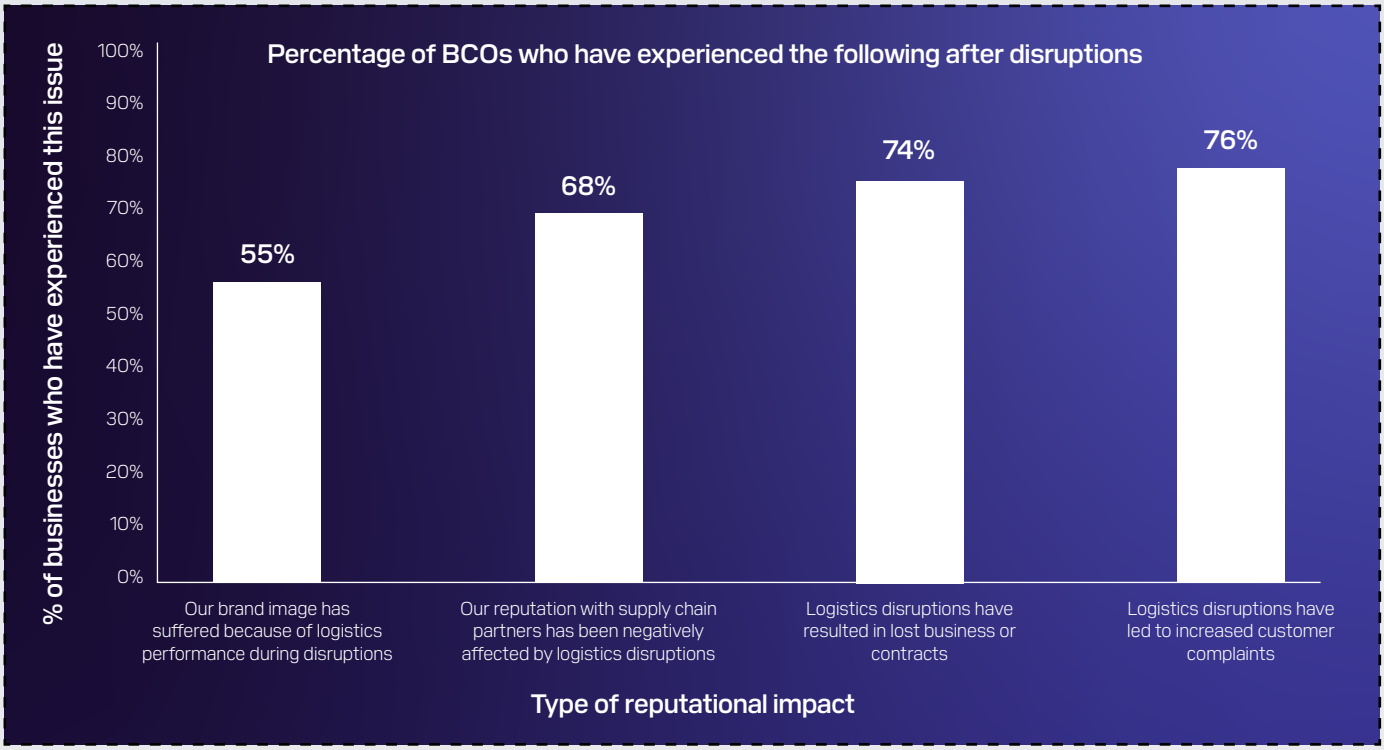
Beneath those headline shocks sits a dense layer of routine disruption. In the last three years, more than nine in ten chemicals cargo owners have experienced customs or border clearance delays at least once (92%), making it the most widespread source of disruption in the sector. Climate-related incidents have affected 89%, geopolitical restrictions 91%, port congestion 90% and container shortages 86%. For many, these are not one-off events: around a third have faced climate, geopolitical or port-related disruption six times or more in three years.

Taken together, the survey and external evidence show a sector living with layered uncertainty: global shocks on top of repeated, localised disruption in the everyday movement of hazardous goods.

[5] "Solid economy provides boost to chemical production: ACC mid-year situation & outlook 2024, American Chemistry Council (ACC), June 20, 2024.
[6] Looking for stability amid an uncertain economic landscape, ACC, June 11, 2025.

THE COST OF INACTION

THE REPUTATIONAL IMPACT



Almost a third of cargo owners report annual disruption losses of more than US$1 million, with around one in ten facing hits of US$5 million or more. Two thirds sit below the US$1 million line, but even there the combination of repeated incidents and higher operating costs creates steady pressure on margins. At sector level, the average incident now costs around US$700,000, adding up to more than US$12.2 billion a year in lost value. Cargo owners reported roughly 17,500 incidents overall.

Time is just as damaging. Just over half of chemicals cargo owners say disruption costs them less than a month of operational time in a typical year. For the rest, disruption consumes more than a month, and one in ten lose six months or more. A third take longer than a month to recover fully from a major disruption; for 15%, the recovery extends beyond three months. During these periods, most see their networks slow visibly: three in four report transit times lengthening by at least 11% during major events, and just over seven in ten see product lead times stretch by a similar margin.

CASE-STUDY

LOW WATER ON THE RHINE AND GERMAN CHEMICALS, 2022

The disruption:
In the summer of 2022, prolonged heat and drought pushed water levels on the Rhine to near-record lows. Barges carrying chemicals and feedstocks into Germany's industrial heartland could only sail part-loaded, and some vessels could not operate at all. BASF and other producers along the upper Rhine warned that sustained low water could force output cuts if supplies could not reach major sites such as Ludwigshafen.

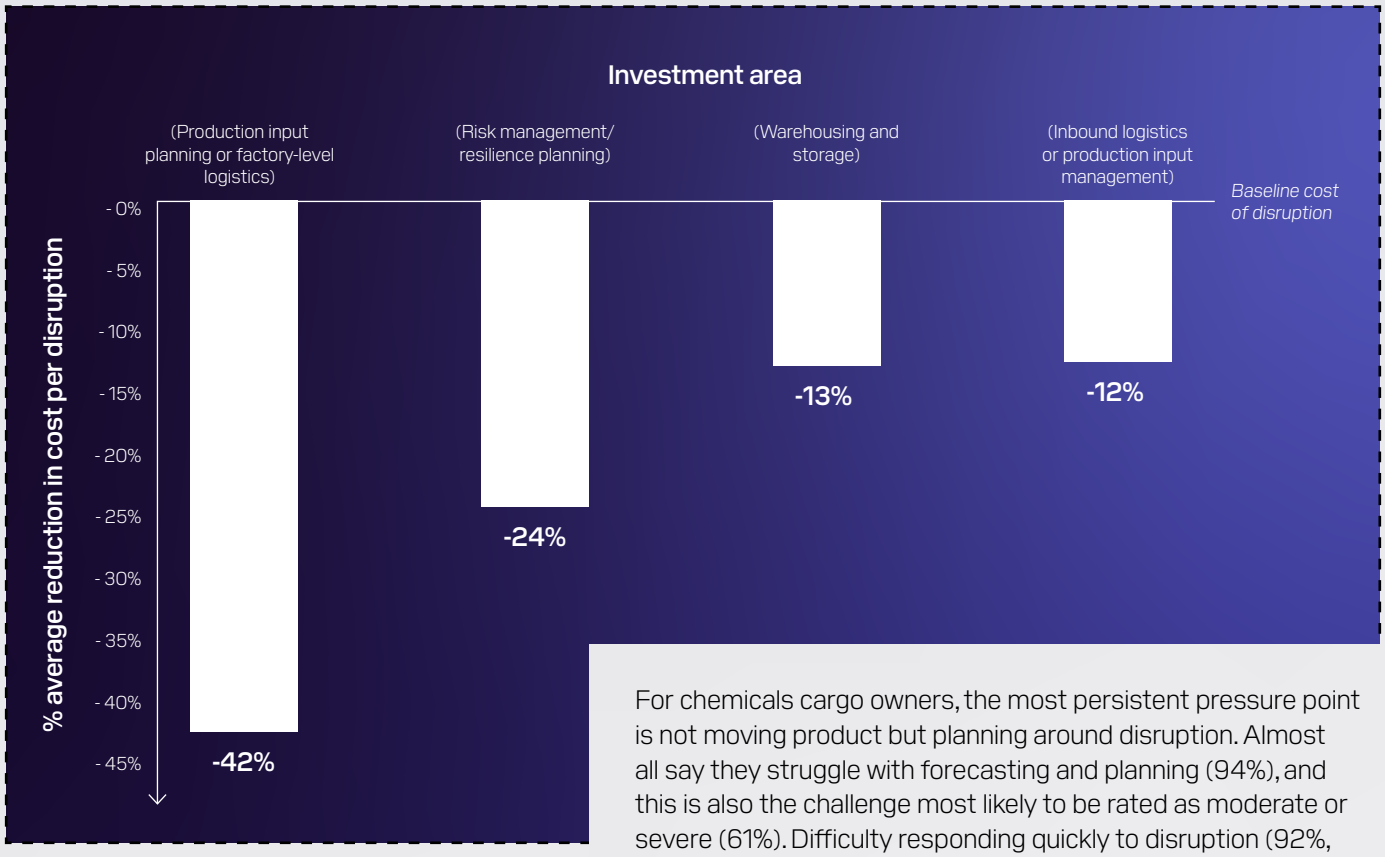
The consequence:
Freight charges for liquid cargoes on the Rhine jumped from around €20 per tonne to about €110 per tonne, sharply increasing logistics costs for chemicals producers.[7] Moody's noted that higher transport costs and possible production cuts at river-dependent plants could weigh on earnings, while economists estimated that disruption to Rhine traffic could shave up to 0.5% off German GDP.[8] The consequences of disruption on one river demonstrated an overreliance and systemic risk for one of the world's largest chemicals hubs.

A lesson learned:
In 2018, low water on the Rhine cost BASF an estimated €250 million.[9] The chemicals giant responded by investing in a low-water tanker, giving it a dedicated way to keep product moving through the same corridor during disruption in 2022.

7 Rhine water falls again in Germany, river shipping costs rise', Reuters, August 10, 2022
8 Low Rhine water levels threaten Germany's economic growth, Reuters, August 10, 2022
9 A major river in Europe hit by drought could create economic havoc, CNBC, July 31, 2019

THE VALUE OF STRATEGIC INVESTMENT

WHEN INVESTING IN TRANSPORT AND LOGISTICS SOLUTIONS, THE MOST EFFECTIVE AT REDUCING COSTS ON AVERAGE ARE:



For chemicals cargo owners, the most persistent pressure point is not moving product but planning around disruption. Almost all say they struggle with forecasting and planning (94%), and this is also the challenge most likely to be rated as moderate or severe (61%). Difficulty responding quickly to disruption (92%, 56% moderate/severe) and unreliability from suppliers (92%, 59% moderate/severe) sit close behind, alongside limited visibility across the supply chain (87%, 54% moderate/severe). In other words, the pain is concentrated in the parts of the system that should anticipate and absorb shocks.

The way chemicals cargo owners respond underlines this. When disruption hits, most turn first to external partners: 62% have used freight forwarding to recover, and roughly half have called on sea-based transport services, contract logistics, customs brokerage, ports and terminals, supply chain technology or land transport services. This blend of physical capacity and intelligence services is where logistics investment starts to translate directly into resilience. An integrated model, including ports, multimodal corridors, specialist warehousing and customs support, will help chemical customers reduce risk and maintain control across complex, high-sensitivity flows.

Current spending already points in that direction. Over half of chemicals BCOs say their organisation is investing in warehousing and storage (54%), with around half also funding inbound logistics, sustainability and ESG (each 49%). Risk management and resilience planning (46%), domestic transport and last mile (45%), supply chain or production logistics technology (40%), customs and regulatory compliance (39%), and production input or factory-level logistics (38%) round out the picture.

CASE-STUDY

TAILOR-MADE LOGISTICS FOR CHEMICAL GASES IN HIGH-TECH MANUFACTURING

THE PROBLEM

A leading semiconductor and chip producer needed a premium logistics solution for high-pressure chemical gases across Europe. It required round-the-clock delivery precision, strict dangerous goods (DG) compliance and full visibility from warehouse to fab. Existing providers could not guarantee on-time supply or consistent regulatory control.

THE RESPONSE

DP World built an integrated DG certified solution: secure multi-user warehousing for hazardous gases, 24-hour B2B just-in-time deliveries across Germany, multimodal European road and global air/ocean links, plus container stuffing and customs brokerage for seamless cross-border flows. Real-time track-and-trace with KPI reporting provided full supply chain visibility.

THE RESULTS

The customer secured a reliable 24-hour delivery window with full DG compliance and 100% shipment visibility, reducing delays and non-compliance risk. Integrated warehousing, transport and customs support increased supply assurance for critical gases and strengthened resilience for a highly time-sensitive manufacturing network.

THE DISCONNECT

PERCEPTION	REALITY
AGILITY: **82%** say they are agile enough to respond quickly to unexpected changes	**33%** take more than a month to recover from a major disruption, including **15%** who take over three months
RESILIENCE: **78%** believe they recover more quickly from major disruptions than competitors and are more resilient than most companies in the sector	**49%** lose more than a month of operational time in a disrupted year
RELIABILITY: **43%** rank "ensuring reliable delivery and minimising disruption" as a top-three priority	**92%** say disruption or unreliability from suppliers is a challenge, and it is one of the issues most often rated moderate or severe

ON PAPER, CHEMICALS LOGISTICS LOOKS CONFIDENT.

Almost nine in ten cargo owners (89%) say they are confident in their ability to scale efficiently over the next three years. A large majority describe their operations as agile and resilient: 82% agree they can respond quickly to unexpected changes, and 78% believe they recover from major disruptions more quickly than competitors and are more resilient than most companies in the sector.

THE LIVED EXPERIENCE TELLS A DIFFERENT STORY.

In the past three years, almost seven in ten chemicals BCOs (69%) have had to escalate multiple disruption incidents to senior leadership, crisis or executive teams. A further 28% have escalated at least one issue. In total, 97% have seen logistics problems reach the boardroom. That level of escalation is hard to square with the self-image of fast, resilient operations. It suggests that disruption is being normalised as a leadership issue rather than managed out of the system.

CARGO OWNER PRIORITIES REFLECT THIS TENSION.

Just over two in five chemicals BCOs (43%) rank "ensuring reliable delivery and minimising disruption" as a top three supply chain priority, and this aligns closely with the challenge they most often rate as moderate or severe: disruption or unreliability from suppliers.

The sector is clearly focused on one of its most pressing pain points. The disconnect lies in the gap between this intent and the continuing need to escalate incidents, which indicates that current approaches to reliability – particularly around supplier management and end-to-end visibility - are not yet sufficient to match the confidence many organisations express.

EMERGING TRENDS

GEOPOLITICAL INSTABILITY IS SEEN AS THE GREATEST THREAT FOR CHEMICALS CARGO OWNERS

NEXT WAVE OF RISK

GEOPOLITICS BECOMES THE BASELINE RISK

- **87%** agree the greatest threats to their logistics strategy will stem from geopolitical instability and trade volatility.
- External outlooks point in the same direction: more sanctions, shifting trade blocs and security incidents along key corridors.

RISING COMPLIANCE AND STAKEHOLDER PRESSURE

- **83%** expect logistics-related ESG requirements to increase in importance for investors and customers.
- Larger chemicals BCOs express stronger conviction, indicating that pressure is already felt in global portfolios.

DISRUPTION MOVES INTO THE BOARDROOM

- Over **8 in 10 (82%)** expect logistics to become a more strategic focus in board decisions over the next three years.
- Risk is no longer treated as an operational issue alone; it is shaping investment and market access decisions.

ROUTE TO RESILIENCE

DIGITISATION AS THE MAIN LEVER

- **86%** say the greatest return on logistics investment will come from supply chain digitisation; **38%** strongly agree.
- Large chemicals BCOs are more likely to strongly agree (42%) than SMEs (30%), signalling a scale advantage in data and tools.

RESILIENCE TIED TO CUSTOMERS AND ESG

- **86%** believe logistics improvements will have the greatest impact on customer retention.
- As ESG expectations tighten, reliable, transparent logistics is seen as part of licence to operate as well as a service promise.

CAPITAL SHIFTING TOWARDS AI AND AUTOMATION

- In the next **12 months, 55%** expect logistics and supply-chain investment to increase; over **3 years** this rises to **78%.**
- Investment in AI, automation and digitalisation accelerates faster: **75%** expect spend to rise within a year, **89%** within three, with almost half anticipating a significant increase.

> “The direction of travel is clear – chemicals plans to meet disruption with a more data-led, proactive form of logistics, with resilience, customer retention and ESG performance as the main tests of success.”

MARKUS KANIS
Global Senior Vice President, Chemicals, DP World

THE DP WORLD VIEW

FIVE PRIORITIES FOR CHEMICAL LOGISTICS IN THE AGE OF DISRUPTION

01 Put forecasting at the centre of resilience

Use the same data for production, orders and transport so everyone plans off one version of the truth. Build "what if" scenarios into regular planning, so disruption is expected and managed, not treated as a surprise.

02 Use visibility to manage risk, not just track loads

Real-time track and trace, control towers and exception alerts should drive decisions: which shipment to reroute, which customer to prioritise, which plant to slow or speed up. Visibility only creates value if it changes how you allocate capacity and respond to early warning signs.

03 Build more than one safe route

Assume that a port, river or border will be constrained at some point. Develop alternative, fully compliant routes and hubs in advance, so you can switch without starting from scratch each time.

04 Work with partners who can flex with you

Treat freight forwarding, warehousing, customs and technology as part of one joined-up setup rather than a list of separate suppliers. The aim is a single, flexible network that can safely handle dangerous goods and time-sensitive flows when conditions change.

05 Put numbers on disruption

Track how many days you lose, how often issues reach senior leadership, and what the financial hit looks like – not just the freight cost. Use those numbers alongside safety and ESG metrics so resilience is discussed with the same discipline as cost and compliance.

Ultimately, every chemical company should strive to have their logistics as engineered as the molecules they move. The sector will always be judged on how safely and reliably it moves the materials that make modern life possible. In a world where disruption is routine and demand is shifting toward high-growth regions like Asia-Pacific and the Middle East, resilience depends on more than recovery. It requires global reach, network flexibility and partners already positioned on the corridors that matter.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