Prewave

Supply Chain Risk Assessment:
March 11, 2026

Hormuz Crisis: Situation Report & Disruption Quantification

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Disclaimer: Risk Assessments Are Based On Future Assumptions And Open Source Data. This Analysis Should Help Readers Understand The Issues At Hand, And Prepare For Potential Impacts. It Is Not A Prediction Of Events Unfolding, Instead A Framework To Think About The Crisis At Hand.

Executive Summary

On February 28, 2026, US and Israeli forces launched Operation Epic Fury, striking military, nuclear, and leadership targets across 24 of Iran's 31 provinces. Supreme Leader Khamenei and the senior military command were killed. Iran retaliated against US bases and Gulf state infrastructure.

The IRGC broadcast a Hormuz closure to all commercial shipping. Simultaneously, Houthi forces in Yemen — Iranian proxies — resumed attacks in the Red Sea, closing the Bab al-Mandab strait. This is the first time both Middle East maritime chokepoints have been simultaneously denied to commercial shipping in modern history.

Report Parameters

- **This assessment is from day 12 of the first simultaneous closure of the Strait of Hormuz and Bab al-Mandab in modern history.**
- **Base assessment does not incorporate mine warfare; that scenario is addressed separately in the final section.**
- **All figures from base model (no mines confirmed at scale). See final section for mine warfare scenario.**

1. Duration

The most likely outcome is 4–8 weeks of disruption: not days, not yet months.

The crisis entered Day 12 on March 11. A statistical model calibrated to historical conflict resolution times assigns the following scenario probabilities:

- **A rapid resolution inside 28 days carries a 30% probability,** requiring Iran's new leadership to signal negotiations quickly, a posture inconsistent with current IRGC rhetoric.
- **The single most likely outcome (42% probability) is a 4–8 week disruption (Scenario B1)**, with partial Hormuz reopening under naval escort after two to four weeks, but continued insurance uncertainty.
- **A prolonged crisis beyond three months carries a 2% base-case probability:** low but consequential given the scale of downstream damage that duration would produce.

Duration is the governing variable for all downstream forecasts in this document. Every figure below is conditional on duration. The distinction between a six-week and a three-month crisis is the difference between a sharp but recoverable economic shock and a structural supply-chain dislocation with recession-level GDP impacts across multiple Asian economies.

How we assessed it: *Left-truncated Weibull AFT model (k=1.50, λ=45.8d), conditioned on Day 12 already elapsed. Calibrated to: 1988 Tanker War (55 days to resolution), June 2025 Iran-Israel war (12 days), 2019 Abqaiq strikes (days). No mine covariate applied in this base model.*

2. Energy (Oil)

Oil will remain elevated for months, but $150 is not the base case.

Brent crude is currently trading at around 20% higher than the $72.48 when the conflict began on February 28. The bulk of the initial price discovery has already occurred. Our median four-week forecast is at most a single-figure increase, effectively flat to current: the market has largely priced a disruption of moderate duration.

The structural reasons oil does not continue to spiral are: major consuming nations hold emergency strategic petroleum reserves (the US alone: over 400 million barrels; Japan: 180 days of consumption; South Korea: 200 days); demand falls automatically at high prices as consumers and industry reduce consumption; and ceasefire probability re-enters market pricing daily.

The relevant planning risk is not the median outcome, it is the tail. In 10% of our simulation paths, Brent breaches three figures by Day 28, rising another 10% by Day 60. At this price, multiple Asian economies enter recession territory, the ECB faces an acute stagflationary bind, and political pressure on Washington to broker a ceasefire intensifies sharply. The distinction between the median and the tail is entirely determined by whether the disruption extends beyond six weeks.

OPEC+ agreed on March 1 to raise production by 206,000 barrels per day. This is 0.2% of global supply against a Hormuz disruption affecting approximately 20 million barrels per day. Rystad Energy's Jorge Leon assessed the move plainly: it is a political signal, not a market solution.

Saudi Arabia and the UAE hold an estimated 2.5 million barrels per day of spare capacity, but both countries sit behind the Hormuz chokepoint: meaning they cannot export that capacity while the strait is closed. The only bypass routes (Saudi East-West pipeline, UAE Fujairah terminal) provide partial relief at a fraction of normal throughput.

How we assessed it: *Merton Jump-Diffusion model: mean-reverting toward fundamental value ($78) with upward jump events sized from historical crisis-regime volatility distributions (2019–2026). Jump arrival intensity: 0.4/day escalation, 0.25/day de-escalation. Calibrated against four historical oil disruptions: 1973 embargo, 1979 revolution, 1990 Gulf War, 2022 Ukraine shock.*

3. Gas / LNG

European gas has doubled in price since the conflict began. The deeper risk is structural: Europe enters its storage-building season severely underweight.

TTF natural gas, the European benchmark, has risen from €34 to €55 per megawatt-hour since February 28. The immediate driver is QatarEnergy's force majeure declaration on LNG shipments following Iranian strikes on the Ras Laffan and Mesaieed LNG facilities on March 2. Qatar is the world's largest LNG exporter and the primary supplier to European and Asian buyers.

All Qatari LNG output is currently suspended. Approximately 20% of global LNG transits the Strait of Hormuz, and that flow has stopped entirely.

The median model forecast holds TTF around the current price point in four weeks as Atlantic Basin alternatives (US, Norway, Australia) provide partial substitution. The P90 tail scenario places TTF at around a 60% increase, a level that would trigger production shutdowns across European energy-intensive industry — glass, ceramics, ammonia, and specialty chemicals.

The structural risk is seasonal. Europe uses the spring and summer months to refill gas storage before winter demand begins in October. Storage entered this crisis at approximately 29% capacity, well below the five-year average for early March. The mandatory EU target is 90% by November 1.

With Qatar restart uncertain and potentially delayed until at least late May (even in an optimistic ceasefire scenario), European buyers face a compressed injection season with reduced LNG availability. Our storage model — incorporating Qatar outage duration probability, Atlantic Basin substitution limits, and demand-side response — finds only a 48% probability that Europe reaches the 90% target. A winter gas crisis in 2026–27 is no longer a remote tail scenario; it is close to a coin-flip conditional on the current disruption persisting for more than four weeks.

Asian LNG buyers face a parallel pressure. Japan and South Korea combined import approximately 40% of their LNG through Hormuz. The Japan Korea Marker (JKM) spot price reflects this: Asian LNG is trading near parity with European TTF, a structural shift from normal Asian-premium pricing. This eliminates the arbitrage that typically allows Asian buyers to outbid European utilities in tight markets.

How we assessed it: *Ornstein-Uhlenbeck mean-reverting gas model, Cholesky-correlated with JKM (ρ=0.88 TTF–JKM). EU storage: 5,000-path injection-season model with Qatar outage duration distribution, Atlantic Basin substitution capacity constraints, and demand-side elasticity. GIE AGSI+ data (29% storage level confirmed). 90% storage target probability extracted directly from distribution.*

4. Insurance: The Operative Closure Mechanism

The Strait of Hormuz is not closed by mines or gunboats. It is closed by insurance withdrawal, which can reverse within days of a ceasefire.

The P&I clubs — the mutual insurance associations that cover approximately 90% of global merchant shipping for liability and war risk — withdrew coverage for Gulf transits on March 5, following the IG Group's formal war-risk escalation. No commercial operator will move a vessel without P&I cover. The IRGC does not need to fire a single shot to maintain the closure. The insurance market is the enforcement mechanism.

This structural fact carries a critical implication for the direction of travel. Insurance withdrawal is reversible. Once a credible ceasefire signal emerges — not a ceasefire itself, but a signal that one is imminent — P&I underwriters can re-enter the market within 48 to 72 hours.

Historical precedent is unambiguous: after the June 2025 Iran-Israel ceasefire, full war-risk coverage normalised within 14 days. BIMCO's Jakob Larsen confirmed the mechanism before this crisis: coverage collapses within hours of hostility escalation and can re-enter within days of de-escalation.

Our model places the median time from ceasefire signal to insurance normalisation at 13 days. Elevated war-risk premium surcharges persist for a median 54 days post-ceasefire.

The single most reliable real-time indicator of crisis trajectory:

Monitor whether Lloyd's of London and the IG P&I clubs issue any war-risk quote for Gulf transits, at any price. The moment a quote appears, even at prohibitive cost, the insurance market is signalling that reopening is approaching. Sustained silence means the closure continues. Diplomatic statements, political communiqués, and White House announcements are secondary indicators until the insurance market moves.

How we assessed it: *Weibull(k=2.0, λ=16d) insurance normalisation model, calibrated to June 2025 precedent (normalised in ~14 days). Premium persistence modelled as separate Weibull(k=1.8, λ=52d). Both distributions conditioned on the full closure duration distribution. IG P&I formal withdrawal confirmed March 5, 2026.*

5. Petrochemicals — The Hidden Crisis

Naphtha is the crisis inside the energy crisis. Unlike oil, there is no strategic reserve.

Naphtha is a petroleum-derived chemical feedstock: the primary raw material that petrochemical crackers across South Korea, Japan, Taiwan, and Singapore process into the building blocks of modern manufacturing: plastics, pharmaceutical intermediates, coatings, synthetic rubber, and industrial chemicals.

It is not traded on a public exchange with the visibility of Brent crude, which is why it receives comparatively little coverage. Its price has risen from approximately $600 per tonne before the conflict to $945 per tonne, a 58% increase. Six cracker facilities across Asia have already declared force majeure.

The critical structural difference from oil: no government maintains a strategic naphtha reserve. When crude oil runs short, the US, Japan, South Korea, and the EU can release emergency stockpiles. When naphtha runs short, crackers shut — and there is no release mechanism. The S&P Global force majeure threshold (the price at which cracker economics make continued production unviable and operators halt) is $1,000 per tonne. The current spot is $945, meaning the gap is $55.

Downstream propagation

Naphtha shortages feed directly into semiconductor chemical inputs (photoresists, ultra-high-purity specialty gases, etchants), automotive polymers (used in every modern vehicle), pharmaceutical active ingredient precursors, and food-grade packaging materials. South Korea, which sources 50% of its petrochemical feedstock from the Gulf, and Japan (45%) face the earliest and most severe exposure.

Our model places the median naphtha supply-chain breach at Day 24 from closure, 12 days from today.

How we assessed it: *S-curve breach probability in the agent-based model. Buffer inventory modelled as beta-distributed (mean 24 days, variance calibrated to industry inventory data). Naphtha price path from Merton JD model feeds into breach probability via force majeure threshold function. S&P Global cracker economics data for threshold calibration ($1,000/t).*

6. Fertilizer Market Data Confirmed: Prices Already Surging

Fertilizer prices have risen sharply since Day 1. The spring planting window is closing, and production damage may persist beyond any ceasefire.

The Strait of Hormuz carries approximately one-third of all globally traded fertilizer, a figure that receives little attention in energy-focused crisis coverage. Three of the world's ten largest urea exporters are located in the Gulf. Qatar, Iran, and Saudi Arabia together account for a substantial share of global nitrogen fertilizer production. That production and export capacity is now offline.

Confirmed market data as of March 4–10:

- Urea prices at the US Gulf Coast benchmark (New Orleans barge) rose from $457 per tonne on February 28 to $520–550 per tonne by March 4
  - increase of approximately $80–90 per tonne in under one week.
- ICIS, the leading commodity intelligence service, confirmed urea is now up 35% from pre-crisis levels, at three-year highs.
- Three simultaneous supply disruptions are driving this: QatarEnergy halted all urea and ammonia production on March 2 following Iranian strikes on its Ras Laffan and Mesaieed LNG feedstock facilities;
- Iran, producing 350,000 to 400,000 metric tonnes of urea per month, is entirely offline; Arab Gulf exports are expected to remain unavailable for at least four weeks.

Even if the Strait reopened tomorrow, QatarEnergy's urea and ammonia plants cannot restart instantaneously, as they require the natural gas feedstock that its LNG facilities have suspended. The ICIS assessment: war-related infrastructure damage means disruption will persist even after a hypothetical near-term ceasefire. Ukraine drone strikes on Russian nitrogen plants have simultaneously reduced the principal alternative supply source.

The planting season constraint is a structural time limit on market adjustment:

The Northern Hemisphere spring planting window for corn, wheat, and rice opens in April and closes in May.

The logistical timeline is fixed: a vessel loading at a non-Gulf origin today requires 30 days to reach US shores, then another three to four weeks to reach inland agricultural markets. This means that the earliest realistic delivery is May 1.

Farmers in the US Corn Belt are already pivoting away from nitrogen-intensive corn toward soybeans. The American Farm Bureau formally wrote to the White House on March 9 requesting naval escort for fertilizer shipments, temporary suspension of import duties, and Jones Act waiver for domestic shipping.

If North American urea supplies do not arrive before late April, the 2026 autumn corn harvest will be materially smaller. Morningstar analyst Seth Goldstein has flagged urea prices returning to 2022 peak levels (near $900/tonne) as his central scenario if the supply shock persists beyond a few weeks.

Secondary fertilizer disruptions compound the primary urea shortage.

Global sulfur trade has stalled, as China sources 50% of its sulfur imports from the Gulf, Indonesia approximately 70%. Sulfur is a key input for phosphate fertilizers (DAP, MAP). Indian plants have begun curtailing domestic urea production as Qatari LNG supply has fallen sharply, with three plants reducing output per New Delhi industry sources.

How we assessed it: *Confirmed market data: CRU Group (NOLA barge prices, March 4), ICIS Senior Editor Chris Vlachopoulos (March 10), StoneX VP Fertilizer Josh Linville (AgWeb, March 9), World Fertilizer / ICIS (March 10), American Farm Bureau Market Intel (March 9), Bloomberg / Reuters (March 6). Morningstar analyst Seth Goldstein scenario anchor (Reuters, March 6). Prior model median at Day 28: $548/t urea. Confirmed spot already at $520–550 on Day 5; forward projections revised upward.*

7. Helium: The Semiconductor Blind Spot

Every semiconductor fabrication facility in the world depends on Qatari helium. The restart lag is a minimum of four months with no viable substitute.

Helium occupies almost no space in the mainstream media coverage of this crisis, but its supply disruption may prove to be the most structurally durable industrial consequence. Qatar is the world's largest single-source helium supplier, providing approximately 30% of global consumption. All three Qatari helium extraction plants are offline: shut down alongside the LNG infrastructure on March 2. Helium is a by-product of natural gas processing, and the two cannot be separated at source.

Helium is indispensable in semiconductor fabrication. It cools the optical assemblies in extreme ultraviolet (EUV) lithography machines — the equipment that produces the world's most advanced chips — and is used as an ultra-pure purge gas that eliminates moisture from deposition environments where even parts-per-billion contamination destroys wafer yield. There is no functional substitute. Argon and nitrogen are used in adjacent industrial processes but cannot replace helium in the precision environments of advanced chip production.

There is also no strategic helium reserve equivalent to the Strategic Petroleum Reserve. Spot prices are up 35–50% since the crisis began.

The structural restart constraint

Qatar's helium plants require a minimum two-to-three months offline period before restart can begin (equipment cool-down, safety certification, restart sequencing), followed by approximately two additional months to reach full output. Analyst Phil Kornbluth's assessment, confirmed to CNBC on March 10: a minimum four-to-five month disruption from LNG plant shutdown to normalised helium supply.

TSMC, Samsung, SK Hynix, and Intel are the most directly exposed chipmakers. The downstream reach is broad: every product containing a semiconductor depends on this supply chain, including automotive, medical devices, consumer electronics, defence systems, and the logistics infrastructure that global supply chains depend on to function.

How we assessed it: *Dedicated helium breach model in the agent-based model: buffer inventory onset Day 14, breach P50=Day 35. OU price model with slow mean-reversion (κ=0.9) reflecting structural supply concentration. Calibrated to Phil Kornbluth (CNBC March 10) and Gasworld shortage-level analytical framework. Japan secondary materials monopoly (JSR photoresists, Shin-Etsu, Tokyo Ohka Kogyo, Ajinomoto Fine-Techno, Mitsubishi Gas Chemical) identified as compounding chokepoint.*

8. Supply Chain Cascade

By Day 42, there is a 51% probability that three or more independent supply chains fail simultaneously. That threshold marks the transition to compounding systemic disruption.

A single supply chain disruption can typically be managed: buffer inventories are drawn down, alternative sourcing is engaged, customers are notified. The compounding failure of multiple chains simultaneously is categorically different. Interactions emerge that are absent when chains fail individually: a naphtha shortage raises the cost of fertilizer production; a fertilizer shortage amplifies food price inflation; a helium shortage constrains chip output, which in turn limits the electronic systems that logistics and manufacturing networks depend on. At some threshold of simultaneous failures, the system stops absorbing shocks and starts transmitting them.

The cascade sequence in this crisis follows a fixed timeline structure.

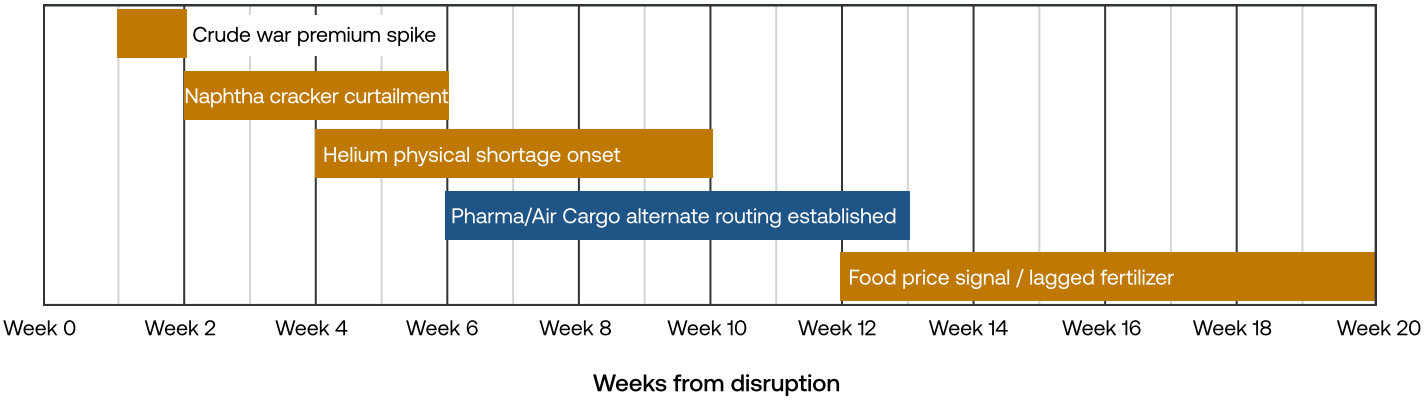
1. The energy shock (crude oil, LNG/gas) is already priced: it hit immediately and is reflected in current market levels.
2. Naphtha and petrochemicals follow in two to three weeks: the median breach day is Day 24.
3. Helium breach follows at Day 35.
4. Fertilizer and methanol occur at approximately Day 35–42.
5. Semiconductor specialty materials and sulphur at Day 46–50.

By Day 42, 30 days from today, our 5,000-simulation model finds a 51% probability that three or more of these eight chains are simultaneously in breach of their buffer thresholds. A resolution before Day 42 avoids the worst of this compounding. Every week of delay beyond Day 28 materially increases the probability of crossing that threshold.

The eight chains tracked in the model: crude oil, LNG/gas, naphtha and petrochemicals, helium, methanol, urea and fertilizers, semiconductor specialty materials, and sulphur. Energy and LNG/gas are already breached. The remaining six chains breach progressively over the next four to eight weeks under the base case.

How we assessed it: *Agent-Based Model: 8 commodity chains, each with S-curve breach probability (inventory depletion against price signal) and beta-distributed inventory noise. Simultaneous breach count extracted at each simulation day across 5,000 paths. The 51% figure is the fraction of simulations with ≥3 chains in breach at Day 42.*

Squeeze Timeline: Staggered Disruption Waves



9. Food Security

A global food price increase is now built into the baseline. A food crisis in the most vulnerable economies is no longer a tail scenario.

Three independent transmission channels converge on food prices in this crisis:

1. **Fertilizer cost pass-through:** urea is already up 35% and rising. Nitrogen fertilizer represents 30–40% of total operating costs for corn farmers in the US and Brazil. If farmers reduce application rates to manage costs, crop yields fall — with a three-to-four month lag before that reduction appears in retail food prices.
2. **Energy cost transmission:** oil and gas price increases raise transport, cold-chain refrigeration, processing, and packaging costs across the entire food supply chain.
3. **Direct distribution disruption:** Gulf air cargo hubs — Dubai, Doha, Abu Dhabi — are operating at severely reduced capacity. India routes 60% of its air cargo through these hubs; Pakistan 65%; Bangladesh 55%. Time-sensitive food imports, particularly perishables and pharmaceutical inputs for livestock, face immediate delay.

At the global aggregate level, our model's median six-month forecast is a +4-point increase on the FAO Food Price Index , a meaningful but manageable increment. The tail matters more: in 16% of simulation paths, the index rises by 10 or more points. This is the threshold historically associated with political destabilisation in food-import-dependent economies. The 2010–11 spike that preceded the Arab Spring was an 8-point rise. The 2021–22 spike that produced humanitarian crises across sub-Saharan Africa and Central Asia was a 12-point rise.

The most exposed economies:

Bangladesh holds 5 days of strategic petroleum reserves and imports 40% of its fertilizer from the Gulf. Physical fuel shortages are measurable in days, not weeks.

Pakistan — already on an IMF programme with 12% inflation — imports 45% of its fertilizer from the Gulf region. In both countries, food represents 40–50% of household expenditure.

Egypt imports over 70% of its wheat and is structurally dependent on Gulf shipping infrastructure for food delivery. In these economies, a food price shock does not stay in the agricultural sector. It translates into political instability within weeks.

How we know: *3-channel Monte Carlo food model: fertilizer price → crop production cost → food price (3-month lag); energy price → transport/processing markup (2-week lag); trade disruption → import price premium (immediate). Calibrated to 2010–11 Arab Spring crisis and 2021–22 global food crisis episodes (World Bank commodity data). FAO Food Price Index as the primary output variable.*

10. Political Asymmetry

The countries prosecuting this war bear virtually none of its economic cost. The countries absorbing the damage had no say in the decision. That asymmetry determines when and how this ends.

The United States is a net energy exporter. Its direct exposure to Gulf energy disruption is near zero. Israel is similarly insulated. Both launched Operation Epic Fury with essentially no economic downside risk to their own economies. The economic damage is concentrated in the economies that had no participation in the decision: India ($56bn GDP loss at median), Japan ($36bn), South Korea ($27bn), and Pakistan (whose 20-day fuel reserve and IMF-programme status make it the most acutely vulnerable).

India's exposure profile illustrates the breadth of the asymmetry: it imports 80% of its crude oil, 87% of its total energy. It holds only 9.5 days of strategic petroleum reserves — the shortest buffer of any major economy. Gulf remittances represent 3.3% of GDP. Gulf air cargo hubs handle 60% of its air freight. Gulf petrochemical feedstocks supply 35% of its industrial inputs.

India does not face one crisis — it faces five simultaneously. Japan and South Korea have deeper financial reserves but are not less dependent: Japan imports 80% of its crude through Hormuz and 87% of all energy; South Korea 68% and 50% of petrochemical feedstock respectively.

The Gulf states themselves (Saudi Arabia, the UAE, Kuwait) are losing oil export revenue every day the strait remains closed. Their combined spare production capacity of 2.5 million barrels per day is geographically trapped behind the chokepoint.

Every day of closure is a day of lost revenue for the countries whose cooperation the US needs for regional stability. This creates a convergent pressure structure: India, Japan, South Korea, and the Gulf monarchies all have strong economic incentives to push for a rapid resolution. The question is not whether this pressure materialises, but how much damage accumulates before it translates into a ceasefire signal.

Given Bangladesh's 5-day fuel reserve and India's 9.5-day position, the answer is: **not much time.**

How we assessed it: *Political asymmetry derived from 6-dimension exposure model across 20 economies (EIA, IEA, Vortexa, Ember, national trade statistics). GDP impact: Agent-Based Model, 9 economies, 5,000 simulations. US net energy export status: EIA STEO March 2026.*

Conditional Scenario: Mine Warfare In The Strait Of Hormuz (Not Base Case)

What Changes If Iran Deploys Mines at Scale

Current mine threat status: Day 12

CNN reported on March 10, 2026, citing two US intelligence officials, that Iran has laid "a few dozen" mines in the Strait in recent days. US Central Command confirmed the same day that it had destroyed 16 Iranian mine-laying vessels. Iran retains an estimated 80–90% of its mine-laying capacity intact.

President Trump threatened "military consequences at a level never seen before" if mines were not removed. IRGC commander's response: "If you have doubts, come closer and test it." Assessment: this constitutes a confirmed but limited mine presence, combined with demonstrated capability and stated intent to expand deployment.

It is not yet a fully mined strait. The figures in sections 01–10 above are base-case estimates that do not incorporate mine warfare at scale. The following analysis quantifies how the entire strategic and economic picture changes if Iran escalates.

Why Mines Change the Operative Closure Mechanism

Base-case closure mechanism: insurance withdrawal.

Under current conditions, commercial shipping has stopped because P&I war-risk insurance has been withdrawn, not because of physical interdiction. This mechanism is reversible: once a credible ceasefire signal emerges, insurers can re-enter within 48–72 hours, and the closure ends within days to weeks of diplomatic resolution. The June 2025 precedent: insurance normalised in 14 days after ceasefire.

Mine scenario closure mechanism: physical mine-clearance requirement.

Once mines are deployed at scale, a ceasefire does not reopen the strait. Mines remain in the water. No P&I underwriter will write coverage for a minefield until naval mine-countermeasure (MCM) teams have physically surveyed and certified the passage as clear.

That process requires weeks to months of dedicated engineering operations under operational conditions that may include continued Iranian shore-based missile threat. The closure timeline is no longer a diplomatic timeline, it is an engineering timeline. A ceasefire is a precondition for clearance, not a substitute for it.

The US MCM Capability Gap

The US Navy removed its four dedicated Avenger-class mine-countermeasure vessels from Bahrain in January 2026. These are the purpose-built platforms for mine detection and clearance in confined waters.

Their replacements — Littoral Combat Ship MCM mission packages — are less capable in hostile shallow-water environments. Full clearance operations require suppression of Iranian shore-based anti-ship missile batteries before MCM vessels can safely operate. Active conflict and mine clearance cannot proceed simultaneously.

Iran's mine stockpile is estimated at 2,000 to 6,000 units, comprising both contact mines (detonated by physical impact) and influence mines (triggered by a vessel's magnetic or acoustic signature). The latter are significantly more difficult and time-consuming to detect and neutralise. With 80–90% of mine-laying capacity surviving CENTCOM strikes, Iran retains the ability to replenish any cleared sections, creating a potentially open-ended clearance burden.

Quantified impact: mine scenario versus base case

Indicator	If mines confirmed and deployed at scale
Median closure duration	Base: 40 days → Mine scenario: 59 days (+19 days)
Closure duration at 90th percentile	Base: 83 days → Mine scenario: 131 days (+48 days)
Probability: crisis exceeds 3 months	Base: 2% → Mine scenario: 16% (8× higher)
Insurance normalisation (median)	Base: Day 54 → Mine scenario: Day 200 (+146 days)
VLCC freight rate normalisation	Base: ~Day 80 → Mine scenario: ~Day 250
Brent crude at Day 28 (P90 scenario)	Base: $104/bbl → Mine scenario: $120/bbl (+$16)
P(≥3 supply chains breach by Day 42)	Base: 51% → Mine scenario: 97% (near-certain)
Naphtha supply chain breach (median)	Base: Day 24 → Mine scenario: Day 19 (7 days from today)
EU winter gas storage — P(90% target)	Base: 48% → Mine scenario: 28% (–20 percentage points)
India GDP loss (median)	Base: $56bn (1.4%) → Mine scenario: $100bn (2.6%)

Critical threshold: first confirmed mine detonation on a commercial vessel

The first confirmed mine detonation on a commercial vessel is the binary event that transforms this from a threat into a structural reality. A confirmed strike would immediately freeze the insurance market for a minimum of six additional months beyond the detonation date, extend MCM clearance timelines by months (the full minefield requires re-survey), and force the United States into a mine-clearance campaign under active Iranian missile threat — the most operationally and politically costly scenario in this crisis.

Beyond detonation: watch for US announcement of dedicated MCM asset deployment into the Gulf (the operational precondition for insurance re-entry); an IRGC statement offering to halt mine-laying as a negotiating gesture (the Trump administration has flagged mine removal as a potential "step in the right direction"); and the Brent 12-month forward price on ICE: above $115/barrel signals the market is pricing the mine scenario as a material probability.

Basis and Methodology Note

Duration model: Left-truncated Weibull AFT (base: k=1.50, λ=45.8d; mine scenario: k=1.42, λ=70.8d). Commodity prices: Merton Jump-Diffusion with OU mean-reversion, 12,000 paths, 7-asset Cholesky correlation. Supply chain cascade: Agent-Based Model, 8 chains, 5,000 simulations, S-curve breach probability. GDP: ABM, 9 economies, 3-channel elasticity, reserve-depletion amplification. Food security: 3-channel Monte Carlo, calibrated to 2010–11 and 2021–22 crisis episodes. Mine clearance: Gamma rate model, USN LCS MCM capability under hostile conditions, 4-scenario mine density matrix. Fertilizer data: CRU Group, ICIS, StoneX, World Fertilizer (March 4–11, 2026). Energy data: EIA STEO March 2026, IEA, GIE AGSI+. Shipping: Kpler, Vortexa, Lloyd's List, UKMTO.