Strait of Hormuz Closure Beyond Oil: Five Cases of Supply Chain Disruptions (updated 07.05)

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*Note: This brief is an empirical companion to "Strait of Hormuz Closure Beyond Oil: Logistics Disruption & Supply-Chain Spillovers" (21 April). It has **not** yet been peer-reviewed. The case-study material is drawn from independent trade-press and industry reporting; there are no model outputs.*

Key Findings

- We document five cases of supply-chain disruptions, which **all start in Hormuz**:
  - Bangladeshi fertilizer, textile, and universities,
  - Indian polyester apparel,
  - Korean petrochemicals and electronics,
  - Japanese car manufacturing, and
  - Chinese sulfuric acid and global copper mining.
- They reveal **multiple pathways** along which the Strait closure disrupts supply chains
  - Disruptions propagate **downstream** from the Gulf to Asian manufacturing, via energy (gas and diesel) and raw material supply (naphtha, aluminum, sulfur).
  - But it also propagates **upstream**: because shipping cars to the Gulf is now costly, Japanese carmakers are curtailing production, which impacts their own suppliers.
- **Toyota** is the first global company whose sales decline (-5.8% year-to-year in March) has been publicly linked to Hormuz by Bloomberg, Nikkei, and others.
- **Policy responses** are key modulators
  - Some states have taken strong measures: India prioritizes gas to the fertilizer industry over textiles, Korea bans naphtha exports and sources it from Russia—for the first time since 2022—, and China is halting sulfuric acid exports
  - By prioritizing some over others, policy responses tend to **propagate disruption further**: Chilean and African copper mining is now at risk after China's decision
- Take-away message: **coordinated responses** across industries and geographies are essential to avoid the coming bulk of economic losses

Introduction. Last week, I published a **model-based prediction**: the closure of the Strait of Hormuz has economic consequences beyond a pure oil-price effect. It triggers supply chain disruptions that propagate and intensify over time as inventories are depleted. Now, I want to examine **what is really happening across industries worldwide**. With the help of AI agents, I have scanned the web, resulting in about 150 news items, mostly from specialized press.

Five case studies surfaced. They show **supply chain disruptions**—gas in Bangladeshi industrial zones, naphtha for Korean petrochemistry, sulfuric acid for Chilean copper mines, logistics constraints preventing car deliveries—that no oil-price-only model would capture.

This is not a quantitative assessment, but an attempt to understand how, **concretely**, supply chain disruptions are propagating. This brief reports the cases and summarizes the lessons learned. A follow-up will combine these findings with new model runs to quantify aggregate impact.

Case study 1 — Bangladesh: Qatar liquefied natural gas (LNG), fertilizer, and garments

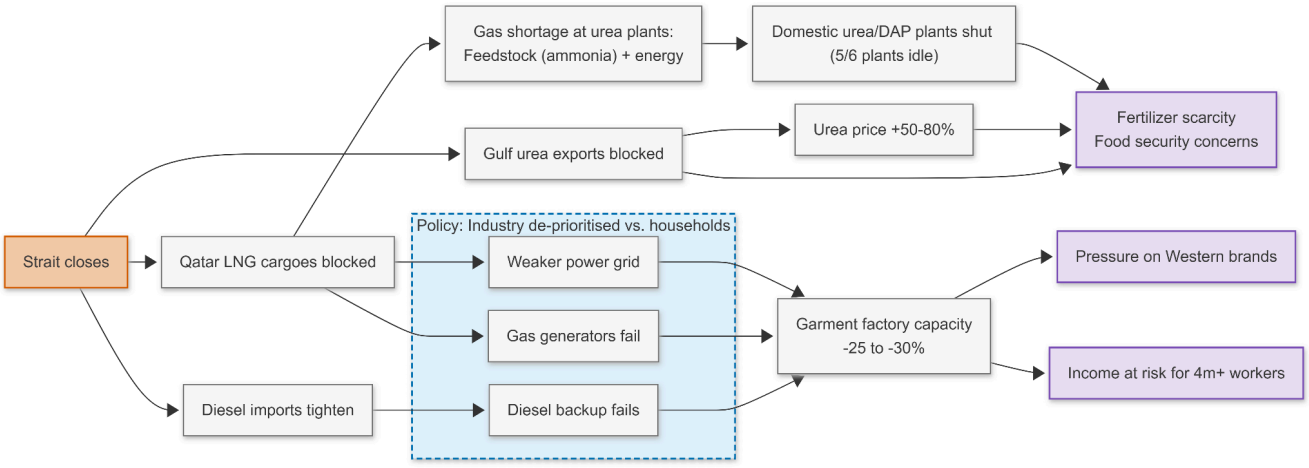
When QatarEnergy declared *force majeure*[1] on long-term LNG contracts on 3 March 2026, only four of the nine ships expected for March had made it across the Strait. Gas pressure in industrial clusters fell sharply. As of late April 2026 the force majeure has been extended again.

Gas is used at two points of the Bangladeshi fertilizer production: (i) power generation, and (ii) feedstock for nitrogen and phosphate fertilizer production. Natural gas is converted into ammonia, then into urea, or combined with phosphoric acid to form diammonium phosphate (DAP). As a consequence of the gas pressure drop, five of six major urea plants were shut by 5 March; by 3 April, only one (Ghorshal-Polash) was operating. On 18 April, the country's only DAP factory halted production because the on-site ammonia stockpile ran out.

Bangladesh imports roughly 60% of its urea, mostly from Saudi Arabia, Qatar, and the UAE. Combined with the domestic production drop and rising global urea prices (+50–80%, driven by Gulf-wide production halts), this is putting Bangladeshi agriculture at risk: the country's main fertilizer suppliers, plants, and prices are all moving in the wrong direction at once. The immediate concern is the upcoming planting season in June.

On the apparel side, garment factories—concentrated in the Gazipur and Ashulia clusters in Dhaka—lost their three energy lifelines at once: power grid, piped gas for captive generation, and diesel for backstop generators (the diesel itself constrained by Hormuz disruption). The industry association reported a 25–30% capacity loss and raised the issue formally with the Power and Energy ministers on 13 April.

This industry is critical for Bangladesh: it is the country's main export sector (~$47 bn/year) and employs 4.1 million workers. With factories at reduced capacity, workers—already among the most economically vulnerable—face hours and wage cuts. Reports describe precautionary order cuts from Western apparel retailers.



Bangladesh cascade: Hormuz closure propagates through gas and diesel supply to the fertilizer and garment industries. Source: author's synthesis based on trade-press reporting.

[1] *Force majeure* is a clause that lets a supplier suspend its contractual obligations when an extraordinary event beyond its control makes delivery impossible. Buyers receive less or nothing, but cannot sue for breach. In commodity markets, a *force majeure* declaration is the formal signal that physical supply has broken down.

Case study 2 — India: Gulf gas & naphtha and the polyester apparel chain

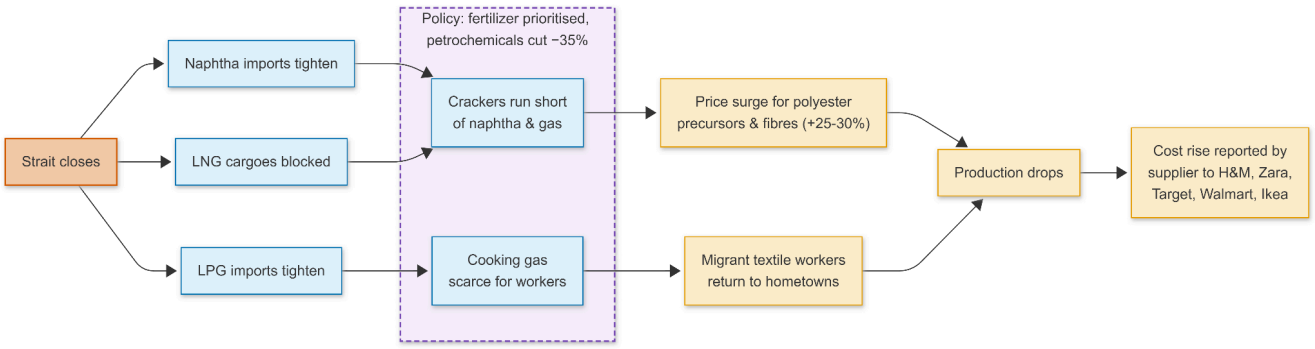
The Gulf supplies most of India's *naphtha*[2] and a substantial share of its LNG, including cooking gas. After the closure, the Indian government invoked the Natural Gas Control Order, redirecting oil and gas to high-priority sectors, including fertilizer production. As of 15 April, the Ministry confirmed LNG supply to refineries and petrochemical units would be consequently cut by 35%.

Polyester is an important petrochemical product and a key input to the textile industry. It is synthesized from both naphtha and natural gas, which are cracked, purified, and polymerized into polyester staple fiber, which is spun into yarn and woven into fabric in industrial clusters such as Surat, in Gujarat.

As a consequence of restrictions on naphtha and LNG, polyester prices rose sharply, prompting factories to reduce production. At Radheshyam Textile, for instance, half of the 200 polyester looms have been silent since the conflict began, with daily output down 60–65%; dyeing and printing units have moved from one to two non-operating days per week.

Supply chain disruptions propagate not only via material inputs but also via labor. Internal migrant workers of textile factories have reportedly been hit by a cooking gas shortage. This lack of basic cooking capacity led many of them to return to their hometowns, effectively reducing the factories' labor force.

This situation is cascading to Western brands. The chief executive of a Surat-based dyed-and-printed polyester supplier (Bindal Silk Mills) to H&M, Inditex (Zara), Target, Walmart, and Ikea confirmed to Reuters that costs have "drastically" risen.



Indian cascade: Hormuz closure propagates through naphtha and gas supply to the polyester petrochemical industry, then to the textile industry. Policies have explicitly favored LNG supply for fertilizer production over petrochemical production. Source: author's synthesis based on trade-press reporting.

[2] Naphtha is a light liquid fraction of refined crude oil. Petrochemical plants "crack" it into the basic building blocks of plastics, synthetic fibres, and specialty chemicals.

Case study 3 — Korea: from naphtha to consumer goods and IA chips

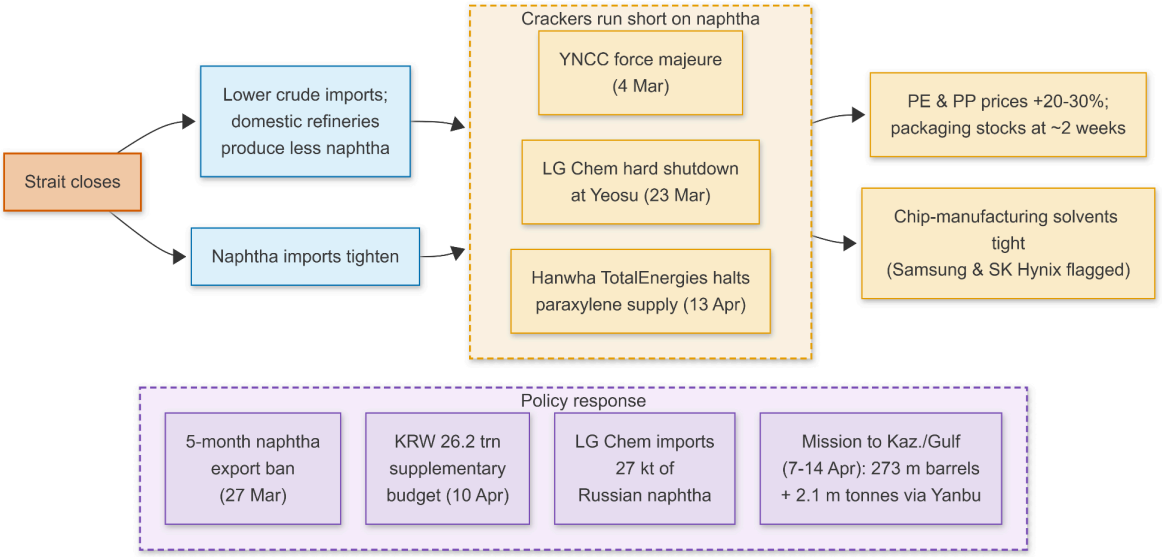
Beyond textiles, naphtha is the primary feedstock—through cracking into ethylene and propylene—for the resins used in packaging films, PET bottles, and a wide range of plastic parts. In Korea, naphtha arrives by two routes, both ultimately Gulf-dependent. Roughly 45% is imported directly as finished naphtha, of which about 77% comes from the Middle East. The remainder is refined at home from imported crude, most of which is also Gulf-sourced.

On 4 March, Korea's third-largest ethylene producer (Yeochun NCC) declared *force majeure* as the Hormuz blockade halted Middle Eastern naphtha shipments. LG Chem, Lotte Chemical, and Hanwha Solutions issued similar warnings to customers, and on 23 March, LG Chem shut its 800,000-t/y No. 2 cracker at Yeosu. By mid-April, the disruption was deepening rather than easing: on 13 April, Hanwha TotalEnergies halted its paraxylene (PX) supply, thereby extending the cascade into the polyester and PET bottle chains.

Thirteen food-industry associations petitioned the government, reporting that inventories of packaging materials—vinyl, film, and PET containers—had fallen to roughly two weeks for some items, with domestic packaging-material prices up 20–30% within a month. Korean memory chipmakers Samsung and SK Hynix have also been flagged as exposed: a specialized stream of naphtha-derived chemistry feeds the high-purity solvents used in semiconductor production. Together, the two firms hold roughly 70% of the global DRAM market and around 80% of high-bandwidth memory (HBM), the latter of which is used in Nvidia's AI accelerators.

To stabilize supply, the Korean government imposed a five-month statutory ban on naphtha exports on 27 March, with priority allocated to healthcare, essential goods, and core industries. The decree mandates daily reporting from refiners and petrochemical firms, and allows the authorities to intervene directly in supply allocation if shortages worsen.

A "war supplementary budget" of KRW 26.2 trillion (~$18 bn) passed the National Assembly on 10 April, including naphtha-import subsidies and support for procurement from non-Gulf suppliers. Around 30 March, LG Chem imported 27,000 tonnes of Russian naphtha—Korea's first such purchase since the 2022 sanctions. Presidential Chief of Staff Kang Hoon-sik toured Kazakhstan, Oman, Saudi Arabia, and Qatar between 7 and 14 April, securing commitments for 273 million barrels of crude and up to 2.1 million tonnes of naphtha through year-end. It includes Saudi crude loaded at the Red Sea port of Yanbu, which has since handled multiple Korean-flagged tankers



Korean cascade: Hormuz closure propagates through naphtha to the large Korean petrochemical industry. Multiple consumer goods are under tension, including PET packaging and electronic chips. Source: author's synthesis based on trade-press reporting.

Case study 4 — Japan: bidirectional shock to the auto sector.

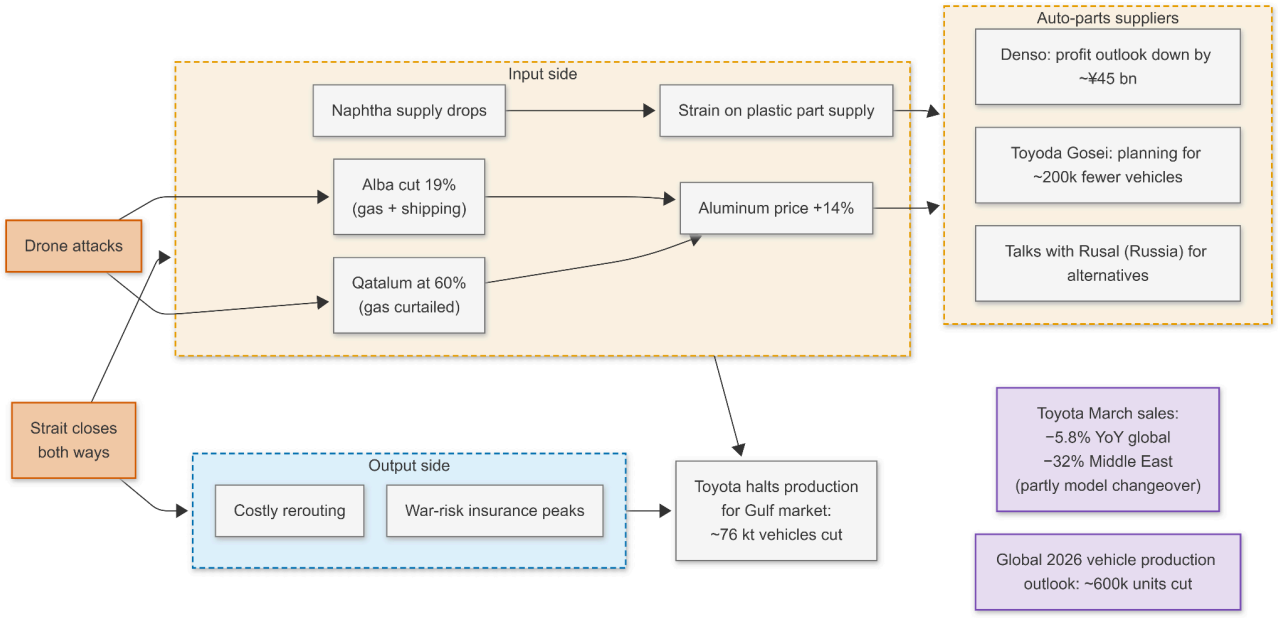
The Strait closure affects ships in both directions. We tend to focus on outbound cargoes leaving the Gulf, but inbound flows are equally disrupted. Japan's auto sector is hit on both sides.

On the input side, Japanese carmakers and their suppliers source roughly 70% of their processed aluminum and naphtha from the Gulf—aluminum for body panels and powertrain components, naphtha-derived plastics for interiors and electronics. The Gulf aluminum smelters (8–9% of global production) benefit from abundant natural gas. Qatar Aluminium scaled back to 60% capacity from 12 March after drone strikes hit its gas supply. Aluminium Bahrain cut 19% of capacity on 15 March amid gas uncertainty and shipping disruption. Consequently, global aluminum prices rose by 14%.

Several Japanese auto-parts suppliers (Tier-1 and Tier-2 firms feeding Toyota, Honda, and Nissan) opened negotiations in early March with Russia's Rusal, the world's second-largest aluminum producer, with no deal publicly announced yet. As in the Korean case, it constitutes a notable pivot: Japanese firms had voluntarily halted Russian aluminum purchases since February 2022.

On the output side, Japanese car manufacturers dominate the Gulf car market. With the Strait blocked, those companies have trouble reaching their consumers: rerouting is costly, and war-risk insurance premiums have soared. Toyota halted production of Gulf-bound vehicles: roughly 20,000 units in March, 18,000 in April, and a further 38,000 in total, according to an announcement on 21 April. The cumulative figure approaches 76,000 vehicles. The bulk of the sales impact will appear in subsequent months, as unbuilt cars fail to reach Gulf dealers.

Both disruption pathways—input and output—converged on 27 April: Bloomberg, Nikkei, and others connected Toyota's 5.8% year-on-year drop in March 2026 sales to the Hormuz crisis—the first time a global company's sales decline has been publicly tied to the conflict. Part of it is also attributed to a planned model changeover. The Middle East region fell 32%. The pressure is showing up at suppliers: Denso has cut its profit outlook by ~¥45 bn, and Toyoda Gosei is planning for ~200k fewer vehicles than ordered. Commodities research firm CRU has cut its 2026 global light vehicle production forecast by 600k+ units.



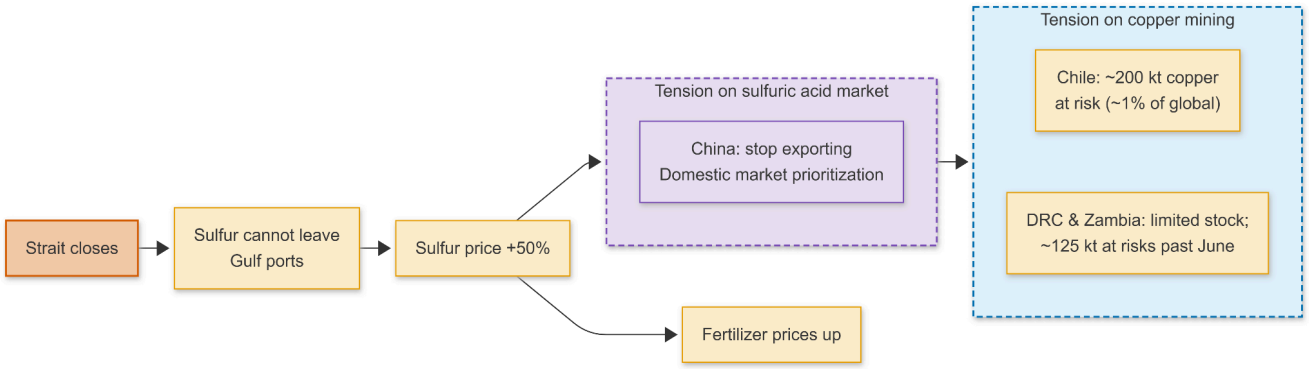
Japanese cascade: Hormuz closure is felt on both sides by Japanese car manufacturers and suppliers. On the input side, they face pressure in aluminum and plastic markets due to the Strait closure, but also drone attacks on Gulf facilities. On the output side, they face challenges shipping vehicles to the Gulf market. Source: author's synthesis based on trade-press reporting.

Case study 5 — Gulf sulfur, Chinese sulfuric acid, and global copper production

This is the longest cascade in geographical reach. The Gulf supplies roughly half of all internationally traded *sulfur* shipped by sea, a by-product of their refineries and gas-processing plants. Sulfur is the upstream input to *sulfuric acid*, which is used to extract *copper* from oxide ores. Copper is essential to electric and electronic equipment and infrastructure, and is widely considered a material bottleneck for the energy transition.

With Hormuz closed, sulfur could no longer be shipped out to fertilizer and chemical buyers worldwide. The benchmark sulfur price rose around 50%, reaching $630 per tonne by April. Beyond tensions in the fertilizer markets, this price surge impacted the sulfuric-acid-copper value chain. China, the world's largest exporter of sulfuric acid, responded by prioritizing domestic users, shipping none to Chile in March 2026. On 10 April, China announced it would halt sulfuric acid exports from 1 May.

As a consequence, around 200,000 tonnes of Chilean copper production are reported at risk, equivalent to about 1% of global supply. According to the financial press, BHP, one of the world's largest miners, has reportedly shifted its copper supply outlook toward its African operations and away from Chile. In parallel, the Democratic Republic of the Congo and Zambia, which together import about 2 Mt of sulfur annually for their copper mines, are reported to hold two to three months of inventory; if the squeeze persists past June, around 125,000 tonnes of copper output could be at risk.



Mining cascade: Hormuz closure halts Gulf sulfur exports, driving up fertilizer prices and tensions in the sulfuric acid markets. China halts exports of this acid, affecting copper extraction in Chile and Africa. Source: author's synthesis based on trade-press reporting.

What we have learned.

- Timing and coverage
    - The set of affected industries is large. It is not only energy and fertilizers, but also plastic manufacturing, textiles, mining, carmaking, all the way to electronics and AI chips.
    - As expected, South Asia is the most affected region, but the impact is cascading further East to China, Korea, and Japan, and is starting to ripple to other regions (South America, Africa, Europe).
    - Force majeure declarations and price moves dominated the first few weeks. Since late March, production reduction and sales loss have been kicking in.
- Propagation along supply chains.
    - Downstream propagation—from raw materials to manufacturing—operates through three channels: energy supply (gas-powered heavy industry), raw inputs (naphtha, aluminum, sulfur), and labor (workers unable to work when cooking gas is rationed).
    - Upstream propagation—from clients to their suppliers—is also occurring. Car manufacturers reduce their production for Gulf countries, which ripples to their own suppliers.
- Policy responses.
    - Policy responses (India's gas allocation, Korea's naphtha export ban, China's sulfuric-acid export halt) are key modulators of the cascade.
    - But by prioritizing some sectors over others, they do create ripple effects that propagate disruptions further
    - This implies that international coordination, not just national emergency responses, will be critical for managing the coming weeks of closure and potential recovery.

Limitations.

- This brief synthesizes secondary reporting, not primary data. I have focused on **trustworthy sources**, including trade and commodity press, giving higher weight to recognized sources such as Reuters. Yet, I did not engage directly with industry representatives to confirm all information.
- The last step in the disruption cascades is often **a warning** rather than an effective disruption. In Korea, photoresist-grade plastics have been flagged as tight, but no fab-level outages at Samsung or SK Hynix have been reported. Copper production in Chile and Africa is at risk, but we have not yet observed output losses.
- Several cases carry non-Hormuz stressors, which act as **confounding factors**. The Indian textile industry is hit by US tariffs, which impact sales. Toyota sales decline may also be due, in part, to a non-Hormuz factor: a separate, planned production slowdown linked to a model upgrade. Chinese sulfuric acid exports may not be entirely driven by Hormuz; they may also reflect other policy priorities.
- The five cases were chosen for the depth and quality of their documentation, **not as a representative sample** of global disruption. They illustrate cascade mechanisms but cannot quantify how widespread or how severe the broader impact has been; many other cascades are unfolding in parallel that this brief does not cover.

Sources. I report only the most salient URLs per case

Bangladesh

- https://www.aljazeera.com/economy/2026/3/2/why-qatarenergys-lng-production-halt-could-shake-up-global-gas-markets
- https://www.iea.org/news/middle-east-crisis-disrupts-international-natural-gas-markets-and-delays-global-lng-supply-wave
- https://boereport.com/2026/04/15/edison-says-qatar-may-extend-gas-force-majeure-sees-us-lng-filling-gap/
- https://www.karmactive.com/bangladesh-garment-industry-runs-at-30-40-capacity-as-gas-pressure-drops-from-10-psi-to-critical-1-2-psi-level/
- https://www.marketscreener.com/news/bangladesh-shuts-fertiliser-factories-as-middle-east-crisis-strains-gas-supply-ce7e5fdbdc89f527
- https://www.thedailystar.net/environment/natural-resources/energy/news/gas-shortage-halts-production-2-chattogram-fertiliser-plants-4121571
- https://www.thedailystar.net/business/economy/news/gas-shortage-brings-dap-fertiliser-production-halt-4155561
- https://www.qcintel.com/ammonia/article/bangladesh-s-dapfcl-halts-dap-output-as-ammonia-supply-runs-out-63140.html
- https://bangladeshtextilejournal.com/energy-crisis-cuts-rmg-output-by-up-to-30-bgmea-urges-quick-action/
- https://www.business-humanrights.org/en/latest-news/bangladesh-garment-factory-generators-shutting-down-due-to-fuel-shortage-amid-strait-of-hormuz-closure-as-buyers-reduce-orders/

India

- https://www.icis.com/explore/resources/news/2026/03/09/11186750/india-invokes-measures-to-ensure-gas-fertilizer-availability/
- https://www.spglobal.com/energy/en/news-research/latest-news/lng/031126-india-secures-alternative-natural-gas-amid-hormuz-disruptions-government
- https://www.business-standard.com/industry/agriculture/indian-domestic-urea-production-likely-to-jump-over-11-pc-in-april-126041501482_1.html
- https://www.business-standard.com/industry/news/iran-conflict-hits-asia-s-polyester-suppliers-to-global-fast-fashion-126042400285_1.html
- https://www.businessoffashion.com/news/global-markets/the-middle-east-war-is-squeezing-asias-polyester-suppliers/
- https://www.agbi.com/manufacturing/2026/04/iran-war-hits-asias-polyester-suppliers-to-fast-fashion/
- https://www.aljazeera.com/video/newsfeed/2026/3/20/india-cooking-gas-crisis-forces-exodus-of-textile-workers
- https://www.cnbc.com/2026/04/09/inside-india-newsletter-tariffs-iran-war-india-massive-garments-industry.html
- https://apparelresources.com/business-news/trade-business-news/indian-textile-apparel-exports-register-significant-yoy-degrowth-march-2026/

Korea

- https://www.scmp.com/tech/article/3351192/asias-chipmakers-feel-heat-naphtha-crunch-hits-photoresist-supply
- https://www.koreatimes.co.kr/business/companies/20260313/fears-of-force-majeure-spread-across-industries-as-iran-war-continues
- https://en.sedaily.com/news/2026/03/23/lg-chem-shuts-yeosu-no-2-plant-amid-naphtha-supply-crunch
- https://hydrocarbonprocessing.com/news/2026/03/south-koreas-lg-chem-to-import-russian-naphtha/
- https://www.icis.com/explore/resources/news/2026/03/24/11191196/insight-s-korea-petrochemical-industry-enters-conservation-mode-amid-naphtha-shortage
- https://hydrocarbonprocessing.com/news/2026/03/south-korea-enforces-naphtha-export-ban-amid-middle-east-supply-disruptions/
- https://www.koreaherald.com/article/10703504
- https://www.koreaherald.com/article/10705958
- https://asia.nikkei.com/business/materials/south-korea-to-import-27-000-tons-of-russian-naphtha-amid-shortage
- https://en.sedaily.com/finance/2026/04/16/naphtha-shortage-ripples-through-supply-chain-from-clothing
- https://www.bloomberg.com/news/articles/2026-03-31/south-korea-rolls-out-17-billion-budget-to-counter-iran-shock
- https://www.koreaherald.com/article/10717264
- https://www.bloomberg.com/news/articles/2026-04-15/south-korea-secures-extra-oil-naphtha-for-non-hormuz-delivery
- https://www.scmp.com/news/asia/east-asia/article/3349167/iran-war-south-korea-aims-bypass-hormuz-send-ships-saudi-port-oil
- https://en.sedaily.com/politics/2026/04/07/breaking-news-kang-hoon-sik-to-visit-kazakhstan-saudi

Japan

- https://www.insurancejournal.com/news/international/2026/04/27/867344.htm
- https://english.alarabiya.net/News/world/2026/04/03/japanese-lng-tanker-crosses-strait-of-hormuz-mitsui-osk-lines-says-

- https://www.marketscreener.com/news/toyota-to-cut-output-by-nearly-40-000-for-mideast-bound-vehicles-nikkei-reports-ce7e5fdbda8ef523
- https://www.thestar.com.my/aseanplus/aseanplus-news/2026/04/21/toyota-to-cut-global-vehicle-production-by-38000-due-to-the-ongoing-middle-east-crisis
- https://www.mining.com/web/norsk-hydro-says-qatalum-aluminum-smelter-to-halt-curtailment-operate-at-60/
- https://www.thenationalnews.com/business/2026/03/15/bahrains-alba-to-cut-19-of-aluminium-production-capacity-amid-hormuz-disruption/
- https://www.autonews.com/toyota/an-japan-iran-war-aluminum-shortage-jama-koji-sato-toyota-nissan-honda-0319/
- https://www.bloomberg.com/news/articles/2026-04-19/japan-manufacturers-hurt-most-by-aluminum-shortage-from-iran-war
- https://www.bloomberg.com/news/articles/2026-04-27/toyota-sees-sales-decline-as-iran-conflict-looms-over-operations
- https://www.japantimes.co.jp/business/2026/04/27/companies/toyota-march-sales-decline/
- https://www.bloomberg.com/news/articles/2026-03-10/iran-war-forces-japanese-auto-parts-suppliers-to-turn-to-rusal
- https://www.autonews.com/manufacturing/suppliers/an-japan-korea-automakers-rusal-aluminum-talks-0310/
- https://www.alcircle.com/news/japan-auto-parts-makers-eye-aluminium-from-russias-rusal-amidst-middle-east-crisis-117586

Critical minerals

- https://www.argusmedia.com/en/news-and-insights/latest-market-news/2803156-sulphur-s-rally-pre-empts-middle-east-price-spike
- https://www.bloomberg.com/news/articles/2026-04-27/mideast-urea-output-slumps-with-lack-of-fertilizer-ships-to-load
- https://www.businesstoday.in/latest/corporate/story/bt-explainer-why-a-sulphuric-acid-shortage-could-ripple-across-indian-companies-525208-2026-04-11
- https://www.bloomberg.com/news/articles/2026-04-10/china-moves-to-ban-sulfuric-acid-exports-as-iran-war-hits-supply
- https://www.spglobal.com/energy/en/news-research/latest-news/metals/041526-chinas-sulfuric-acid-restrictions-set-to-squeeze-miners
- https://www.mining.com/web/china-moves-to-ban-sulfuric-acid-exports-as-iran-war-hits-supply/
- https://discoveryalert.com.au/supply-chain-vulnerabilities-critical-chemical-2026/
- https://www.benzinga.com/markets/commodities/26/04/51961314/bhp-turns-to-africa-as-hormuz-threatens-copper-surplus-thesis