Prewave

Situation Assessment:

3 March 2026 | Day 3 of Operations

Iran-US War: Second-Order Supply Chain Impacts

Pharmaceuticals & Food Security

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Situation Assessment: Pharmaceuticals & Food Security

Executive Summary

The simultaneous closure of the Strait of Hormuz and hostile conditions at Bab al-Mandab create cascading risks for two sectors receiving insufficient attention: **pharmaceuticals and food**.

- Pharmaceuticals are hit through air cargo disruption, cold chain failure, and, over a longer timeframe, petrochemical feedstock constraints that affect API manufacturing.
- Food security is hit through fertiliser supply shutdown, energy cost pass-through, and critical planting-season timing.

Both share one feature: the damage arrives slowly but is difficult to reverse once it begins. Oil has strategic reserves, demand destruction mechanisms, and pipeline bypasses. Fertiliser has none of these. Pharmaceutical cold chains have no alternative hub system of equivalent scale. These gaps make both sectors structurally more fragile than crude oil to prolonged disruption.

Confidence Framework

This assessment uses explicit confidence tags.

CONFIRMED = independently verified by named sources.

ASSESSED = plausible based on available evidence; not independently confirmed.

UNVERIFIED = claimed but not supported by accessible sources. Scenario probabilities throughout are subjective analytical judgments.

Part 1: Pharmaceutical Supply Chains

1.1 Air Cargo: Primary Exposure

Air cargo carries less than 1% of global freight volume but approximately 35% of global trade value (IATA). Pharmaceuticals represent 25–30% of India's air cargo export value (Air Cargo Week). India exported over $4.2 billion in pharmaceutical goods in Q1 2025 and supplies medicines to more than 200 countries (Indian Ministry of Commerce, cited by Air Cargo Week).

The Gulf hubs, Dubai (DXB), Doha (DOH), and Abu Dhabi (AUH), function as the world's primary air cargo transshipment nodes for traffic between Asia, Africa, and Europe. This role is well-established in industry capacity analysis.

On the key China/Hong Kong–Europe route, approximately 50% of air cargo capacity ran through intermediate stopovers in the Middle East or Central Asia in Q4 2025, with the remaining 50% on direct services (Loadstar/Pro Carrier). This applies to the China/HK–Europe corridor specifically. The share for the broader Asia–Europe corridor may differ.

Current Capacity Impact

- Middle East and South Asia regional air capacity is down more than 60%.
- Asia–Middle East–Europe air cargo capacity fell 26% between 21 and 28 February (Loadstar/Pro Carrier).
- Direct Asia–Europe routes that bypass Gulf hubs have partially recovered, with capacity on non-Gulf services up 13–14% (Loadstar).
    - This partial offset does not replace the Gulf hubs for pharma-specific handling.

Qatar Airways (~12,000 tonnes/day) and Emirates (~10,000 tonnes/day) together provide over 20,000 tonnes/day of cargo capacity; both were substantially disrupted. Emirates and Flydubai resumed limited flights from Dubai on 2 March, while Qatar Airways and Etihad remained suspended. The Global Cold Chain Alliance confirmed on 2 March that all major maritime carriers have suspended reefer bookings into the Persian Gulf.

Alternatives

Some cargo is diverted through Almaty, Tbilisi, and Muscat (Loadstar). These are overflow points, not integrated distribution hubs. None have pharma-grade cold chain infrastructure, validated handling protocols, or onward connectivity that Gulf hubs provide. The bottleneck is not zero alternatives, it is the gap between what exists and what the volume requires.

1.2 What Moves Through Gulf Air Hubs

Cargo Type	Characteristics	Impact of Hub Disruption
Vaccines & biologics	2–8°C cold chain; 24–72hr transit windows	Batch spoilage if transit exceeds window. No recovery.
Clinical trial materials	Strict traceability, rapid transit, full chain of custody	Trial delays, protocol violations, regulatory exposure.
Generic medicines	India exports to 200+ countries; ~20% of global generics	Delayed deliveries to Africa, Middle East, SE Asia.
Oncology & specialty drugs	High value, short shelf life, temperature-sensitive	Supply gaps in import-dependent countries.
Insulin & diabetes supplies	Cold chain required, continuous demand	Rationing risk in countries fully reliant on imports.

DSV warned customers on 2 March to expect extended transit times, irregular schedules, and rate increases. UK-based Woodland Group warned of schedule volatility across impacted corridors (Air Cargo News).

1.3 The Petrochemical Feedstock Channel

The second, slower pharmaceutical impact runs through petrochemical feedstock. Gulf naphtha and condensate feed Asian petrochemical crackers that produce base chemicals for Active Pharmaceutical Ingredients (APIs), excipients, packaging plastics, and medical devices.

South Korea, Japan, Singapore, and Taiwan are structurally dependent on Gulf-sourced feedstock. In 2017, Gulf producers accounted for approximately 82% of South Korea's crude oil imports (Middle East Institute). However, this figure is now seven to nine years old. South Korean refiners have since diversified significantly, increasing imports of North African naphtha and US LPG (S&P Global Commodity Insights). The current Gulf share is lower than 82%, though the dependency remains structurally high.

Until 2018, Qatar and Iran were among South Korea's leading condensate suppliers for petrochemical plants. Following the reimposition of US sanctions, South Korea ceased purchases of Iranian condensate; US and other suppliers have gained market share since. The disruption to Gulf feedstock flows would still compress margins and, if sustained, reduce output at petrochemical facilities across East Asia.

US Pharmaceutical Supply Chain Exposure

Approximately 47% of generic medicines consumed in the US originate from India (Connecticut Mirror).

Indian API manufacturers source approximately 68% of their active ingredients by value from China, or 58–75% by volume (Brookings Institution). Both India and China depend on Gulf energy and feedstock. The disruption propagates through a long chain, but it does propagate.

1.4 Pharmaceutical Impact Timeline

Timeframe	Mechanism	Most Exposed
Days 1–7	Air cargo delays. Cold chain breaches on in-transit shipments. Reefer bookings suspended. Forwarders restricting bookings for affected destinations.	Gulf states (import-dependent for medicines), East Africa, South Asia.
Weeks 2–4	Inventory buffers begin depleting at distributor and hospital level in import-dependent countries. Rerouted shipments face regulatory scrutiny. Clinical trial disruptions.	Gulf states, Sub-Saharan Africa, Pakistan, Bangladesh.
Weeks 4–8	Petrochemical feedstock constraints begin affecting API manufacturing if disruption persists. Packaging and medical device plastics under pressure.	India (export capacity disrupted), South Korea, Japan, Taiwan.
Months 2+	Risk of drug shortages broadening. Production curtailments possible at API level. Price inflation on generics. Alternative sourcing creates regulatory bottlenecks.	Broader global risk; severity depends entirely on duration.

India is a pharmaceutical *producer*, not just a transit point, and its domestic drug supply is less vulnerable than export capacity. The countries hit first are those that depend on imports routed through Gulf hubs: the Gulf itself, Sub-Saharan Africa, and parts of South Asia.

Part 2: Food Security & Fertiliser

2.1 The Fertiliser Chokepoint

The headlines focus on oil. The more enduring risk may be fertiliser.

Approximately one-third of the world's fertiliser trade, including sulphur and ammonia, passes through the Strait of Hormuz (Kpler, 2025). Within this, an estimated 20–25% of globally traded urea passes through Hormuz, based on Middle Eastern countries' share of 40–50% of global urea trade (Farmdoc), not all of which transits the strait. The Gulf is also a leading exporter of seaborne sulphur; industry estimates place the region's share at approximately half of the global ~40 Mt seaborne total (Argus Analytics, not publicly verifiable).

Roughly half of global food production depends on synthetic nitrogen fertiliser. This is a well-established finding in agricultural science, summarised by Forbes/Robert Rapier and grounded in the Haber-Bosch process that underpins modern agriculture.

Globally, about 180 Mt of nitrogen fertilisers are consumed annually (Farmdoc/Forbes).

2.2 Gulf Fertiliser Production at Risk

Producer	Annual Exports	Key Products	Status / Confidence
Qatar (QAFCO)	~5.5–6 Mt urea + ammonia	World's largest urea exporter. Ras Laffan complex.	**Operational status unclear.** Unconfirmed reports of drone strikes on Ras Laffan. No independently verified source confirms LNG production halt or QAFCO disruption.
Iran	~5 Mt urea (~10% of global trade)	Major ammonia and urea exporter.	**Production likely halted** given strikes across 24 of 31 provinces, but not independently confirmed for this crisis.
Saudi Arabia (SABIC/Ma'aden)	~4–5 Mt urea/DAP/MAP	Ma'aden: ~20% of global seaborne MAP, ~14% of DAP trade (Argus).	Production operational but exports blocked by Hormuz closure.
Oman & UAE	Several Mt combined	UAE Fujairah resumed limited ops Mar 2.	Partially operational; export capacity severely constrained.
Total behind Hormuz	**15+ Mt/year (Forbes)**	**Monthly: 3–3.9 Mt fertiliser flows (Kpler)**	

2.3 Fertiliser Pricing

Urea and broader fertiliser prices had been rising before the crisis. Industry sources (Argus, All Ag News) report significant price increases from late-2025 levels, though specific pre-crisis FOB figures vary by source and could not be independently verified from public data.

US fertiliser prices were trending higher year-on-year across major products before the strikes, with industry analysts noting poor fertiliser-to-crop price ratios for farmers (StoneX).

2.4 Egypt: Separate, but Connected Disruption

Israel halted gas exports to Egypt within 24 hours of the strikes (Mada Masr, Newsbase, Egyptian Petroleum Ministry). Both the Karish field (Energean, shut down by Israeli government order) and Leviathan were suspended. Israeli gas accounts for 15–20% of Egypt's total gas consumption (JODI data).

However, as of 28 February, Egyptian urea plants were still operating. Egyptian producers confirmed no change in gas supply to plants (Argus, 28 February). Egypt had prepared since the June 2025 precedent, when identical circumstances shut down all Egyptian nitrogen production. Egypt now has three regasification units and has pre-contracted over 150 LNG cargoes: 80 from the US, 24 from Qatar, with ~75 more to be tendered (Mada Masr).

Egypt's net urea capacity is approximately 7.7 Mt/year (BC Insight). Its continued operation provides a meaningful buffer that did not exist during the June 2025 war. However, this buffer is measured in days to weeks. If the crisis persists and LNG deliveries themselves are disrupted (Hormuz + Red Sea), Egypt's fertiliser sector is at risk.

2.5 No Strategic Fertiliser Reserve

Fertiliser has no equivalent to the Strategic Petroleum Reserve. There is no strategic fertiliser reserve in any major consuming country. No bypass pipeline. No OPEC equivalent that can ramp up production overnight. New ammonia plants require years to permit and build. Existing non-Gulf facilities typically operate near capacity.

Partial offset: Russia could increase fertiliser exports to fill some of the gap. Russia and Belarus are major potash producers, and Russia has nitrogen capacity (Kpler). But Russian exports are constrained by sanctions complications and logistics bottlenecks. Russia is a partial substitute, not a replacement.

2.6 The Planting Season Problem

Timing is critical. The Hormuz closure coincides with the start of the Northern Hemisphere spring planting season:

- India's kharif season is approaching.
- Brazil's soybean and corn cycle depends on consistent fertiliser deliveries.
- US farmers are finalising spring planting decisions now.

After Russia's invasion of Ukraine in 2022, fertiliser prices rose sharply, with some nitrogen products more than doubling and potash prices increasing by well over 100% (American Farm Bureau Federation). The Hormuz closure puts a comparable volume of nitrogen fertiliser at risk.

Fertiliser-to-food transmission chain

Hormuz closes → Gulf fertiliser exports stop → urea and ammonia prices spike → farmers pay more or apply less → crop yields fall → food supplies tighten 3–6 months later → food prices rise.

This mechanism is well-documented from the 2022 precedent. The question is scale and duration.

2.7 Most Vulnerable Countries

Country	Key Dependency	Buffer	Vulnerability
India	World's 2nd-largest fertiliser consumer. Heavy Gulf imports. Domestic urea production partly depends on Qatari LNG.	9.5 days SPR (oil). No fertiliser reserve.	1.4 billion people. Kharif planting imminent. Dual shock: fertiliser + energy.
Bangladesh	Heavily import-dependent for both fertiliser and food.	5 days SPR. Thinnest buffer globally.	Physical fuel shortages within first week. Fertiliser disruption during planting = food crisis within months.
Pakistan	Major Gulf fertiliser importer. On IMF programme. 12% inflation pre-crisis.	20 days SPR.	Food = 30–50% of household spending. Compound economic and sectarian pressure.
Brazil	Major Middle Eastern urea importer. Soy/corn cycle needs consistent deliveries.	Domestically food-secure; import-dependent for fertiliser.	Global grain balances tighten if Brazil's output falls.
Sub-Saharan Africa	Import-dependent for both fertiliser and food. Morocco needs Gulf sulphur/ammonia for phosphate production.	Minimal reserves across the board.	WFP: multiple countries already at worst food emergency level. Disruption accelerates existing crises.

2.8 Compounding Channels

Food security is not hit through a single channel. Three disruptions compound simultaneously:

- **Fertiliser input costs spike** as Gulf exports halt and urea/ammonia prices rise.
- **Energy costs spike** as oil and LNG prices rise, increasing diesel for farm equipment, irrigation, and transport.
- **Freight costs spike** as container rates rise on affected lanes and reefer equipment drains from repositioning to longer routings.

The Global Cold Chain Alliance warned on 2 March that energy-driven increases in feed, fertiliser, and packaging costs will raise upstream costs for temperature-controlled products globally, with the most acute pressure in import-dependent markets.

Part 3: Outlook

3.1 Duration Is the Decisive Variable

The severity of both pharmaceutical and food impacts depends almost entirely on how long the chokepoints remain closed. Brief disruptions create cost spikes. Prolonged disruptions create structural shortages that take months to unwind.

The scenarios below are subjective analytical assessments, not probabilistic forecasts. Actual outcomes depend on military developments, diplomatic action, and government interventions that cannot be predicted with confidence.

Duration	Pharmaceutical Impact	Food / Fertiliser Impact
1–3 weeks	Air cargo delays and cold chain breaches on in-transit shipments. Existing inventory absorbs most impact in well-stocked systems. Clinical trials disrupted.	Fertiliser prices spike but forward contracts cover current planting in most markets. Limited physical impact on food supply.
1–3 months	Supply gaps in import-dependent countries (Gulf, Africa, South Asia). API feedstock constraints begin to affect manufacturing. Generic drug production slows.	Spring planting disrupted. Farmers reduce fertiliser application. Yield impacts locked in for the harvest season.
3–6 months	Drug shortage risk broadens. Production curtailments at API manufacturing level if feedstock constrained. Regulatory bottlenecks from emergency alternative sourcing.	Food price increases in import-dependent countries. Grain balances tighten. Political pressure intensifies where food is 30–50% of household spending.
6+ months	Structural pharmaceutical supply chain damage. Some production capacity potentially lost. Government interventions likely.	Severe food insecurity worsens in already-fragile states (Sudan, Yemen, DRC, Nigeria, Palestine, Haiti). Risk of broader food crises in South Asia and Sub-Saharan Africa.

3.2 Indicators to Track

Indicator	Current Status (3 March)	Significance
Commercial vessels entering Hormuz	Near standstill. AIS data shows some vessels — primarily Chinese-flagged or neutral — still transiting. 11 westbound containerships observed; 97 containerships trapped in the Gulf (Lloyd's List). Not zero, but far below normal.	Single most important indicator. When commercial entry normalises, the trajectory changes.
Urea benchmark pricing	Rising sharply pre-crisis. Industry sources report significant increases from late-2025 levels. Exact current FOB figures vary by source.	Watch for whether prices exceed 2022 peaks. The 2022 precedent saw nitrogen prices more than double.
Gulf hub flight capacity	Emirates/Flydubai resumed limited flights Mar 2. Qatar Airways and Etihad remain suspended. ME air capacity down 60%+. Direct Asia–Europe routes up 13–14% (partial offset).	Watch for full hub reopening vs. continued partial operations.
Qatar Ras Laffan status	Operational status unclear. Reports of drone strikes and production halt could not be independently verified.	Ras Laffan hosts both LNG and QAFCO (world's largest urea export complex). Its status is critical for both energy and fertiliser.
Egyptian urea plant operations	Still running as of Feb 28 (Argus). Israel gas cutoff confirmed, but Egypt's LNG buffer holding.	Egypt's 7.7 Mt/year capacity is a meaningful global buffer. If plants go offline (as in June 2025), global urea tightens significantly.
India emergency tender activity	India's most recent tender sought 1.5 Mt for March delivery (All Ag News).	Emergency tenders or allocation changes signal government assessment of supply adequacy.

Bottom line

Oil markets have buffers — strategic reserves, demand destruction, alternative suppliers, pipeline bypasses.

Fertiliser has no reserve, no bypass, and limited substitution. Pharmaceutical cold chains have no alternative hub of equivalent scale.

Both sectors operate on longer timescales than energy: pharmaceutical disruptions emerge over weeks, food price effects arrive months later.

That mismatch between timing and attention is what makes these risks easy to underestimate and hard to reverse.

Sources & Methodology

Air cargo and pharmaceutical logistics: IATA (air cargo share of trade value), Air Cargo Week (India pharma exports), Indian Ministry of Commerce (export data), Loadstar/Pro Carrier (capacity analysis: China/HK–Europe corridor, ME capacity decline, direct route recovery), Global Cold Chain Alliance SITREP 2 March 2026 (reefer suspension), DSV advisory, Woodland Group/Air Cargo News. Fertiliser: Kpler 2025 (Hormuz fertiliser share), Farmdoc (urea trade volumes, ME share), Forbes/Robert Rapier (Haber-Bosch, Gulf production scale), American Farm Bureau Federation (2022 price impact precedent), Argus (Egyptian urea plant status 28 Feb), BC Insight (Egypt urea capacity). Egypt energy: Mada Masr (gas cutoff, regasification units, LNG contracts), Newsbase (gas cutoff), Egyptian Petroleum Ministry statements, JODI (consumption share). Petrochemicals: Middle East Institute (South Korea 2017 crude import share), S&P Global Commodity Insights (Korean diversification), IEA (Korea oil security). US pharma supply chain: Connecticut Mirror (~47% of generics from India), Brookings Institution (~68% of Indian API imports from China by value). Shipping: Lloyd's List (Hormuz vessel tracking, containership count).

Limitations: Specific fertiliser FOB prices could not be verified from public sources and are presented as directional trends. Gulf-origin feedstock shares for South Korea, Japan, Singapore, and Taiwan are structurally established but exact current figures are difficult to verify due to ongoing diversification — stated qualitatively or with dated figures explicitly flagged. Iranian fertiliser production status is assessed as likely halted but not independently confirmed. Qatar Ras Laffan drone strikes and LNG production halt could not be verified from public sources and are flagged as unverified. The 70% India–Africa cargo share via Gulf hubs, attributed in earlier versions to CII/World Bank, could not be verified and has been removed. Government interventions, diplomatic resolution, and secondary effects (social unrest, sovereign debt) are flagged but not modelled. All scenario assessments are subjective analytical judgments.

This assessment reflects information available as of 21:00 CET, 3 March 2026. The situation is evolving rapidly. Figures and operational statuses may have changed since publication.

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