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Why Iran war could become global food crisis, not just energy shock

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The ongoing conflict involving Iran is generating a multi-layered shock to global commodity systems, extending well beyond hydrocarbons into fertiliser markets and the broader architecture of global food production, according to sector analysis of trade flows and supply chain dependencies.

At the centre of the disruption is the Strait of Hormuz, a strategic maritime corridor through which a significant share of global energy and fertiliser-related commodities is transported. While traditionally framed as an oil and liquefied natural gas chokepoint, the strait is also a critical transit route for agricultural inputs, including roughly two-fifths of globally traded urea, more than 40 percent of seaborne sulphur, and over a quarter of global ammonia exports.

These materials form the backbone of modern industrial agriculture. Nitrogen fertilisers such as urea and ammonia are primarily derived from natural gas through energy-intensive processes like Haber-Bosch synthesis, while sulphur is essential for producing phosphatic fertilisers such as diammonium phosphate (DAP) and monoammonium phosphate (MAP). Disruptions in any of these inputs create cascading effects across the entire fertiliser value chain.

In response to escalating insecurity in the Strait, maritime traffic has sharply contracted, with shipping insurers withdrawing or restricting war-risk coverage and operators facing elevated transit costs. Limited and controlled passage has significantly reduced export volumes from key Gulf producers, effectively constraining a major global supply hub for fertilisers and related feedstocks.

The operational impact is already visible in production and logistics systems. Several large-scale fertiliser and energy-linked facilities in the region have declared force majeure due to feedstock interruptions and export bottlenecks. Storage terminals in key industrial zones are approaching capacity limits, forcing producers to curtail output even in cases where direct physical damage has not occurred.

Particularly acute is the disruption to sulphur flows, a less substitutable but indispensable input in phosphate fertiliser production. Gulf economies represent the worldâ??s largest concentrated source of export sulphur, much of which is used internationally to produce sulphuric acid for processing phosphate rock into usable fertiliser compounds. Interruptions in this segment propagate rapidly through downstream phosphate producers.

Major global phosphate suppliers, including Morocco, China, and Saudi Arabia, are simultaneously affected through different channels: feedstock shortages, export restrictions, and logistical constraints. Although geographically diversified on paper, the phosphate production system remains structurally dependent on Gulf-derived sulphur, revealing a hidden concentration risk in global agricultural input markets.

Price signals in fertiliser markets have begun to adjust upward, though analysts note that commodity pricing remains slower to reflect physical disruptions compared to energy markets. Urea and ammonia prices have risen sharply in key export benchmarks, while DAP prices at major ports have approached thresholds last seen during previous global supply crises.

However, current price levels still remain below the peaks observed in 2022, when simultaneous shocks in grain and fertiliser markets reinforced each other. The present situation differs structurally: fertiliser costs are rising against relatively stable or weakening grain prices, intensifying the cost-price squeeze for farmers and reducing their ability to offset input inflation through higher crop revenues.

This asymmetry is expected to have significant implications for planting decisions. Reduced fertiliser application rates are likely, particularly in price-sensitive agricultural economies, which may not immediately affect production volumes but could translate into yield reductions in subsequent harvest cycles.

Exposure is highly uneven across regions. India, as the worldâ??s largest importer of diammonium phosphate and a major consumer of urea, faces heightened vulnerability due to its dependence on Gulf suppliers and its tight planting calendar. Although domestic production capacity and buffer stocks provide partial insulation, disruptions extending into key sowing windows could create acute short-term shortages.

Brazil presents a different but equally significant risk profile. As the worldâ??s largest net importer of fertiliser, with limited domestic nitrogen production capacity, it relies heavily on imported inputs for soybean and maize production cycles. A large share of these imports historically transits through Gulf shipping routes, making Brazil structurally sensitive to prolonged Strait disruptions during its purchasing season.

In Southeast Asia and parts of South Asia, including Indonesia, Vietnam, Pakistan, and Bangladesh, supply constraints are compounded by simultaneous reductions in Chinese phosphate exports and gas shortages affecting domestic fertiliser production. These overlapping constraints increase the probability of localized shortages during peak agricultural demand periods.

Europe, while less directly dependent on Gulf supply chains, is not insulated from the shock. High natural gas prices have already reduced domestic fertiliser production capacity in recent years, and the renewed energy price surge has further increased production costs. As a result, European farmers face a widening cost-price gap, particularly in nitrogen-intensive crops.

Mitigation efforts are underway but remain constrained by structural limitations. Alternative suppliers, including Russia and Morocco, are absorbing additional demand, but neither has sufficient spare capacity to fully replace disrupted Gulf volumes in the short term. Russiaâ??s ability to expand exports is further limited by seasonal domestic demand, logistical constraints, and damage to industrial infrastructure.

Moroccoâ??s phosphate production expansion offers longer-term relief potential, but its reliance on imported sulphurâ??historically sourced from the Gulfâ??creates a secondary bottleneck that limits immediate scalability. Even when alternative sulphur sources are available, rerouting and substitution significantly increase costs and slow output adjustments.

At the multilateral level, discussions have begun on establishing emergency corridors for fertiliser and agricultural goods through the Strait, modelled loosely on previous maritime grain agreements. While politically significant, such mechanisms face operational uncertainty, particularly given that they address transport constraints but not upstream production bottlenecks.

Critically, there is no global strategic reserve for fertilisers comparable to petroleum stockpiles maintained by energy-importing countries. This absence limits the ability of governments to smooth short-term disruptions, making agricultural input markets more vulnerable to geopolitical shocks than energy markets in certain respects.

Looking ahead, analysts outline several possible trajectories. A short-lived disruption followed by reopening of maritime routes would likely keep fertiliser prices elevated but contained, with limited spillover into global food production. A more prolonged closure through key planting seasons would tighten supply conditions significantly, raising the probability of yield impacts in major exporting regions such as South America and South Asia.

In a worst-case scenario involving extended conflict and sustained disruption of Gulf production infrastructure, the fertiliser shock could transition from a cyclical supply disturbance into a structural loss of global production capacity. In such an environment, reduced fertiliser availability would become a persistent constraint on agricultural output, amplifying existing pressures from climate variability and input cost inflation.

Overall, the crisis underscores the deep integration of energy systems, fertiliser production, and global food security. It also exposes a structural vulnerability: modern agriculture is heavily dependent on a small number of geographically concentrated inputs whose disruption can propagate rapidly through global markets, with delayed but far-reaching consequences for food availability and prices.

Source: https://noria-research.com/mena/the-war-on-iran-and-the-complex-economics-of-fertilisers-and-food/