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Energy disruption and El Niño: Leading to a global food crisis?

Pressure building in fertilizer and diesel markets

From the **S&P Global Institute**

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HIGHLIGHTS

- The conflict in the Middle East reveals a fundamental nexus of energy, fertilizers and food, and the major role played by the Gulf in the global context.
- The Middle East and Russia account for about half of global net diesel exports — about 2 million barrels/day of that supply has disappeared. Global food prices are impacted in two ways: diesel is an important input cost for farmers, and farmers may direct acreage away from food production to feedstock for biofuels.
- The Gulf is a critical chokepoint for global fertilizer supplies. The limitations on passage through the Strait of Hormuz in the spring and summer reduced the amount of fertilizer available, and ongoing shortfall puts new planting seasons at risk. The challenge is particularly acute for sulfur, a key fertilizer input.
- The compounding effect of higher energy and fertilizer costs, resilient biofuel-linked demand and El Niño-related weather risk puts pressure on food prices and, ultimately, food security. The risk is increasing, especially for low-income countries, where food costs amount to about half of household spending.

Is a crisis for food security looming?

In the past, when agriculture was disrupted and prices rose, the reason would typically have been weather: droughts, floods, freezes. The COVID-19 shutdown also had an impact. But today, it is something new: geopolitics and military conflict. The impact on food will likely become much more apparent over the next few months as farmers wrestle with high costs and with shortages of fertilizer and diesel. Consumers are likely to struggle with higher prices, and governments face social unrest and inflationary pressures. El Niño, the warming of the waters of the Pacific that has a global impact on weather, will compound the difficulties if it is as strong as predicted.

Conflict is moving through fertilizer, energy and biofuel markets.

When the Iran war first led to the effective closure of the Strait of Hormuz, the general expectation was for a disruption of global oil markets, since it was well known that about 20% of oil passed through those waters. Some would have also anticipated a disruption of natural gas, since about 20% of global LNG also flowed through the strait. Few, however, would have considered the impact on global food security. That is in part because the conflict revealed something that was not necessarily obvious — the high degree of overall integration of the Gulf region into the world economy and what has become its major role in fertilizer and the inputs that go into fertilizer.¹

¹ In this report, references to the Gulf region include Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates.

The threat is not confined to a single market or region. The shocks converge on many of the same crops. Farmers in different regions are already responding to the cost dimension, forcing them to use fewer inputs or to plant less. The evidence is visible in the EU's record-low corn area, Brazil's weakest soybean-area growth in two decades and a 13% year-over-year decline in Australia's wheat area.

All this highlights the fundamental nexus of energy, fertilizer and food security that is so much on the global agenda today.

This S&P Global Institute report maps the links between energy and agriculture — and the risks now moving through them. The risks are not only economic. High fuel prices have already led to protests and demonstrations in several countries. Bad harvests and food crises bring pressures for migration. And recent history reminds that sharp increases in food prices in 2010 and 2011 were principal factors that ignited political upheaval across the Middle East in what became known as the Arab Spring.

The multidirectional squeeze on world agriculture

The connection between energy and food security runs through three channels:

- *The first is through fertilizer.* Fertilizers depend on energy, mainly natural gas, for feedstock as well as fuel for their manufacture; and important quantities of the world's traded fertilizer are located upstream of today's conflict-bound bottlenecks.
- *The second channel is through energy products themselves.* Diesel powers farm machinery, irrigation and transport from the farm through supply chains to consumers. Higher prices for diesel therefore raise production costs and squeeze farm margins.
- *A third channel — little-noticed until recently — is through biofuels.* These broadly substitute for diesel itself. As the conflicts in Europe and the Middle East have driven up diesel prices, biofuels become more attractive. The knock-on effect is that, in some regions, crops for fuel become more valuable than crops for food.

What is unfolding is not a single agricultural shock, but the convergence of several shocks. Conflict is moving through fertilizer, energy and biofuel markets, raising costs and narrowing farmers' choices just as an extreme El Niño threatens harvests.

An exceptionally strong El Niño, expected to peak in late 2026, acts as an environmental multiplier that threatens to unleash severe droughts and floods across key Asian, African and Latin American breadbaskets in 2027. This weather shock is projected to hit hardest in regions where crop resilience has already been eroded by consecutive seasons of under-applied fertilizers. Moreover, global grain reserves remain depleted to historic lows by the ongoing Ukraine war. The international system retains few buffers to absorb simultaneous, multi-regional harvest failures if current meteorological forecasts materialize.

This report follows those connections from the geopolitics of energy to the economics of the farm — and shows the effects of reduced fertilizer use and tighter incomes and losses for farmers.

The first shock: Russia's invasion of Ukraine

Before Russia's full-scale invasion in February 2022, Ukraine was a major agricultural exporter. It accounted for approximately 46% of global sunflower oil exports, 17% of barley exports, 12% of corn exports and 9% of wheat exports. Russia also supplied approximately 20% of global wheat exports. Ukrainian cereals represented roughly one-third of Middle Eastern and North African imports and 45% of East African imports. Countries including Egypt, Libya, Pakistan, Yemen and Lebanon were particularly exposed.

The invasion immediately disrupted agricultural trade, prices and consumption. Wheat, corn, sunflower oil, fertilizers and energy became more expensive as buyers sought alternatives to uncertain Black Sea supplies. The situation was eased by a very good Russian harvest in 2022 and by the Turkey/UN-brokered arrangement that allowed Ukrainian commodities to flow. Ukrainian production subsequently declined because of occupied or contaminated farmland, displacement, damaged equipment and shortages of labor, fuel, fertilizer and finance.

Although Ukraine had rebuilt part of its maritime trade after the initial disruption in 2022, the disruption intensified again in 2026. Attacks and security risks affected Black Sea exports from both Russia and Ukraine. Exporters sought alternative routes: Russia redirected more cargo through Baltic ports, while Ukraine relied more heavily on other routes through Europe. Congestion, limited capacity and higher inland costs prevented these alternatives from fully replacing Black Sea access.

Worldwide, higher input costs squeezed farmers while higher food prices forced lower-income households to switch to cheaper foods or reduce consumption, exposing the vulnerability of global supply chains.

The second shock: The Iran war and the Strait of Hormuz

The Iran war began on Feb. 28, 2026. Shortly after, Iran asserted sovereignty over the Strait of Hormuz, the most important maritime chokepoint in the world. The continued disruption of transit through the strait is turning into a threat to global food security. Damage to infrastructure in the Gulf and repeated restrictions on shipping have sharply reduced the movement of oil, LNG, helium, fertilizer and fertilizer inputs. Although some trade has resumed, flows remain below prewar levels, forcing markets to price the risk of a prolonged disruption.

The food-security consequences arise from the Gulf's deep integration into the global fertilizer industry. Natural gas is both the principal feedstock and a major energy source for ammonia and urea production, while global oil refining and gas processing supply more than 90% of the world's sulfur. Since the 1980s, Gulf producers have built large export-oriented industries around these resources.

The strait therefore carries not only oil and LNG, but also substantial volumes of urea, ammonia and sulfur needed to sustain crop production elsewhere.

The impact differs sharply by product, as explained in the following section. Alternative suppliers can replace part of the lost Gulf urea trade, although at the cost of greater price volatility. Sulfur is more difficult to substitute, and shortages directly constrain phosphate

fertilizer production. Ammonia is less exposed in physical terms, but its price response shows how disruption in one part of the fertilizer chain can reverberate through another. Across these markets, access through the Strait of Hormuz remains the common point of vulnerability.

Three fertilizer nutrients, three distinct vulnerabilities

Commercial fertilizers provide three key essential nutrients — nitrogen, phosphorus and potassium:

- Nitrogen fertilizers — produced from hydrocarbons, typically natural gas
- Phosphate fertilizers — derived from phosphate rock, a mined mineral, with sulfur as a key processing intermediate
- Potash (potassium) fertilizers — derived from mined potassic ores

The world's most widely used nitrogen fertilizer — essential today for feeding the world's 8.3 billion people — is urea. Urea is manufactured from ammonia. About 70% of ammonia is produced using natural gas. This is a major market for natural gas; for each metric ton of urea, roughly 1,000 cubic meters of gas is needed, mainly as feedstock for the hydrogen in ammonia and also as fuel. Gulf countries, endowed with large natural gas resources, are major producers of urea fertilizer, and so roughly 29% of global urea trade normally passes through the Strait of Hormuz. However, those flows account for only about 8% of worldwide demand, since much of production remains within national boundaries and is not internationally traded. This leaves scope for other producers to offset some of the lost Gulf shipments, but not all, as logistical constraints hinder substitution.

Damage to infrastructure in the Gulf and repeated restrictions on shipping have sharply reduced the movement of oil, LNG, helium, fertilizer and fertilizer inputs.

The market's round trip in pricing during 2026 reflects that adaptability. FOB Middle East prices for urea averaged about \$420/metric ton in January before the war, reached \$910/mt in April during the Northern Hemisphere spring application season, then fell to about \$380/mt by the end of September as China and other suppliers filled part of the gap. China issued export quotas totaling about 9 million mt in 2026 by the end of September, while weaker European demand — buyers had stocked up ahead of the January 2026 start of the EU's Carbon Border Adjustment Mechanism — added a further cushion.

Fertilizer deliveries to farmers remain vulnerable to disruption. Continued hostilities sustain a war-risk premium and threaten further price swings in Gulf-origin urea. Risks are concentrated especially across South Asia's grain basins and Latin America's agricultural export corridors, where immediate price increases of 15% to 30% threaten to price smallholders and commercial farmers out of the market.

The sulfur bottleneck

Sulfur is proving to be the more serious constraint. Sulfur is an input to most phosphate fertilizers, second to nitrogen fertilizers in terms of their importance for global agriculture. About 47% of global sulfur trade normally passes through the Strait of Hormuz, and — unlike for urea — alternative exporters cannot readily replace lost volumes. Disruption therefore reaches beyond logistics into the economics of phosphate-fertilizer production. The reason lies in how sulfur enters the market. It is recovered from sour natural gas at the production stage and, more commonly, from sulfur-bearing crude oil in refineries. Sulfur supply therefore depends both on refinery throughput and on the quality of crude oil. Lower runs do not necessarily mean lower recovery: processing heavier, sourer crude can yield more sulfur than running higher volumes of sweeter crude.

Owing to strong demand, sulfur prices were already high in historical terms before the conflict started. In January 2026, the FOB Middle East sulfur price was almost \$500/mt. It then reached a record \$1,000/mt in July before easing to about \$810/mt at the end of September. Exports are estimated to have fallen 39% year over year to 6.1 million mt in the second quarter, forcing phosphate producers to adjust output rather than wait for replacement supply.

Leading phosphate producer OCP SA of Morocco reportedly cut phosphate-fertilizer operating rates by as much as 30% in the second quarter of 2026 and shifted production toward triple superphosphate, which uses less sulfur than the more widely used diammonium phosphate (DAP). The change shows how scarcity in a single raw material can influence the product mix of a global industry.

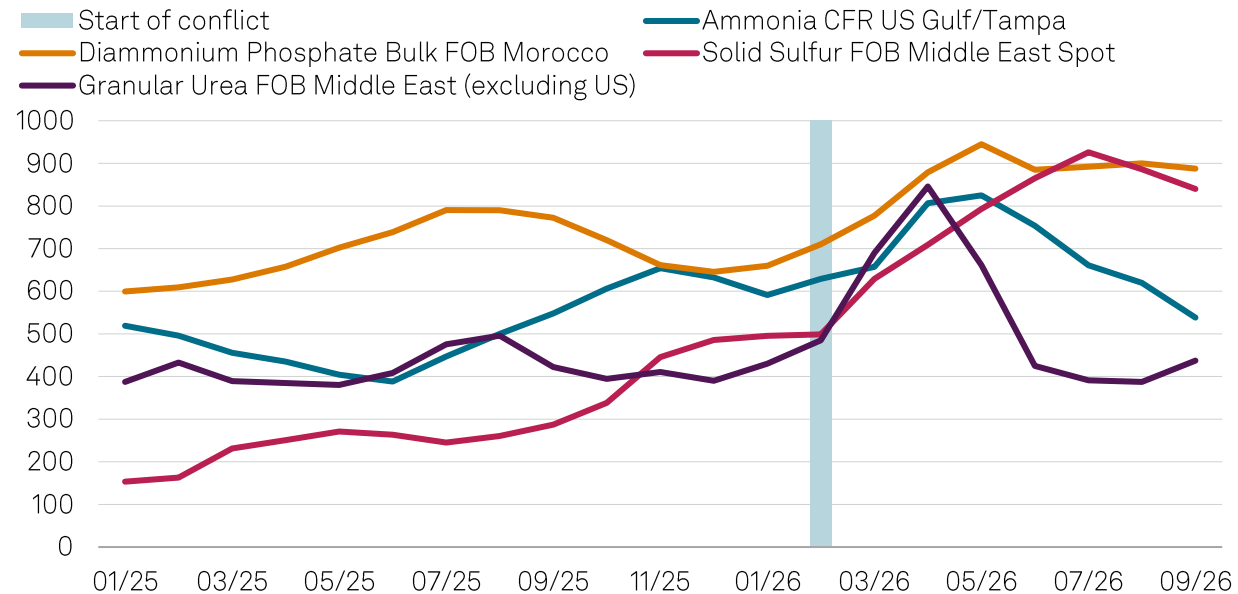
A further constraint is competition from other industries. Most sulfur is converted into sulfuric acid, the world's most widely used industrial chemical. Fertilizer is the leading user of this product, but when supplies tighten, fertilizer producers must compete with users such as chemicals, metals and mining companies, which may be able to pay more and secure priority access.

Ammonia: The counterintuitive price effect

The final commodity in the chart below, ammonia, is less exposed to the Strait of Hormuz than sulfur. The strait carries about 21% of merchant trade, equivalent to only 3% of global consumption. Ammonia supplies the nitrogen component in the principal phosphate fertilizers. It reacts with phosphoric acid to produce monoammonium phosphate (MAP) and DAP, combining nitrogen and phosphorus in forms that crops can readily use. The key ammonia benchmark cost and freight (CFR) Tampa price fell from \$825/mt in May to \$555/mt for September. That decline did not signal a return to normal. It reflected the sulfur shortage. As soaring sulfur prices forced phosphate producers to cut output, their demand for ammonia also fell. The result is a revealing paradox: disruption in one part of the fertilizer chain contributed to lower prices in another.

The figure below shows key benchmark prices for the above commodities through to September 2026.

Historical monthly average Platts prices for key fertilizers and their raw materials (\$/mt)



The energy shock: Fertilizer and farm costs rise

The fertilizer disruption is only the first channel through which the Iran war reaches global agriculture. By restricting oil and LNG flows through the Strait of Hormuz, the conflict also raises fertilizer production costs and farm operating costs far beyond the Gulf. As already noted, the Strait of Hormuz carries oil equal to about 20% of world supply and is the only maritime outlet for LNG exports from Qatar and the United Arab Emirates, which supplied about 20% of global LNG trade in 2025. Strategic-reserve releases and additional crude supply have softened the oil shock, but LNG cargoes are harder to replace.

LNG disruption: uneven regional exposure

As LNG supplies from the Gulf are interrupted and traded gas prices rise, the burden falls unevenly. Fertilizer producers in the Middle East do not necessarily face higher costs — many operate under fixed or regulated gas-pricing regimes, typically well below world levels. But these producers are struggling to ship their product. Asian producers rely heavily on Qatari LNG and have faced both higher prices and the most immediate competition for replacement cargoes.

Asia: where the energy, fertilizer and food shocks converge

South Asia is particularly exposed to the crisis. The Gulf producers are an important source of imported urea for India, while LNG supports around 85% of its

The conflict revealed something that was not necessarily obvious — the high degree of overall integration of the Gulf region into the world economy and what has become its major role in fertilizer and the inputs that go into fertilizer.

domestic urea production. This creates a double vulnerability of disrupted urea supply from the Gulf and higher costs for the LNG used by domestic producers. Pakistan and Bangladesh face a more immediate physical constraint; scarce gas supply has contributed to fertilizer plant shutdowns, reduced industrial activity and power shortages.

In particular, the lack of available LNG has resulted in Bangladesh ceasing operations in four of its five urea fertilizer plants since March 2026. India has largely avoided comparable production losses by securing replacement LNG from the spot market, but at a substantial cost. Spot LNG prices have risen from \$10-\$12/million British thermal units early in the year to \$26-\$28/MMBtu by late summer (see figure below), sharply increasing the government subsidy needed to protect farmers from higher fertilizer costs.

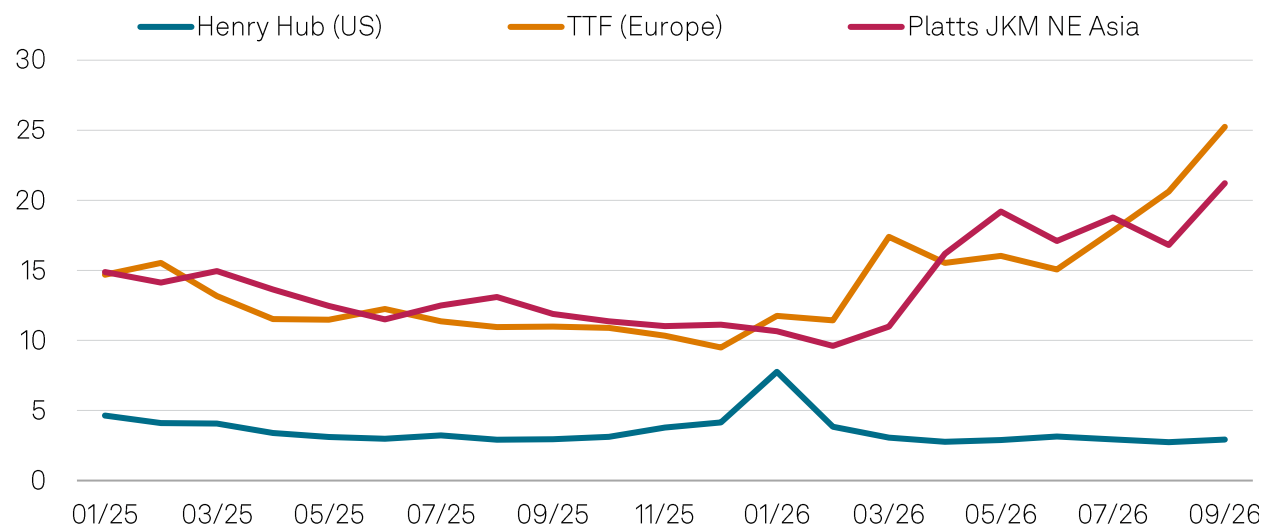
Across South and Southeast Asia, the Iran war therefore transmits through three mutually reinforcing channels: disrupted fertilizer imports, higher LNG costs and growing fiscal pressure to shield farmers and consumers.

Europe and North America: contrasting resilience

Europe, primarily dependent on world LNG supplies since the Russian invasion of Ukraine, entered the 2026 disruption with gas storage already below historical norms. Storage in Europe stood at only 64% of capacity at the beginning of September 2026, well below average for the time of year. The United States, together with its linked North American markets, has abundant domestic gas and expanding export capacity; its fertilizer producers are largely insulated from disruptions to the global gas market. These structural differences are clearly visible in the history of the price of gas in each of these regions.

The figure below shows US, European and Asian spot gas prices through September 2026.

Monthly average prices for natural gas (Henry Hub, TTF) and LNG (Platts JKM NE Asia), \$/MMBtu



As of Oct. 9, 2026.

TTF = Title Transfer Facility; Platts JKM = the benchmark price reflecting LNG delivered to Northeast Asia; NE = North-East.

Platts is part of S&P Global Energy.

Source: S&P Global Energy.

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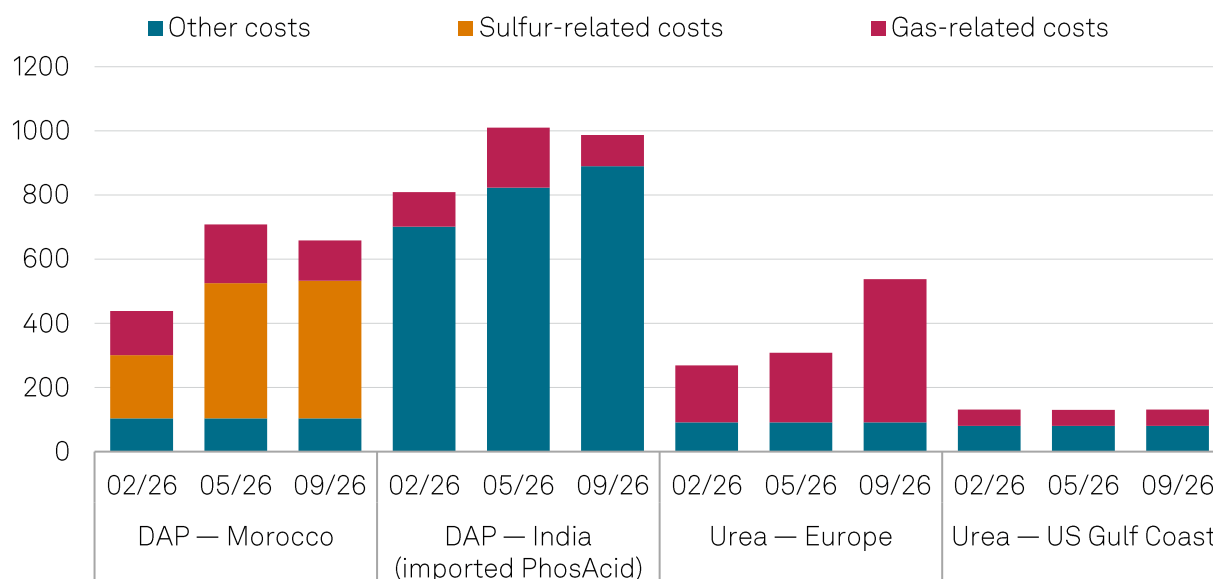
Higher energy costs redraw fertilizer economics

The economic burden of the conflict falls therefore on those buyers who seek to replace lost Gulf natural gas supply as feedstock. Marginal fertilizer production outside the United States, especially in Europe, remains tied to market-based gas prices. It becomes progressively more expensive as energy markets tighten.

The larger risk is that a continuing disruption in the Middle East, combined with rising energy costs, pushes fertilizer production in import-dependent regions beyond the point of economic viability — for producers and farmers alike. If sustained, the shock could do more than lift prices. It could redraw the economics of the global fertilizer market.

The figure below shows how higher energy and raw-material prices alter estimated production costs across major fertilizer-producing regions outside the Middle East. It highlights both the sulfur-dependent DAP markets, and the natural gas dependent urea markets.

Evolution of production costs highlighting key raw materials (\$/mt of fertilizer)



As of Sept. 30, 2026.

DAP = diammonium phosphate.

Other costs include conversion costs and phosphate-related costs (rock and acid). Gas-related costs include feedstock and ammonia costs.

Source: S&P Global Energy.

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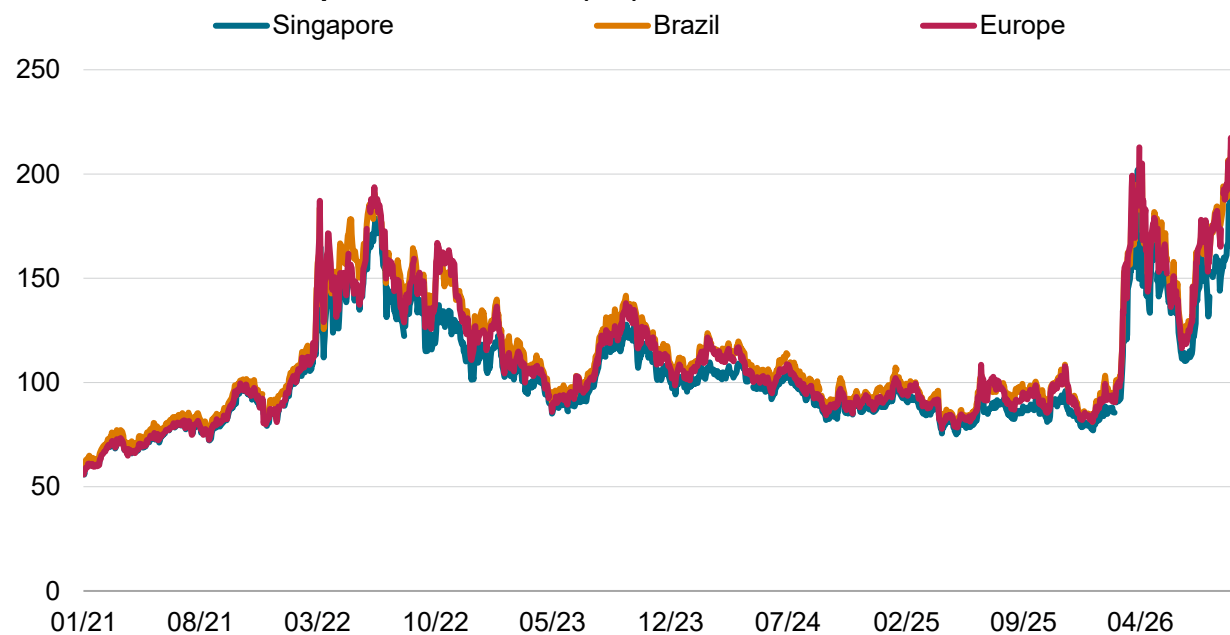
Diesel scarcity: the tight squeeze on farm economics

Diesel is a major farm expense in most parts of the world, and the outlook here is especially challenging. The conflict has driven diesel prices up much faster than crude oil prices, exposing farmers to a sharp increase in operating costs. Faced with this increase, on top of more expensive fertilizer, farmers in the most affected regions either have to reduce fertilizer purchases and the rate at which they apply fertilizer to their crops, or they may choose to reduce the acreage that they plant. Either way, less food would be produced than would otherwise have happened, and many farmers may be challenged by economic viability.

The constraint that drives diesel prices is refining capacity. The Middle East and Russia host major refining systems, which together account for close to one-fifth of global refining

capacity. The refining capacity in these regions is significantly larger than domestic demand, and as a result, both regions export large volumes of refined products, particularly diesel. The Middle East and Russia normally account for half of global net diesel exports. In other words, the supply from these refineries has been critical to meeting global demand for diesel. While crude oil has alternative pipeline routes out of the Gulf, the same is not true for refined products. As a result, refineries that are unable to export product have been forced to reduce activity, while others were damaged in the conflict and await repairs. The net result is that Middle Eastern diesel exports have fallen from close to 2 million barrels/day in July 2025 to less than 1 million b/d in July 2026. Meanwhile, Ukrainian drone attacks and an export ban have pushed Russian diesel exports from roughly 1 million b/d toward zero. On top of those losses, China is also restricting oil product exports.

Selected Platts diesel price benchmarks (\$/b)



As of Sept. 30, 2026.
Platts is part of S&P Global Energy.
Source: S&P Global Energy.
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The loss of about 2 million b/d of tradeable diesel coincides with a comparable seasonal increase in demand from harvest activity and winter heating. Inventories are low and refineries are already near their operating limits, leaving little capacity to absorb a prolonged disruption.

The long-run differential between a barrel of crude oil and a barrel of diesel is \$12-\$20, reflecting manufacturing costs. But the spread between the price of crude oil and the price of diesel rose above \$100/b in the first week of September and in early October was still about \$70/b, reflecting the shortfall of diesel supply against demand. In other words, higher prices have become the mechanism through which the market rations scarce diesel. This not only drives up the price of food and potentially limits supply but also puts great pressure on farmers' balance sheets and, for many, their economic viability.

The cost of diesel is already a point of political sensitivity in the United States, where it accounts for between 5% and 8% of farm operating costs. Often overlooked, diesel also

affects the costs of transporting crops to processing and then on to grocery shelves. Diesel accounts for higher proportions in other parts of the world, where long transport distances combine with poor infrastructure, or where groundwater irrigation pumps depend primarily on diesel. Farmers in South and Southeast Asia, Latin America and sub-Saharan Africa accordingly face a heavier cost burden as diesel prices rise.

Biofuels intensify the food-or-fuel trade-off

High oil prices do not only raise farmers' fuel and fertilizer bills. They also make biofuels more competitive with petroleum, strengthening demand for the crops and vegetable oils used to produce them. That link matters because it keeps consumption of corn, soybean oil and palm oil firm, even as agricultural input costs rise. Crop markets have less scope to rebalance toward food production. For the first time in recorded history, biofuels became cheaper than oil-based shipping fuels in Europe in September 2026.

The implication is that energy prices are adding demand-side support to agricultural markets already under pressure from higher production costs, even in markets (such as the EU) where limitations exist on the use of food crops for biofuels.

Indonesia illustrates how powerful that demand can become. Industrial use of palm oil, largely for biodiesel, is projected to reach 18.4 million mt in 2026-27. This is about five times the 3.7 million mt consumed during 2015-16 — a period in which agricultural output was also hit by a strong El Niño. A repeat of the production shock seen at that time would therefore today hit a market in which fuel policy already claims a far larger share of palm oil supply. Planting decisions are following the same pattern elsewhere. In the EU and Australia, resilient demand and policy support for biofuels are expected to draw acreage toward rapeseed and canola and away from wheat and barley. This is despite oilseeds' heavier fertilizer requirements in an already stressed fertilizer market.

Biofuel policy is thus doing more than supporting demand. It is influencing what farmers plant in the middle of an input-cost shock.

High input costs could put crop yields at risk

The next planting cycles will show whether today's fertilizer and energy shock becomes tomorrow's harvest shortfall. The first tests will come in Brazil, India and the Northern Hemisphere's autumn fertilizer-application season.

Price volatility alone will not determine the outcome. What matters is whether farmers can still justify applying nutrients at rates sufficient to protect yields.

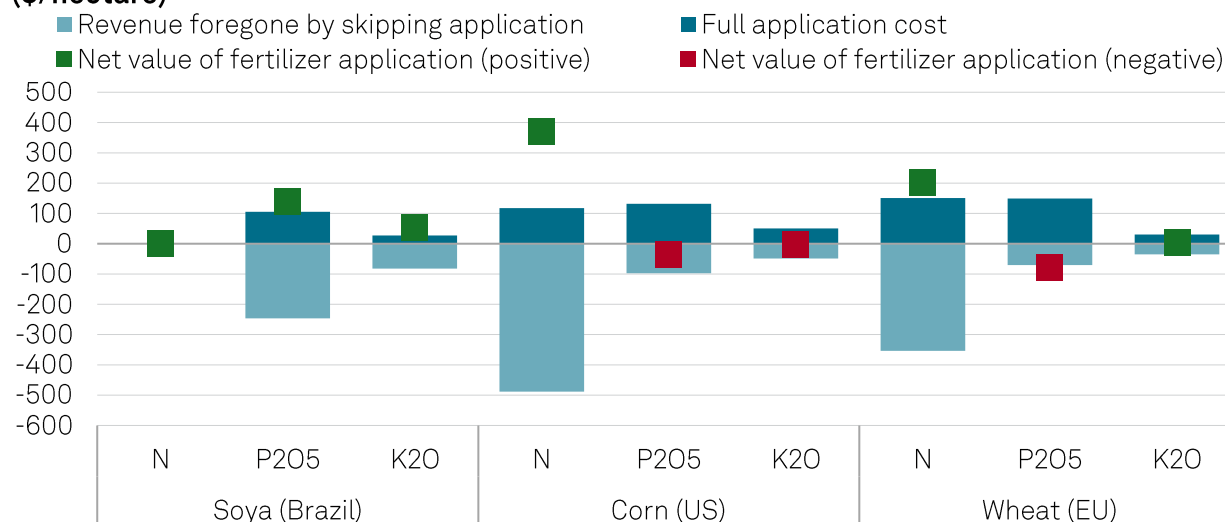
The response will differ by nutrient, crop and region. Farmers are likely to protect nitrogen use for as long as possible because crops need it every season and soils generally retain less nitrogen than phosphorus and potassium. Farmers can postpone some nutrient use, but they cannot eliminate the agronomic cost.

S&P Global has assessed the trade-offs, as they are likely to be experienced in developed regions. These are shown, for Brazil, the US and the EU, and for soya, corn and wheat, in the figure below. The analysis compares full nutrient application with an 80% application rate, then estimates the resulting losses in yield and farm revenue. The analysis assumes a linear

relationship across the three primary fertilizer constituents: nitrogen, phosphorus and potassium.

Across the three examples, the pattern is consistent. Unsurprisingly, using less fertilizer lowers both yields and farm revenue. The revenue lost from smaller harvest eventually exceeds the savings on fertilizer — but if the farmer is severely cost-constrained, the choice to save on fertilizer is not necessarily economically irrational. Nitrogen cuts inflict the largest losses, making it the hardest nutrient for farmers to economize. There is an exception for legumes, such as soybeans — biological nitrogen fixation reduces their dependence on nitrogen fertilizer.

Net economic impact of fertilizer application by crop/nutrient, selected geographies (\$/hectare)



As of Sept. 30, 2026.

N = nitrogen; P2O5 = phosphate; K2O = potash. Based on average crop cash prices in September 2026.

Source: S&P Global Energy.

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El Niño: compounding the input-cost shock

A strong El Niño would add further stress just as farmers face higher fertilizer and fuel costs — and, in some regions, use less of both — leaving crops less resilient to heat and disruptive rainfall.

The risk is no longer marginal. El Niño is likely to persist into early 2027 and affect the 2026-27 crop calendar. The National Oceanic and Atmospheric Administration (NOAA) projects sea-surface temperatures to reach at least 2 degrees C above normal — a threshold reached in only seven episodes since the 1950s. Other observers consider this to be a conservative estimate, and some measurements have already reached 3 degrees C above normal.

Impact on grains: corn, rice and wheat

S&P Global's agriculture modeling indicates that rainfed grains and oilseeds in Brazil and Australia face the greatest exposure. The forecast output for Brazilian corn has been lowered by 6 million mt to 137 million mt and has the potential for another 10 million mt loss if El Niño strengthens. Cooler, wetter conditions have supported a 2 million mt increase in Argentina's forecast to 58 million mt, but that gain would not fully replace the loss in Brazil.

Australia faces a sharp export risk. If El Niño intensifies alongside a positive Indian Ocean Dipole, wheat output could fall to 22 million mt from the current forecast of 28 million mt, with New South Wales and Victoria most exposed. India's rabi wheat crop would also become more vulnerable if monsoon deficits persist; the September readings were about 14% below average.

India's rice market is better protected. Extensive irrigation and stocks held by the Food Corporation of India at about 39.6 million mt — nearly three times the official buffer requirement — reduce the immediate supply risk. Even so, government indications of lower kharif rice acreage could erode part of that protection. India's dry-season crops are more exposed than rice. Cotton and wheat depend more heavily on seasonal rainfall, leaving rainfed areas vulnerable.

S&P Global's agriculture modeling indicates that rainfed grains and oilseeds in Brazil and Australia face the greatest exposure.

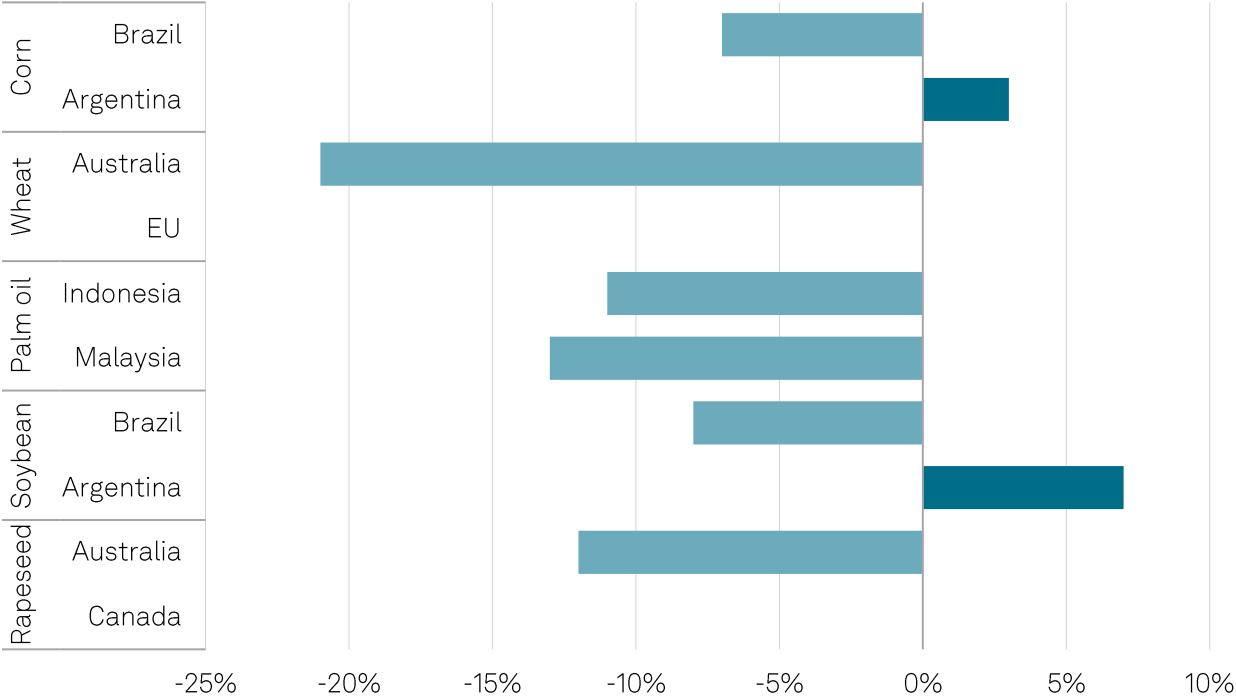
Oilseeds and vegetable oils: compound risks in soy and palm

Brazil presents the largest near-term downside risk in oilseeds. The soybean forecast has already been cut by 6 million mt to 177 million mt. A model that combines El Niño severity with lower phosphate application yields a probability-weighted estimate of 168 million mt, with a 65% chance that output falls between 160 million mt and 170 million mt — well below the official forecast. The result shows why the starting point matters: crops weakened by reduced fertilizer use are less able to withstand adverse weather. Argentina again offers only a partial cushion. Above-normal rainfall has raised its soybean forecast by 4 million mt to 55 million mt, but that gain would replace only part of the projected Brazilian shortfall.

The risk to palm oil will emerge later. Because the fruit-development cycle lasts roughly 22-24 months, the effect of El Niño typically appears six to eight months after the initial weather stress. Losses are therefore expected to become more visible from March 2027, with a downside risk of 5.8 million mt in Indonesia and 2.5 million mt in Malaysia.

The figure below summarizes the estimated proportional impact of El Niño on five commodities across the most exposed producing regions.

Potential El Niño impact on crop production outlook (%)



As of Sept. 30, 2026.
EU wheat and Canadian rapeseed (aka canola) are projected to be broadly neutral, with impact likely to be localized within these geographies.
Source: S&P Global Energy.
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Soft commodities: sugar, coffee and cocoa

Commodities other than the basic staples will be affected by the El Niño, including cash crops that are important to livelihoods in many poorer regions.

The risks to sugar differ by region. Below-normal monsoon rainfall could weaken cane development and yields in India and Thailand, while excessive rain in Brazil’s Center-South could prevent mills from harvesting and crushing all available cane.

For coffee, the risk depends on timing and location. Irregular rain and heat during the September-to-November flowering period in Brazil’s Minas Gerais and São Paulo regions could weaken the 2027-28 harvest, with dry and hot conditions in early 2027 adding further upside price risk. In Colombia, El Niño can alter rainfall and sunshine but has sometimes supported output during moderate events; excessive rain and cloud cover under La Niña have historically posed the clearer threat to flowering.

West African cocoa faces a more ambiguous weather shock. Wetter-than-normal conditions followed by heat stress could reduce output in Côte d'Ivoire and Ghana. Yet with cocoa prices already elevated as global stocks tighten, part of the El Niño risk may already be priced in.

Animal products: higher feed costs pressure protein supply

The shock will also reach animal proteins through feed costs. Corn and soybean meal account for a large share of poultry production expenses, while El Niño-related drought could tighten cattle supplies in Brazil and Australia. The impacts will be global: Brazilian soybeans feed a substantial part of China’s livestock. If grain and oilseed prices rise as forecast, producer margins will narrow and the adjustment may eventually come through reduced

production and higher consumer prices. The effect is likely to be strongest in import-dependent markets and sectors — such as poultry — where feed represents 60%-70% of live production costs.

Macro consequences: inflation, government response, household impact

Agricultural commodities and inflation

Rising agricultural commodity prices feed both directly and indirectly into consumer price inflation. The direct effect is through staple food prices, particularly grains, vegetable oils and livestock feed. The indirect effect is through higher costs for processed food, transport, energy and packaging. In countries where these sectors make up an important share of the whole economy, there can also be notable losses in economic output.

The effects will not be uniform. Net importers of food, fertilizer and fuel face the hardest combination of higher import bills, weaker currencies and rising local-currency debt-service costs. Countries with large food stocks, domestic production buffers or effective subsidy schemes may be able to smooth the immediate consumer impact, but at the expense of fiscal pressure.

At the time of the most recent very strong El Niño (2014-15), global food prices rose in response by about 10%. For a country where food accounts for 25%-30% of the consumer price basket (typical for a middle-income country such as Indonesia, Mexico or Malaysia), the effect of a similar increase would be to increase headline inflation by 2.5 to 3 percentage points. But in 2027-28, the inflation effect of the El Niño will come on top of the fertilizer and energy price shocks. Central banks will be aware of the potential for second-round effects on the prices of other goods and services. They may be reluctant to ease monetary conditions where food and fuel prices are rising together, even if the original inflationary shock is triggered by external supply factors rather than by domestic demand.

All this highlights the fundamental nexus of energy, fertilizer and food security that is so much on the global agenda today.

Government responses matter

Government policies, whether subsidies of fertilizer costs for farmers or price guarantees for crops, can significantly impact outcomes. As an example, nine African countries with active farm support programs consume almost the same volume of fertilizer as nearly 50 other African nations with no programs. India extensively subsidizes fertilizer, particularly nitrogen. China does not subsidize fertilizer prices but uses government policy to restrict exports at key times, to ensure there is sufficient fertilizer for domestic need at competitive prices. Food security is at the core of these interventions. Subsidy adds up. The current estimate for the Indian subsidy bill in the 2026-27 crop year is \$20 billion-\$22 billion, and it is probable that in the final event it will be more. Indonesia will spend up to \$3.0 billion and Bangladesh between \$2.2 billion and \$2.5 billion.

The political response may prove as important as the initial shock. Food and fuel can be catalysts of social unrest. While households can defer major purchases, food and fuel are

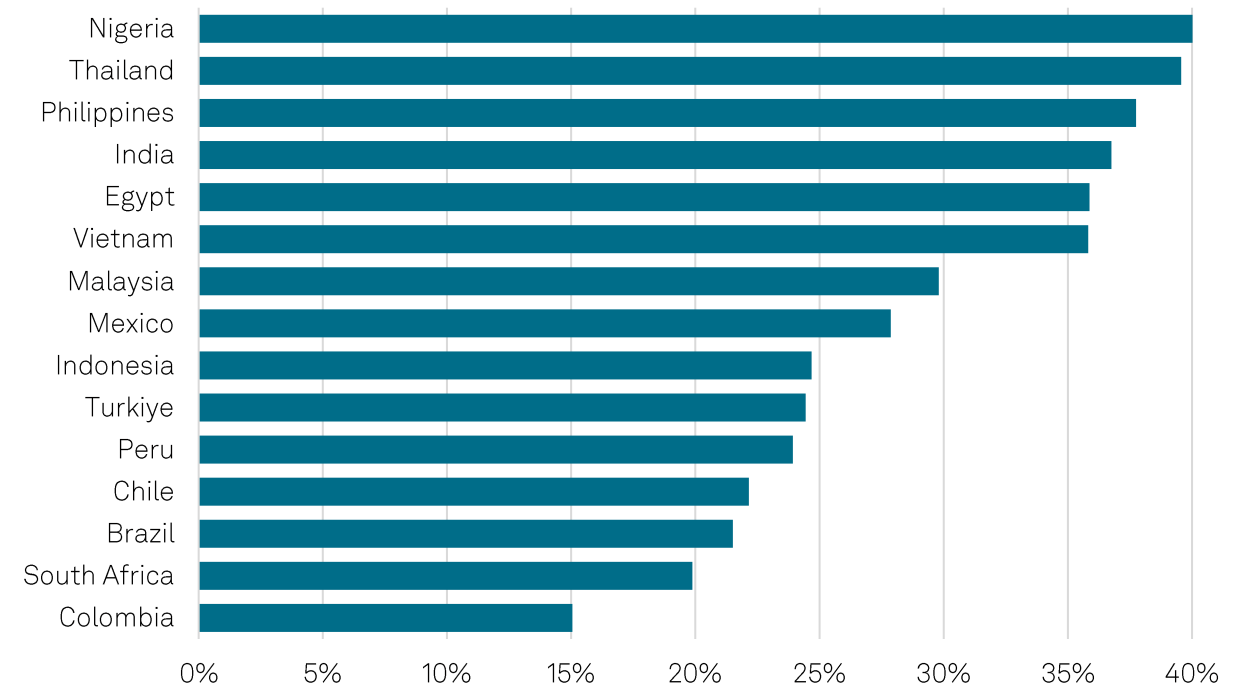
daily, non-negotiable essentials. In the Global South, where families routinely spend 40% to 60% of their income on these two commodities, price spikes could be particularly sensitive. If conflict persists or elections approach, governments may reverse reforms and restore broad subsidies to contain unrest. Such measures would weaken the fiscal position of governments, add to debt and constrain economic policy.

When the food shock reaches households

For high- and middle-income countries, some of the food-price shock from the emerging crisis will fall on government budgets. But household budgets will be hit as consumers see significant increases in prices when they visit their grocery stores. However, in many low-income food-importing countries, where the government does not have fiscal capacity to intervene at scale, households absorb the entire shock through lower consumption. Where food represents a major part of household budgets, there are sharp consequences in terms of human welfare.

Food inflation is politically potent because low-income households devote more of their income to basic goods. The figure below shows that, even for selected middle-income countries, the share of food in the principal measure of consumer price inflation (CPI) can range from 15% to 40%.

Weight of food in Consumer Price Indices (%)



As of Sept. 30, 2026.
Sources: National Statistics Agencies; S&P Global Ratings.
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For countries classified as low income by the World Bank, food accounts for roughly 50% of household spending. When food becomes unaffordable, households first cut protein, dairy and vegetables. But the consequences can be far reaching as poor nutrition can lead to lasting damage to a country’s population and human capital.

Conflict, crops and climate: risks converge on tighter food supplies

The paper has examined the reinforcing shocks of higher energy and fertilizer costs, resilient biofuel-linked demand and El Niño-related weather risk. These pressures do more than merely add to one another; in several cases, they compound.

Unlike changes in oil prices, which register immediately, the full impact on food will take time to appear. Farmers buy seed, fertilizer and fuel months before they sell a crop. The squeeze now bearing down on farm budgets may therefore not reach food markets in force until 2027. Fertilizer production will eventually recover and markets will adjust. Higher crop prices should restore margins, bring acreage back into production and encourage more intensive input use. But that adjustment comes only after the price signal has done its work — and in food markets, the price signal is felt first at the household table.

The effects will be very different across countries. For affluent economies, a food shock would mean higher prices in the grocery store, another bout of inflation, pressure on living standards and challenges for governments already contending with the political legacy of earlier price increases. For lower-income food-importing countries, the stakes are more immediate and, compounded with other local factors, could translate into social unrest, if not cushioned by government support. Governments will reach for subsidies and price controls, as they have in past food crises, because the politics of bread can quickly become the politics of the street. Yet many of the countries most exposed have the least fiscal room to respond.

The world's food producers rely on a steady supply of natural gas and sulfur for fertilizer, diesel for machinery and transport, and open sea-lanes for trade. Conflict is now testing all of them at once, just as El Niño tests the harvest. A global food crisis is not foreordained. But neither is it any longer a distant risk. If war continues to impede the movement of energy and fertilizer, and if weather cuts harvests across several major producing regions, the elements of such a crisis will be falling into place.

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