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LES MARCHÉS ALIMENTAIRES MONDIAUX PRIS EN ÉTAU ENTRE ORMUZ ET EL NIÑO

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PRÉSENTATION DE L'AUTEUR



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Alexandre Roussel est chercheur à l'IRIS, co-responsable du programme Énergie et matières premières. Il travaille sur les enjeux stratégiques liés aux questions de sécurité d'approvisionnement des flux et des matières énergétiques. Il est diplômé de l'école d'ingénieur CentraleSupélec, et est également titulaire du Master Environmental Change and Management de l'université d'Oxford où il a réalisé son mémoire sur l'impact du changement climatique et du phénomène El Niño sur le trafic du canal de Panama.

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FERTILIZER MARKETS SEVERELY DISRUPTED BY THE STRAIT OF HORMUZ CRISIS

As a key link between energy and food systems, fertilizer markets are currently under pressure from the conflict surrounding the Strait of Hormuz, thereby threatening the global food system in the months ahead.

The Gulf countries have become indispensable to globalized fertilizer value chains, which rely in part on the region's fossil fuel and mineral resources. The Persian Gulf accounts for approximately 30% of global urea exports, 20% of ammonia, phosphate fertilizer and liquefied natural gas (LNG) exports, and nearly half of global sulfur exports[1]. These fertilizers and the resources required to produce them help explain the current pressures on fertilizer prices and availability.

The three main nutrients found in fertilizers are nitrogen, phosphorus and potassium. These elements are essential for plant growth and occur naturally in soils. However, their application through the chemical fertilizer industry increased dramatically in the 1950s, helping to multiply agricultural output alongside mechanization and pesticides. In France, for instance, wheat yields per hectare increased approximately fivefold between 1950 and 2000[2]. Having become heavily dependent on agricultural inputs, modern farming now relies on a steady supply of nutrients, the sudden withdrawal of which would have serious consequences. While potash fertilizer markets have been relatively spared by the current crisis, nitrogen and phosphate fertilizer markets have been much more severely affected.

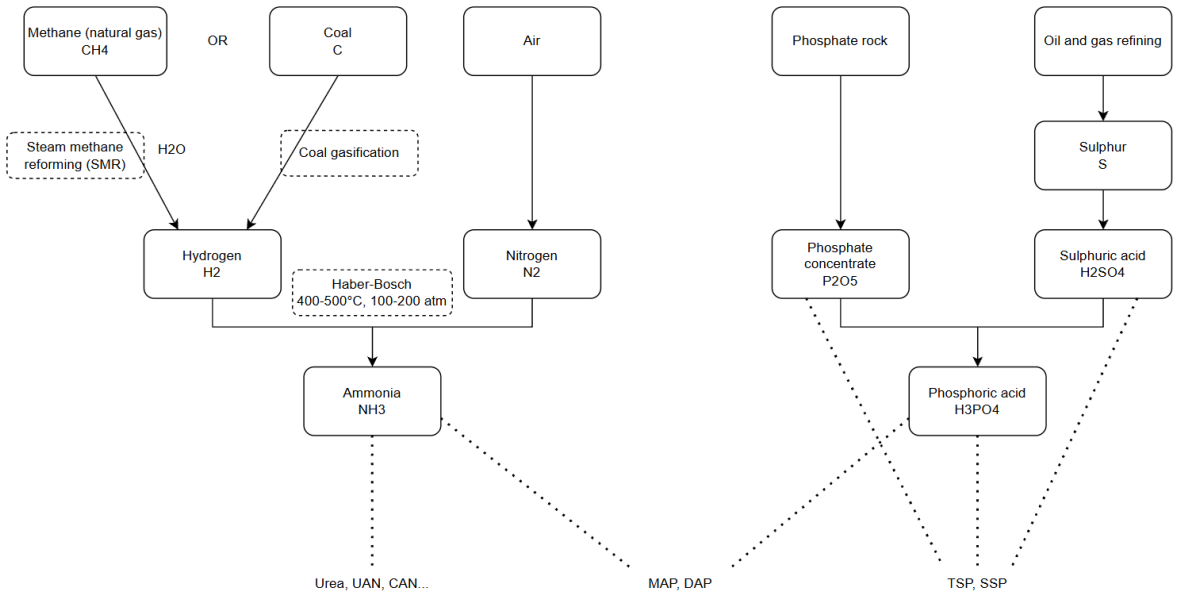
Ammonia (NH_3) production, the basic building block of nitrogen fertilizers, lies at the heart of the current tensions. This molecule – around 70% of global production of which is used to manufacture fertilizers – is produced from nitrogen and hydrogen through the Haber-Bosch process (see diagram below). Hydrogen is currently obtained largely from fossil gas (accounting for 70% of global ammonia production) through the highly energy-intensive process of steam methane reforming, or from coal (25% of global production, mainly in China)[3]. As a result, ammonia production is extremely sensitive to energy prices, particularly gas prices, which are often used both as a feedstock to produce hydrogen and as an energy source to drive the reaction. Ammonia is then processed into fertilizers, notably urea,

[1] International Energy Agency, "The Middle East and Global Energy Markets," IEA, accessed October 31, 2026, https://www.iea.org/topics/the-middle-east-and-global-energy-markets.
[2] Cour des comptes, Rapport public annuel 2024: L'action publique en faveur de l'adaptation au changement climatique (Paris: Cour des comptes, March 2024).
[3] International Energy Agency (IEA), The Breakthrough Agenda Report 2025: Accelerating Sector Transitions Through Stronger International Collaboration (Paris: IEA, 2025).

diammonium phosphate (DAP), monoammonium phosphate (MAP) and NPK fertilizers (nitrogen, phosphorus and potassium) (see diagram).

The phosphate fertilizer market is also heavily affected by the ongoing conflict. First, 20% of phosphate fertilizer exports passed through the Strait of Hormuz before the war began. Second, nearly half of global sulfur exports normally come from the Persian Gulf. Sulfur is an element derived from oil and gas refining. It is used to produce sulfuric acid, which in turn is used to produce phosphoric acid (obtained from phosphate rock), essential for making phosphate fertilizers (see Figure 2). As a result, on top of the drop in fertilizer exports from the Gulf countries, global phosphate fertilizer production is falling because of tensions in the sulfur market, notably in Morocco.

Diagram of the value chains of nitrogen and phosphate fertilizers



Source: author

As a chokepoint for global oil and gas flows, the Strait of Hormuz is also a critical artery for the global fertilizer trade. In the short term, reopening the strait is therefore crucial to stabilizing markets and global supplies, while in the longer term, breaking free from dependence on non-renewable fertilizers appears essential.

PHOSPHATE AND NITROGEN FERTILIZERS: PRICES UNDER STRAIN, CONTRASTING DYNAMICS

Even before the war began, fertilizer markets faced multiple constraints. Owing to strong demand, global sulfur prices were particularly high, as were energy prices in Europe, while fertilizer exports from major producers such as China and Trinidad and Tobago were already constrained.

The escalation brought by the blockade of Hormuz therefore came amid already tight markets, pushing phosphate fertilizer prices up by around 30% since the start of the war[4]. The sulfur constraint plays a decisive role in the impact on phosphate fertilizer production. Sulfur is very hard to substitute and has few alternative suppliers. Spot export prices on the US Gulf of Mexico market reached $1,100 per ton in July and exceeded $700 on the Tampa (Florida) market for third-quarter deliveries[5]. Twelve to twenty-four months earlier, prices stood between $75 and $250[6, 7].

This situation forced some phosphate fertilizer producers to cut output. Morocco's OCP announced that it had reduced production by up to 30% in the second quarter of 2026 and was switching to fertilizers that require less sulfur, such as triple superphosphate (TSP)[8]. Moreover, in response to the surge in sulfur prices, several countries, including Russia, Kazakhstan, India and Turkey, announced restrictions or bans on sulfur exports to protect their domestic markets, while other countries, such as China, temporarily restricted their phosphate fertilizer exports.

Nitrogen fertilizer market dynamics are more complex, combining upward and downward pressures. The reduction in exports from the Gulf countries, combined with the seasonal rise in fertilizer demand tied to the Northern Hemisphere crop cycle and with higher energy prices, first drove urea prices sharply higher, from $400 to $850 per ton between January and April[9]. This rise was amplified by temporary restrictions on nitrogen fertilizer exports by China and Russia.

[4] Joseph Glauber and Shawn Arita, "How Are Fertilizer Markets Coping with the Continued Closure of the Strait of Hormuz?," International Food Policy Research Institute, September 18, 2026.
[5] Maria Mosquera, "Tampa 3Q Liquid Sulphur Price Hits Record $705/lt," Argus Media, July 13, 2026.
[6] U.S. Geological Survey, "Sulfur," in Mineral Commodity Summaries 2025 (Reston, VA: U.S. Geological Survey, January 2025).
[7] Argus Media, Argus Sulphur, no. 25-37, September 11, 2025.
[8] Daniel Yergin, Shankari Srinivasan, Allan Pickett, and Simon Blakey, "Energy Disruption and El Niño: Leading to a Global Food Crisis?," S&P Global Institute, October 19, 2026.
[9] World Bank, Commodity Markets Outlook, October 2026 (Washington, DC: World Bank Group, 2026).

Prices fell back below $400 in September, notably owing to the seasonal drop in demand, which also allowed countries such as China and the United States to export nitrogen fertilizers[10]. Some countries, such as Nigeria and Egypt, have also taken advantage of higher prices, almost doubling their urea exports and partly offsetting the loss of Gulf exports[11]. In addition, rising sulfur prices paradoxically lead to lower ammonia prices: reduced production of phosphate fertilizers, some of which also use ammonia, lowers demand for this molecule. Furthermore, in the EU, the anticipated extension of the Carbon Border Adjustment Mechanism to fertilizers had led Europeans to stockpile fertilizers in 2025, partly explaining the drop in imports of nearly 50% in the first half of 2026 compared with 2025[12].

However, a seasonal rise in fertilizer demand at the end of 2026, notably in Brazil and in South and Southeast Asia, could again push prices up. Overall, the World Bank expects urea prices to rise by 21% in 2026, an estimate that depends heavily on how the situation in the Strait of Hormuz evolves[13].

A CONVERGENCE OF SHOCKS WEAKENING THE GLOBAL FOOD SYSTEM IN THE MONTHS AHEAD

Alongside rising fertilizer prices, other factors are putting pressure on global food markets. The consequences of some of these crises will become visible only in a few months, or years.

First, tensions over competing uses emerge. Sulfur, and above all the sulfuric acid produced from it, is also widely used in the mining, metallurgical and chemical industries, which may be willing to pay more than farming to secure their supplies. In addition, with Hormuz blocked, biofuels are becoming increasingly competitive and politically attractive compared with fossil fuels. This is pushing various governments to raise their production targets, which should increase production of non-food crops in the coming years, in competition with human food[14].

Particularly high diesel prices are also pushing food prices up. S&P Global Institute estimates that diesel normally accounts for 5 to 8% of the operating costs of a US farm. While the price difference between crude oil and diesel is normally around $12 to $20, the spread rose to as

[10] World Bank, Commodity Markets Outlook, October 2026.
[11] Peter Foster and Susannah Savage, “New Fertiliser Exporters Blunt Food Crisis Fears,” Financial Times, September 15, 2026.
[12] Glauber and Arita, “How Are Fertilizer Markets Coping?”
[13] World Bank, Commodity Markets Outlook, October 2026.
[14] Patrick Schröder, Bhargabi Bharadwaj, and Richard King, “The Problem with Biofuels as a Response to the Gulf Energy Supply Shock: How They Threaten Food Supplies and Forests, and What to Do About It,” Chatham House, September 2026.

much as $100 per barrel in September before falling back to about $70 in October. This gap can be explained by the situation in Russia and in the Middle East, two regions that are key to global refining and whose refining capacity normally exceeds domestic consumption. Together, they typically account for half of global net diesel exports. These tensions are further compounded by China's restrictions on refined product exports, which Beijing has introduced to protect its domestic market[15].

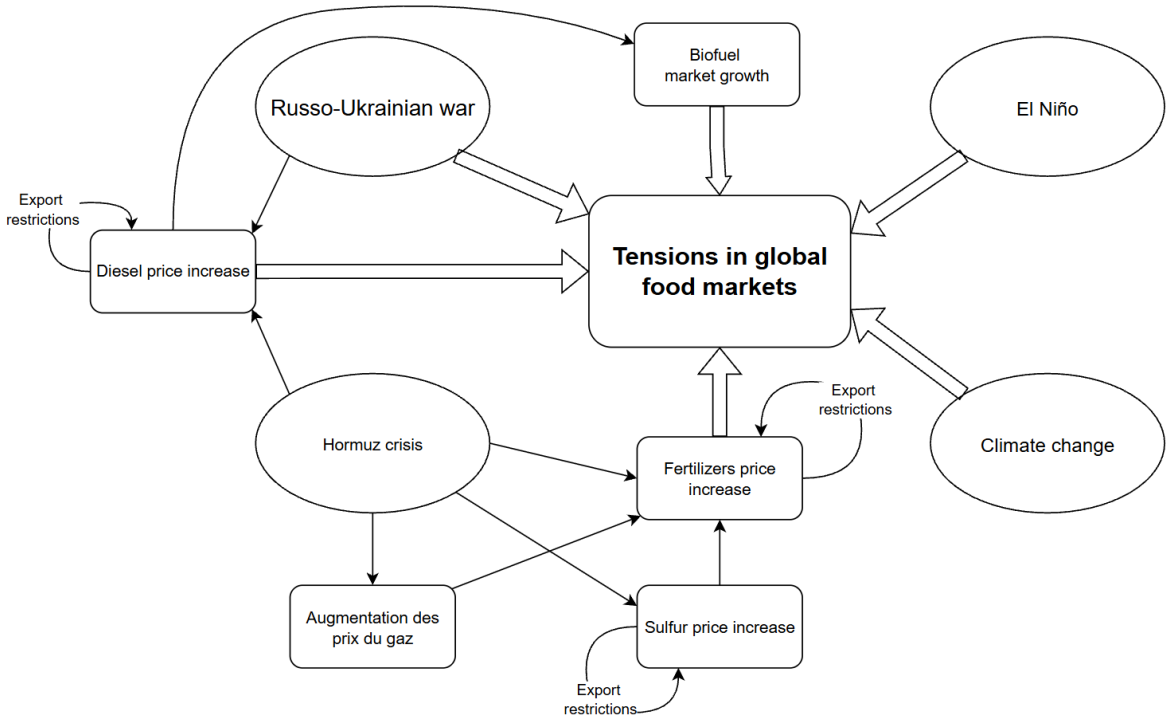
Meanwhile, the Russia-Ukraine conflict is affecting not only energy and fertilizer prices but also grain prices, as attacks on Ukrainian and Russian Black Sea ports have intensified over recent months. Russia and Ukraine, respectively the world's first- and fifth-largest wheat exporters, together account for 27% of global wheat exports. The resumption of strikes on agricultural export infrastructure since June 2026 comes ahead of the export season for the main wheat variety grown in these two countries, which arrives at the end of summer. These strikes have temporarily knocked out around 70% of Russia's grain export capacity and around 90% of Ukraine's maritime export capacity[16].

These constraints coincide with significant crop losses caused by the drought that hit several exporting countries in 2026. In addition, low water levels on the Danube have restricted Ukraine's alternative export routes, causing the country's exports to plunge by 70% in August 2026. Grain prices thus rose by 9% in the third quarter of 2026, and wheat prices by 40% over the past twelve months[17].

Finally, the ongoing El Niño – possibly the most significant event ever recorded – will further worsen the state of global food markets through droughts and floods. According to the US Department of Agriculture, wheat production from July 2026 to June 2027 in the world's seven largest exporters could fall by 11% compared with the previous year. US production could fall by 26%, and exports by 15%[18].

[15] Yergin et al., "Energy Disruption and El Niño."
[16] Caitlin Welsh, Emma Curtis, and Joseph Glauber, "How Do the Latest Black Sea Attacks Affect Global Food Security?," Center for Strategic and International Studies, September 11, 2026.
[17] World Bank, Commodity Markets Outlook, October 2026.
[18] Welsh, Curtis, and Glauber, "How Do the Latest Black Sea Attacks Affect Global Food Security?"

Diagram of the stress factors currently weighing on the global food system



Source: author

Thus, over the coming months, several stress factors – whose combined effects exceed the sum of their individual effects – could converge, potentially triggering a major global food crisis. While El Niño appears likely to have a significant impact on the global food system, the evolution of the Russia-Ukraine conflict, and particularly the situation in the Strait of Hormuz, remains uncertain. As a result, the true scale of the shock to come is difficult to predict. The Trump factor remains a major unknown. With the midterm elections now behind him, the US president could once again act as a disruptor, particularly in the Middle East, unless the shift in the balance of power in Congress changes the equation.

CASCADING SOCIAL AND POLITICAL REPERCUSSIONS

From the French Revolution to the Arab Spring, including the Russian Revolution of 1917, history is full of episodes in which food shortages helped trigger upheavals. Yet the coming crisis is taking shape in an already tense social, political and economic context, in which energy prices remain very high around the world and protests are multiplying in Europe and elsewhere.

The particularly powerful 2014/2015 El Niño episode caused food prices to rise by around 10%, according to S&P Global Institute[19]. That increase should be viewed in light of the current episode, which is shaping up to be even stronger and is combining with other factors.

This increase is particularly worrying for emerging economies, where food accounts for between 15 and 40% of the consumer price index, and for more than 50% of household budgets in the poorest countries. In this context, a 10 to 20% increase in food prices can add several percentage points to inflation. When energy expenditure is added to food costs, these two categories of spending can easily account for 40 to 60% of the income of an average household in an emerging economy. As these are relatively unavoidable expenses, they are particularly sensitive to price fluctuations[20].

Governments are seeking to curb the inflationary pressures looming ahead. India, for instance, has increased its subsidies for fertilizer purchases, which are expected to reach at least $20 billion for the 2026/2027 agricultural season. Indonesia is expected to spend up to $3 billion, Bangladesh between $2.2 and $2.5 billion[21], while the European Commission introduced a temporary state aid framework in late April allowing member states to support, among others, farms in purchasing fuel and fertilizers [22]. These expenditures are putting further strain on public finances, which are sometimes already stretched.

[19] Yergin et al., “Energy Disruption and El Niño.”
[20] Yergin et al., “Energy Disruption and El Niño.”
[21] Yergin et al., “Energy Disruption and El Niño.”
[22] European Commission, “The Middle East Crisis Temporary State Aid Framework (METSAF),” April 29, 2026, accessed November 4, 2026, https://competition-policy.ec.europa.eu/state-aid/legislation/metsaf_en.

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