

**Policy Brief
Regional Food Trade**



The Food, Fuel and Fertiliser Crisis

May 2022

What's currently out of sync?

Rising agricultural commodity prices

Whilst war in the Ukraine may have exacerbated agricultural commodity prices, wheat, and maize prices etc., have been rising for the past couple of years. Figure 1 and Figure 2 illustrate price trends for wheat and maize respectively.

Spikes in agricultural commodity prices tend to be cyclical in nature. Key spikes can be seen in the mid-1970s (known as the international farm crisis), and the 2008/2009 and 2011/2012 food, fuel, and finance crises. As with previous agricultural commodity price spikes, the current spike closely tracks the commensurate increase in energy prices

(especially gas and oil). The close association between maize and energy prices is illustrated in Figure 3. A similar association exists between wheat prices and energy prices. High fossil fuel costs have also led to an increased use of palm oil and soybean oil for biodiesel in the EU, and the increased use of maize to make ethanol in the USA (New York Times 2022b).

In many respects, the war in Ukraine is exacerbating an already difficult situation.

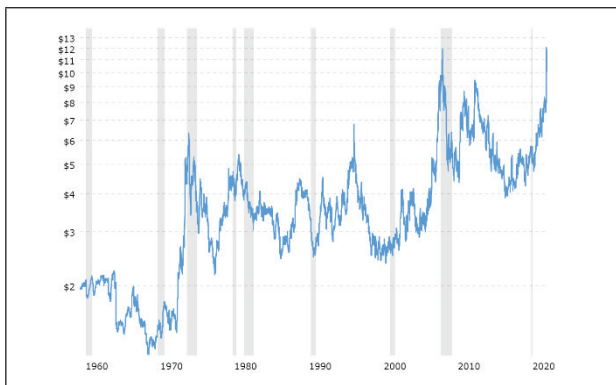


Figure 1. Wheat Prices - 1960 to 2022 (Macro Trends 022a).

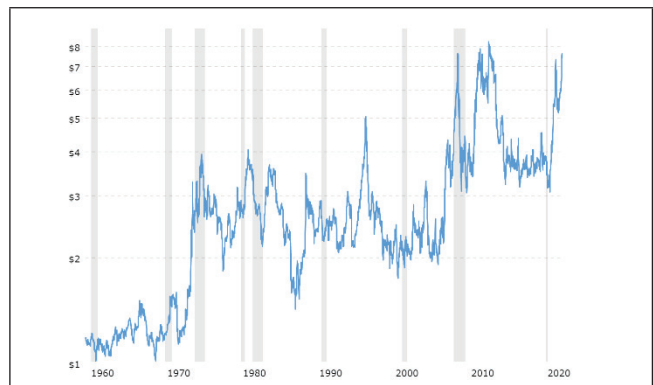


Figure 2. Maize Prices - 1960 to 2022 (Macro Trends 2022b).

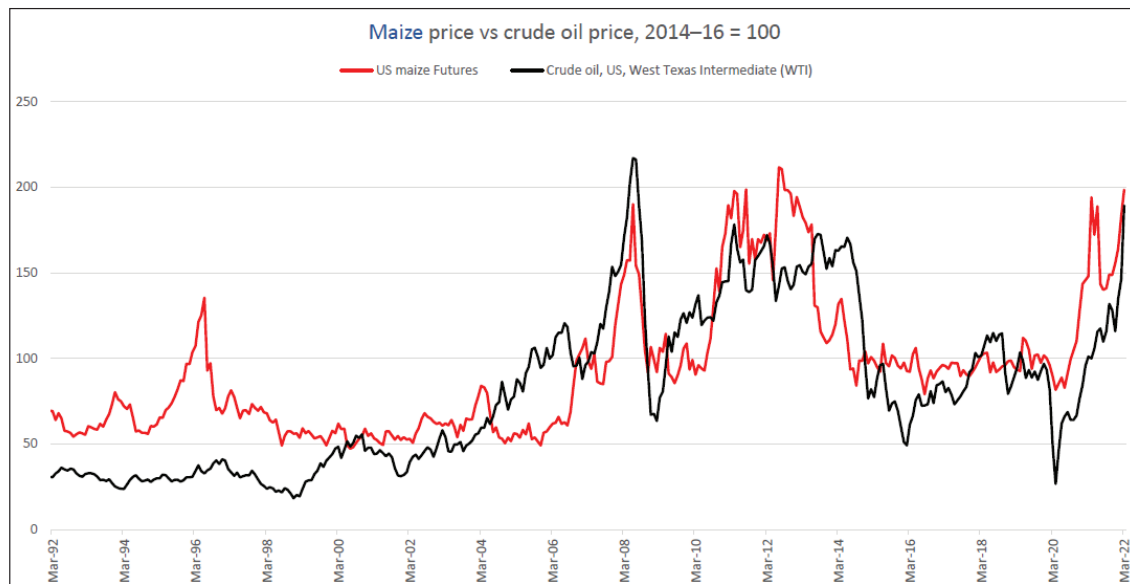


Figure 3. Maize price versus crude oil price (FAO 2022d)

Which commodities are directly affected by the war in Ukraine?

There are four major agricultural food commodities directly affected by the war in Ukraine. These are sunflower oil, barley, wheat, and maize. However, due to the sanctions imposed by both the USA and its allies, and Russia and its allies, the combined impact of trade restrictions between Ukraine and Russia and the rest of the world is having a significant direct impact on global agricultural commodity markets (see Figure 4 below).

Currently, Ukraine and Russia, account for approximately 25% of the world's wheat exports, 75% of the world's sunflower exports, and 17% of the world's maize exports (Chatham House 2022).

Indeed, in recent years, Russia has been the top wheat exporting country, exporting 37 million metric tons in 2020, with Ukraine exporting just over 16 million metric tons (Bentley et al 2022). The further tightening of wheat, maize and sunflower oil supplies has resulted in even higher prices. Wheat prices are now at their highest level in history.

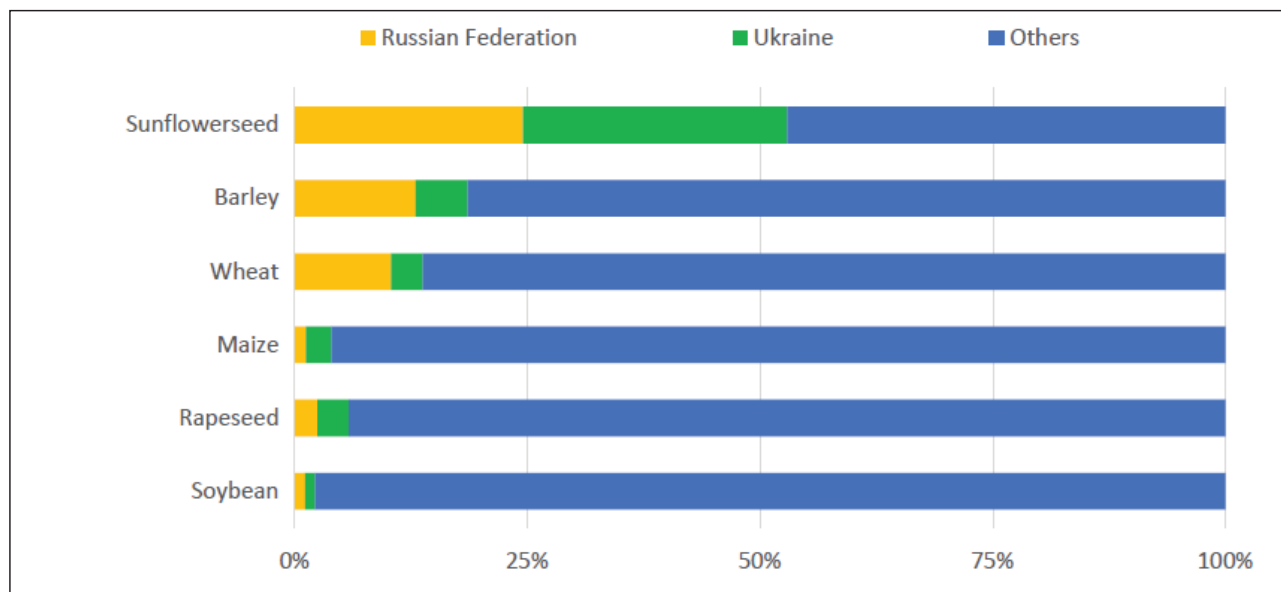


Figure 4. Ukraine and Russia's share in the global production of selected crops 2016/2017 to 2020/2021 average (FAO 2022c).

Which commodities are indirectly affected?

Rapidly increasing prices of wheat, maize and sunflower oil have resulted in consummate increases in the prices of other grains and oilseed commodities (especially palm, soy, and rapeseed oils) (FAO 2022c; World Grain 2022).

Figure 5 illustrates the precipitous increase in soybean and palm oil prices since the Russian invasion of Ukraine.

Soybean prices are now the highest that they've been since 2012 (AgWeb 2022). And, despite ample supplies, rice prices have nudged slightly upwards since the invasion as some processors begin substituting broken rice grains in place of expensive wheat (World Grain 2022; Bangkok Post 2022).

Which countries are likely to be most affected?

Whilst there is a significant geographical spread of countries, which currently import wheat from both Russia and Ukraine, Figure 6 (below) highlights the countries that are highly exposed to imports from Russia and Ukraine and are likely to suffer from near-term food security impacts. Due to their high reliance on wheat imports, food insecurity is expected to increase in several low- and middle-income countries, such as Pakistan, Bangladesh, Turkey, Azerbaijan, and Yemen (Bentley et al 2022; IFPRI 2022).

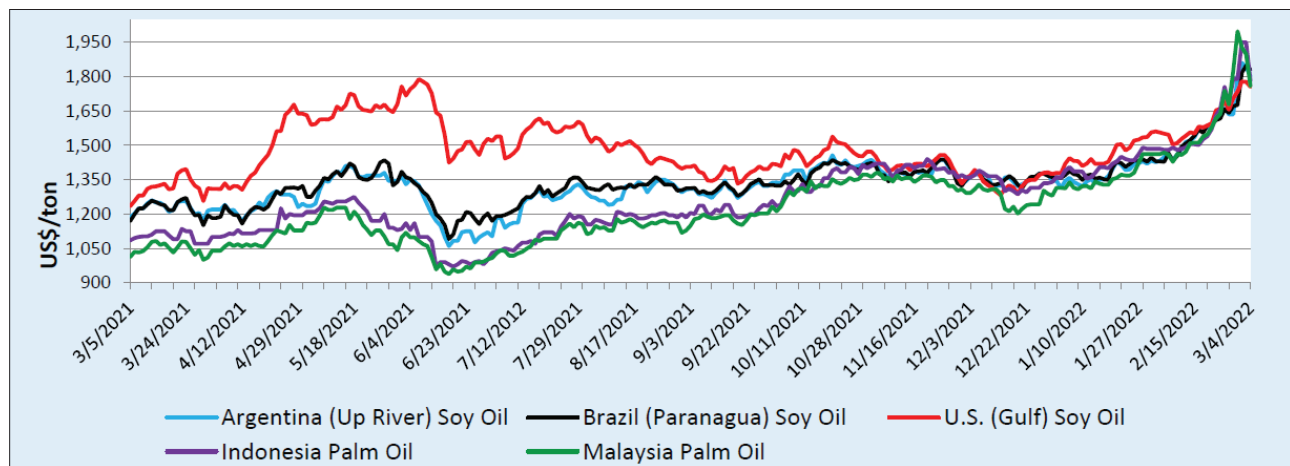


Figure 5. Soybean and Palm Oil Export Prices US\$/tonne) USDA (2022).

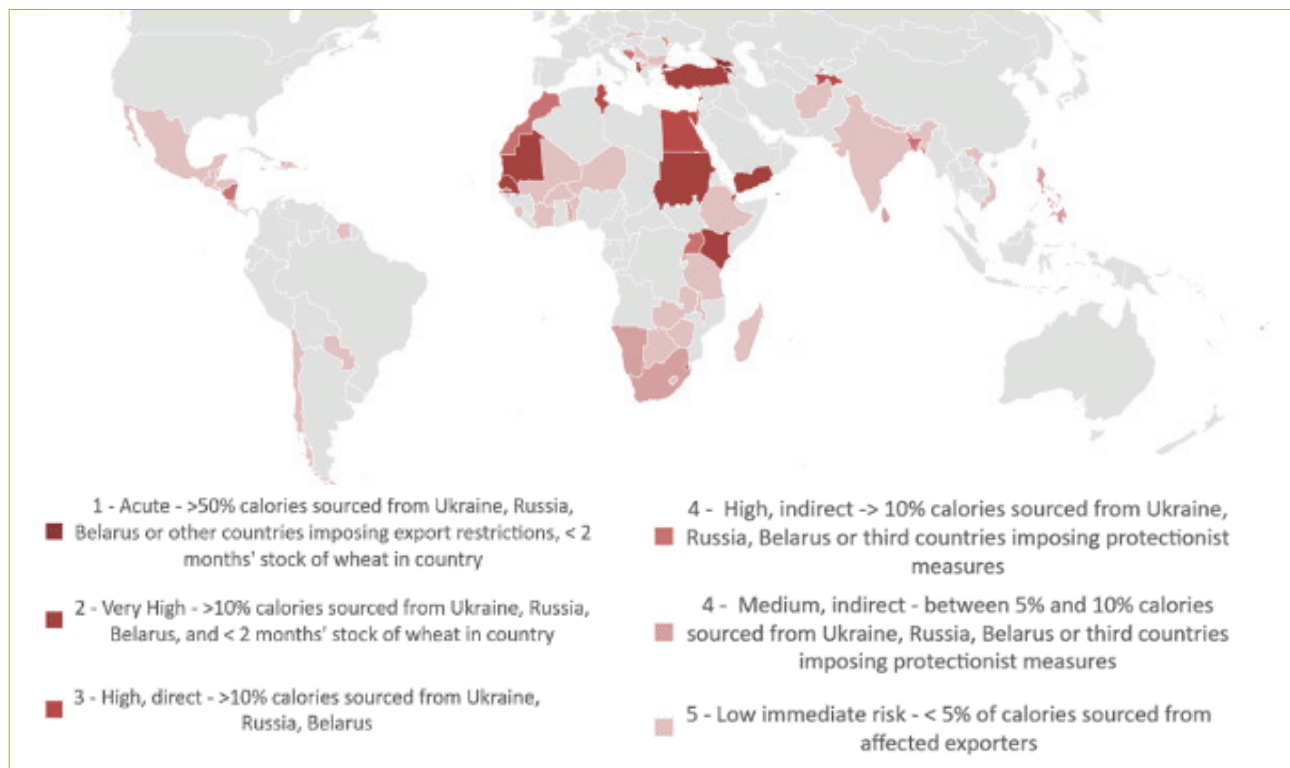


Figure 6. Near-term food security impacts (IFPRI 2022)

However, food security implications are predicted to be especially acute in Africa. The countries likely to be most affected are Egypt, Sudan, Libya, Algeria, Morocco, Mauritania, Somalia, Senegal, Cameroon, Nigeria and Kenya (Bentley et al 2022; IFPRI 2022; World Bank 2022; Business Insider Africa 2022).

Somalia and Sudan import as much as 90% and 92% respectively of wheat from Russia and Ukraine. Egypt also imports >50% of its wheat from Russia and Ukraine (The Conversation 2022b). Ethiopia (US\$864mn), Kenya (US\$797mn), Sudan (US\$1.8bn), and South Africa (US\$1.1bn) import significant volumes of wheat from Ukraine and Russia (World Bank 2022). Additionally, the World Food Programme purchases 50% of its wheat requirements from the Ukraine (The Guardian 2022). In 2020, SSA countries imported 30.8% of their animal fats and vegetable oils supplies from Russia and Ukraine, worth US\$9.4bn (World Bank 2022).

In addition to food supplies, the Russia-Ukraine War is also impacting on animal feed markets. Together, Russia and Ukraine are responsible for >30% of the world's wheat and barley exports, 17% of maize exports and >50% of the world's sunflower oil, seeds, and cake exports, much of which is destined for animal feed (Politico 2022). In high income countries, where much of the animal feed is purchased on the open market, the inflated cost of feed is impacting negatively on livestock farmers (EC 2022).

Rising agricultural input prices

Fertiliser prices have also been spiking since 2020 (see Figure 7). Nitrogen-based fertilisers have been most affected with prices for ammonium nitrate reaching £1,000/tonne in the Spring of 2022 (Farmers Weekly 2022c; The Conversation 2022). In the case of nitrogen-based fertilisers, this price spike is in large part due to the recent increase in energy costs, especially gas (see Figure 8) (Westra 2022). Along with projections of lower fertiliser demand (Westra 2022), and increased gas prices, many manufacturers either stopped or reduced their production of nitrogen-based fertilisers, which reduced supplies and increased product costs (World Bank 2022; Westra 2022). For example, even before the war, rising gas prices led Yara to temporarily cut nitrogen-based fertiliser production in Italy and France (Farmers Weekly 2022c). In the UK, CF Fertilisers have temporarily closed their ammonium nitrate plant in Ince, leaving just one operational plant in Billingham (The Courier 2022).

Some nitrogen-based fertiliser manufacturers in Lithuania and Poland have restricted exports until domestic demand has first been met (The Courier 2022; Food Manufacture 2022). In addition, the high cost of coal in China resulted in power outages and the rationing of electricity supply, which forced fertilizer factories to cut production. This, in turn, led to China banning exports of phosphate and Urea (nitrogen-based) fertilisers until their domestic



Figure 7. USA monthly average fertiliser nutrient prices – January 1995 to October 2021 - (Outlaw et al 2022)

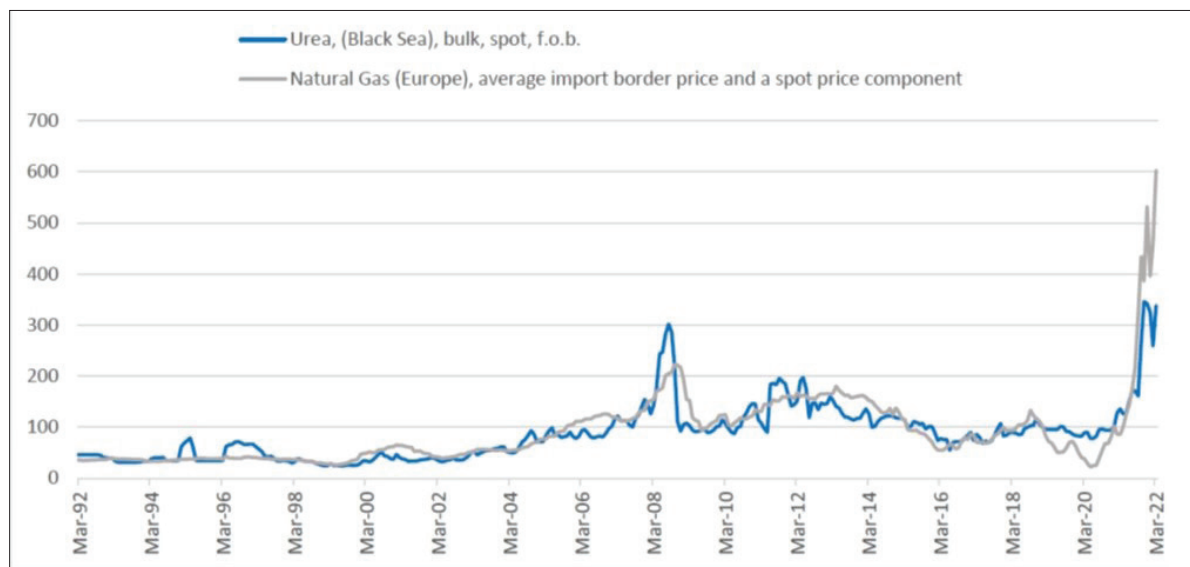


Figure 8. Urea price versus natural gas price, 2014–16 = 100 (FAO 2022d)

demands were met (Chemical and Engineering News 2021; Westra 2022). China accounts for 25% of global phosphate fertilizer exports, and approximately 10% of global urea exports - but 80% of Australia's urea needs (Westra 2022). Several climate-related factors effected nitrogen-based fertiliser production in the USA. Firstly, Hurricane Ida reduced gas production in the USA, which led to higher prices and suspension of nitrogen-based fertiliser production (World Bank 2021; Progressive Farmer 2022b; Westra 2022). In February 2021, the exceptionally cold weather across much of the US diverted the use of natural gas away from fertiliser production to heat homes, causing fertiliser plants across Oklahoma, Texas, and Louisiana to temporarily close, and fire disabled a plant in North Carolina (National Geographic 2022). This reduced US nitrogen-based fertiliser production by 60%, or 250,000 tons (Westra 2022). Even inspections and maintenance of fertiliser plants, which were delayed by Covid-19, managed to disrupt fertiliser production. In addition, higher

transport cost, due to increased energy/fuel prices, and logistical challenges have tightened fertiliser supplies and contributed to higher fertiliser costs (Westra 2022).

Ultimately, the war in Ukraine has also exacerbated already volatile fertiliser prices and supplies (Progressive Farmer 2022b). Approximately 40% of the world's potassium-based fertiliser (CNBC 2022; Farmers Weekly 2022c), and 12.7% of phosphate fertiliser is from Russia and Belarus (Farm Bureau 2021). Yara, Europe's principal producer and supplier of fertilisers produces a large proportion of its fertilisers in Ukraine (The Conversation 2022). This has limited supplies and pushed prices up even further. Much of the nitrogen-based fertiliser is made from Russian gas. Sanctions have pushed up gas prices and, in turn, nitrogen fertiliser prices. Figure 9 (below) illustrates how much the world relies on Russia and Belarus for nitrogen, phosphate, and potassium fertilisers.

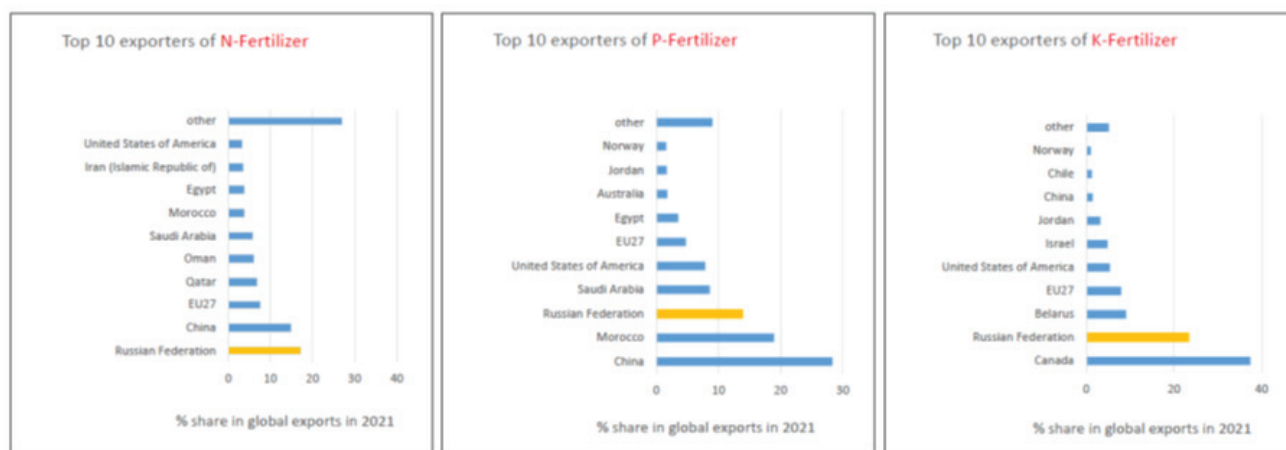


Figure 9. Top 10 exporters of nitrogen, phosphate and potassium fertilisers (FAO 2022c).



Figure 10 (above) illustrates the countries that are most dependent on fertiliser imports from the Russian Federation and Belarus. Brazil, one of the world's principal grain and oil seed producers imports around 20% of fertilisers from Russia (Progressive Farmer 2022b). According to the Brazilian National Fertilizer Association, Brazil's has only three months of fertilizer stocks remaining, and that sanctions and supply logistics have hampered fertiliser shipments to Brazil (Progressive Farmer 2022b). Whilst Germany is the fourth largest potash supplier globally, it only accounts for 6% of the global market, leaving the EU as a net potash importer (EURACTIV 2022). In 2020, the EU imported 2.4 million tonnes of potash, which equates to approximately 85% of its potash needs (EURACTIV 2022). Between 2018 to 2020, the EU imported approximately 27% of its potash needs from Belarus, which would be difficult and costly to replace from other sources (EURACTIV 2022). According to the EU's Agriculture Commissioner, Janusz Wojciechowski, "We've seen a drastic change of the situation, including in the fertilizer sector. There are no imports and no possibilities of imports" (EURACTIV 2022). According to The Zimbabwean (2022), Zimbabwe alone imports approximately 250,000 tons of nitrogen-based fertiliser from Russia each year. Whilst the country has enough fertiliser in stock for its wheat crop, the fear is that there will be little left over for maize.

Which factors could exacerbate the situation?

A protracted war: A long and protracted war in Ukraine, or potentially one that escalates to involve other neighbouring countries, could fundamentally exacerbate the global food security situation (FAO 2022d). Indeed, as a direct consequence of the war, between 20% and 80% of the Ukrainian winter wheat crop may not be harvested (FAO 2022d; Progressive Farmer 2022c). Those fields that can be harvested are also expected have at least 10% lower yields as farmers are expected to struggle to access fertilisers and crop protection products and apply them in a timely manner. Farmers may also lack enough fuel, labour, and machinery to harvest or may lack storage capacity etc., (FAO 2022d; Reuters 2022d; The Western Producer 2022). And, even if wheat can be harvested, which isn't certain, there's no guarantee that the harvest will be able to find its way out of the country due to damaged infrastructure, high fuel cost, low availability of labour, lack of transport and functional ports, and high insurance premiums for those brave enough to send

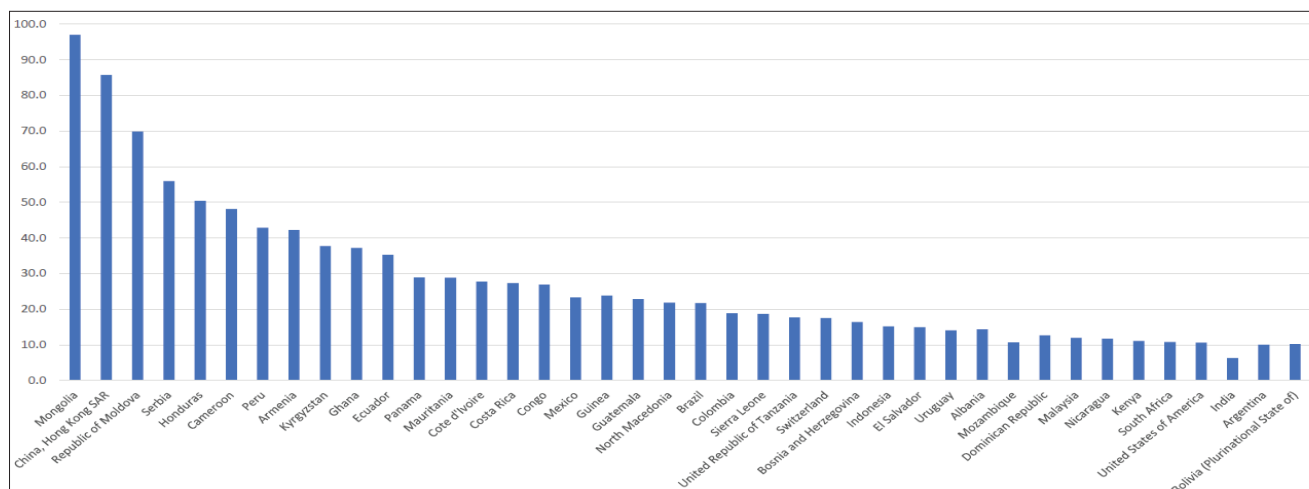


Figure 10. Share of fertiliser imports from the Russian Federation – net importers only – 2021 % - (FAO 2022c)

ships into a war zone (Bentley et al 2022; New York Times 2022). At the end of February 2022, over 100 foreign-flagged ships were reportedly damaged or physically “blocked in Ukrainian seaports by the Russian navy”. Whilst winter wheat was already in the ground when Russia invaded Ukraine, the sowing of Spring sown crops is imminent. According to Roman Leshchenko, Ukraine’s Agriculture Minister, the area of Spring-sown crops may be slashed from 15 million hectares to 7 million hectares (Newswire 2022), or, potentially much lower (The Guardian 2022c; Bentley et al 2022; CNN 2022; National Geographic 2022).

Limited Supplies of Key Food Staples



Figure 11. Cereal production, utilisation, and stocks (FAO 2022)

In its recent forecast, the FAO retrospectively upwardly adjusted world cereal production estimates for 2021 by 2.2 million tonnes to 2,796 million tonnes, an increase of 0.7%, due to higher-than-expected production levels of maize and rice (FAO 2022). In 2022, global cereal stocks (ending in 2022) are forecasted to increase just 0.5%, leaving an estimated stocks-to-use ratio of 29.1%. Whilst global cereal production continues to grow, this needs to be set against a slightly higher growth rate trend in cereal utilisation of between 1.4% and 1.7% (FAO 2022). Although current cereal stocks hold no immediate cause for alarm, key food system actors, both private and public sector, are beginning to act as if they do (Farmers Weekly 2022e).

Figure 12 illustrates the ending stocks portrayed as how many days the stocks would last if no additional supplies were forthcoming. This has prompted farming industry press across the globe to suggest that global wheat stocks are already dangerously low (Farmers Weekly 2022e).

The FAO remains concerned that importing countries may struggle to replace reductions in wheat, maize, sunflower oil/cake and barley exports from Russia and Ukraine (FAO 2022c). According to the FAO (2022c), “wheat inventories are already especially tight in Canada and the United States of America following reduced harvests in 2021/22. Among other suppliers, Argentina’s exports during the ongoing season will also likely remain limited by Government efforts to control domestic inflation, while Australia has reached its maximum shipment capacity logistically. In such a setting of significantly reduced global export availabilities, other countries could enforce measures (formal or informal) to slow or restrict exports to protect domestic supplies and/or address domestic price inflation, as several countries have already announced since the start of the conflict”. There is a need to ensure that, unless there is dire need, countries endeavour to keep trade flowing and resist the imposition of export bans or unnecessary hoarding of food commodities. According to The Guardian (2022), the WTO suggested that government hoarding increased wheat prices by as much as 40% during the food crisis of 2011/2012.

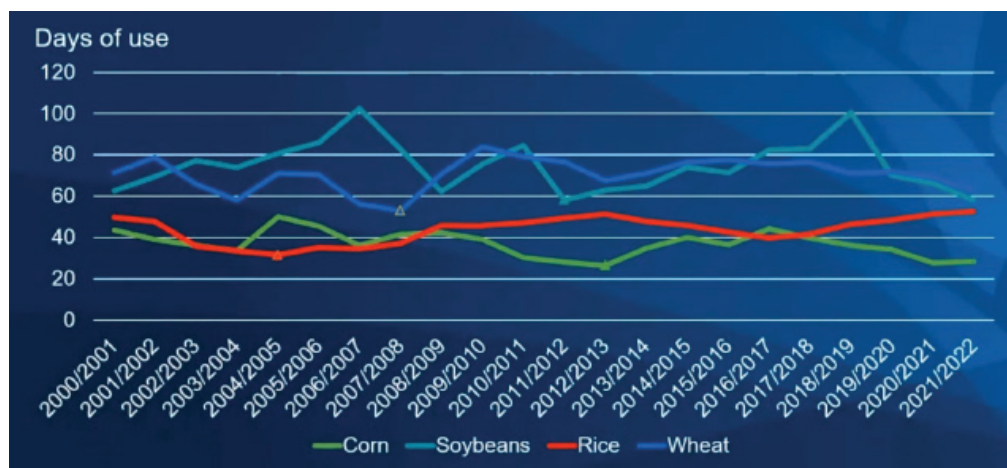


Figure 12. Ending Stocks (ex-China) have tightened, except for rice – (IFPRI 2022).

Climatic Challenges

Farming is always at the mercy of climate. If farmers have done everything right (land preparation, sowing, fertiliser management and crop protection), and crops receive the right amount of rainfall, temperature and sun at the right time, bumper harvests are possible. However, if the weather is not conducive (too wet, too dry, too hot, too cold, too windy, too cloudy), the whole harvest can be lost. Currently, there are several climatic events (ongoing and predicted) that have the capacity to devastate harvests at a time when global food stocks are lower than usual and agricultural markets are sensitive. Figure 13 (below) illustrates the USAID's La Niña Advisory for 2021.

Long-Range Forecasts suggest a 65% chance of the La Niña conditions of 2021 continuing through to March-May 2022 (WMO 2022). In 2021, hot and dry conditions produced by La Niña led to a reduction in wheat yields of >38% (Bentley et al 2022; The Guardian 2022c). Late sowing due to high rainfall and flooding in 2021 are expected to significantly reduce 2022 winter wheat yields in China (Bentley 2022; New York Times 2022). Drought across 73% of the US wheat belt could lead to reduced wheat yields (Reuters 2022b; Progressive Farmer 2022). Drought conditions across many parts of Argentina, Paraguay, Uruguay, and southern Brazil are expected to reduce soybean yields (World Grain 2022b). Drought and high temperatures in Eastern Africa are also expected to drastically reduce crop yields in 2022 (FAO 2022f).

Unpredictable markets

Highly volatile and unpredictable input and output markets are creating havoc for almost all food system actors. Not knowing if prices will rapidly increase or decrease overnight for agricultural inputs and outputs make it extremely risky for anyone willing to commit to buying, right from the input suppliers, farmers, primary aggregators, food processors and manufacturers, and exporters/importers. If the next buyer along the chain is willing and able to pay, profits increase if prices continue to increase. Conversely, if the bubble bursts and you're left holding over-valued inputs or outputs, you're the one that takes the loss, however big it happens to be. In some cases, this market roller-coaster has stopped input and output buying in its tracks. This especially puts farmers in a difficult cash-flow position (Cyprus Mail 2022). This situation is further exacerbated by knee-jerk policy responses, especially hurriedly imposed export bans of agricultural commodities (Chatham House 2022). To date, Algeria, Argentina, Belarus, Egypt, Hungary, Indonesia, Kyrgyzstan, Lebanon, Morocco, Russia, Serbia, and Turkey have instigated export bans on agricultural commodities (Laborde 2022). If other countries impose export bans/restrictions on agricultural commodities, this will further tighten global food supplies and result in increased food inflation. Where possible, efforts should be made to reduce these trade distorting measures.

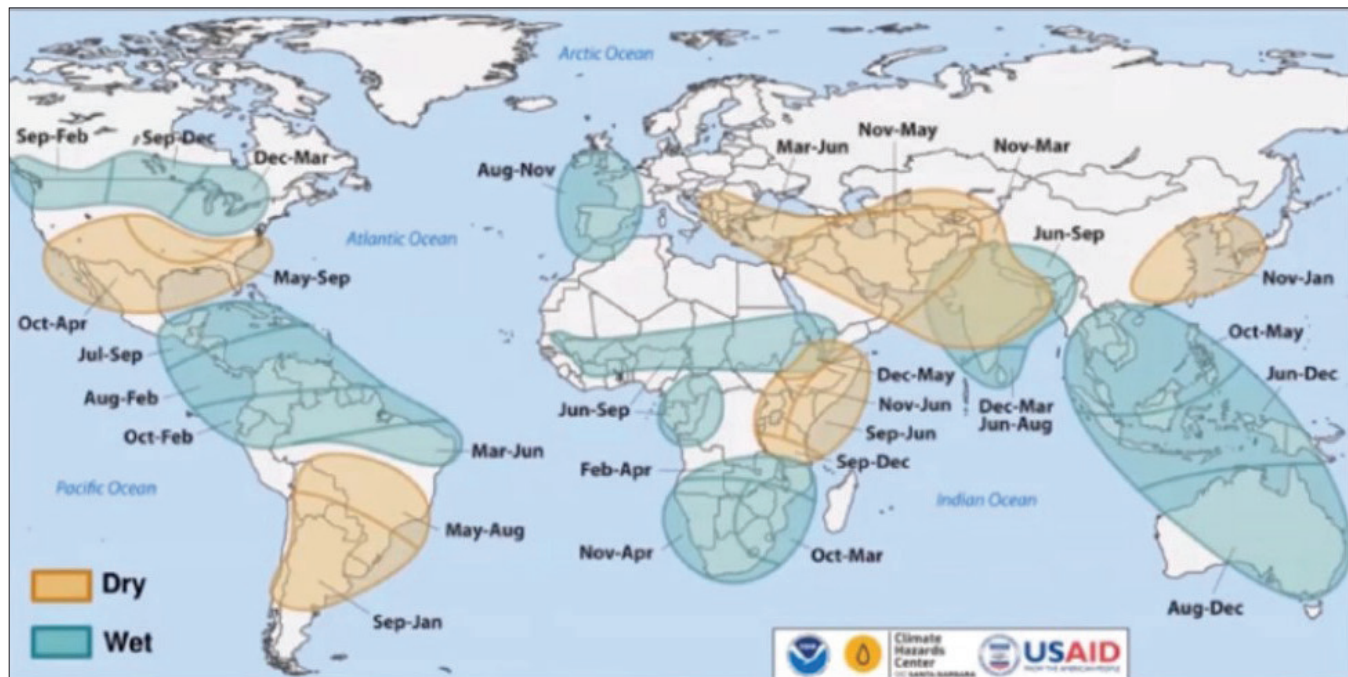


Figure 13. La Niña Advisory for 2022 (IFPRI 2022).

Fertiliser, Fuel and Food Nexus

One of the key questions being asked is, how will high fertiliser prices effect food production? Working on the premise that, despite limited fertiliser supplies and disrupted logistics, farmers have physical access to fertilisers, how much fertiliser will farmers buy and apply?

Whilst the price of many agricultural commodities has risen significantly during the past couple of years, many analysts are convinced that fertilisers are becoming increasingly unaffordable for farmers – see Figure 14 - (FAO 2022c). As such, it is expected that farmers will cut back on the amount of synthetic fertiliser that they buy and apply (New York Times 2022; Progressive Farmer 2022c). Indeed, in some cases, such as the National Soybean Farmers Association of Brazil, farmers have been instructed to cut back, or even eliminate, fertiliser applications in 2022 (New York Times 2022). Even if farmers can source fertilisers, and that's not a given (New York Times 2022; Farm Bureau 2021), they need to achieve the “breakeven ratio, which is typically around six for a cereal crop (6kg of grain needed to pay for 1kg of nitrogen fertiliser), but with the rise in fertiliser prices it is currently around ten” (The Conversation 2022). In Nebraska, USA, fertiliser prices now account for approximately 15-20% of total cash costs for maize production. Given their costs, even in core maize production areas, farmers will need to think twice about how much fertiliser to apply (Farm Bureau 2021; Westra 2022). In many situations, it will make more sense to reduce fertiliser applications and take a small cut in yields. “When all prices are going up, the tendency is to be more prudent in your input use” (Chemical and Engineering News 2021). In the UK, some farmers plan to use 20% less fertiliser (The Guardian 2022d). Indeed, when fertiliser prices are high, high-input farmers can cut back by around 50kg/ha whilst only marginally reducing yields (Farmers Weekly

2022d; Wiggins 2022). For livestock and some niche and cash crops, even with current agricultural commodity prices, it may not be possible to recoup the high cost of fertiliser. In most developing countries, fertiliser prices are already out of reach for smallholder farmers (World Bank 2022). During the food, fuel and finance crisis of 2008/2009, farmers in Africa reduced the application of nitrogen-based fertilisers by 13%. Given fertiliser supply and logistical constraints, the decrease in fertiliser applications could be greater (Farm Bureau 2021; FAO 2022e). Even those farmers who regularly purchase fertilisers are unlikely to purchase and apply fertilisers unless their government intervenes with expensive fertiliser subsidies or e-voucher schemes. Those countries that already provide fertiliser subsidies, such as Malawi, Nigeria, Ghana, Togo etc., are likely to run into fiscal challenges in 2022 and 2023 (Bouët et al 2022). According to The Zimbabwean (2022), whilst tobacco farmers may have high enough profit margins to absorb high fertiliser cost, maize farmers won't. Ultimately, rising fertiliser costs are likely to lead to reduced fertiliser applications. The extent of these reductions, and their effects on crop yields, exportable surpluses, and food prices, remains to be seen (World Bank 2022; Wiggins 2022; The Courier 2022).

Will farmers plant less nitrogen hungry crops?

Given the high costs of fertilisers, and the strong market for soybeans, many agriculture industry analysts suggest that there is likely to be a move away from nitrogen-hungry maize to soybean or wheat planting (AgWeb 2022; AllAfrica 2022; Farm Bureau 2021). This has already happened in the USA. According to the USDA, US-farmers have planted a record 91 million acres of soybeans, which has knocked maize (falling to 89.5 million acres) off the top-spot (Progressive Farmer 2022d; Successful Farming 2022b). In Nigeria, similar shifts can be seen from nitrogen-hungry tomatoes and Irish potatoes to irrigated wheat (Daily Trust 2022).

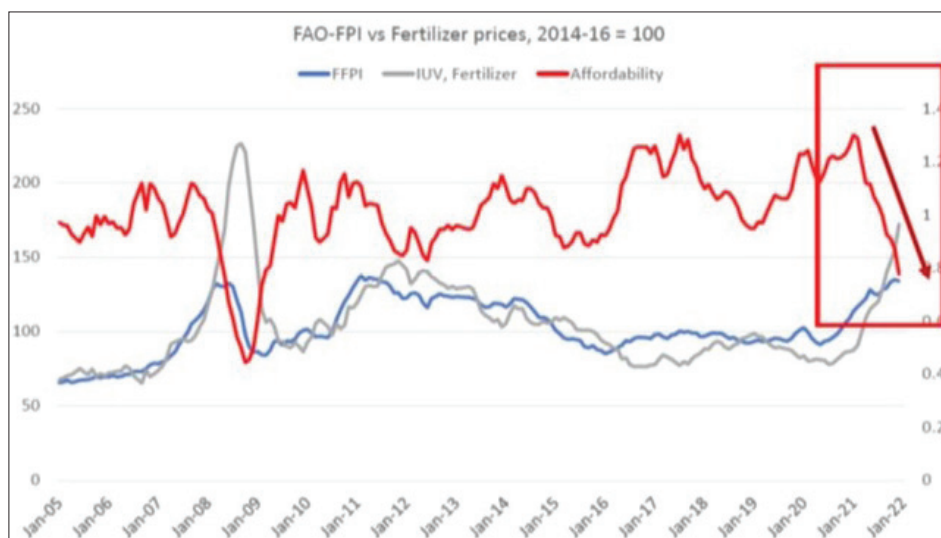


Figure 14. Fertiliser affordability – (FAO 2022c)

Which factors could ameliorate the situation?

A swift end to the war: Alongside the end of unnecessary suffering, a swift end to the war would bring several benefits to the global food system (The Conversation 2022b). First and foremost, it would allow Ukrainian farmers to harvest at least a significant proportion of the remaining 6 million hectares of winter sown crops (Bentley 2022), and, if the hostilities ended quickly enough, allow at least some spring crops to be sown, and existing stocks of wheat to be exported (Reuters 2022). According to Farmers Weekly (2022), Ukrainian farmers may still be able to deliver 16 to 20 million tonnes of wheat, compared to the 37 million tonnes of wheat that Ukraine usually exports (The Western Producer 2022). Already, 1.1 million tonnes of existing wheat stocks in Ukraine have been sent by rail, via Poland and Romania, to the EU (The Western Producer 2022). After domestic needs are met, this leaves approximately 6 to 7 million tonnes of wheat for export in the 2022/2023 marketing year. According to Taras Vysotskyi, Ukraine's deputy minister of agrarian policy and food, food exports are being rerouted, and, if hostilities end quickly, crop production in the Ukraine may only fall by 20% (Farm Policy News 2022; Progressive Farmer 2022c). Depending on how quickly trading could recommence with Russia and Belarus, both energy and fertiliser prices would likely decline, taking some of the heat out of global inputs and output markets. Stock markets should also settle as greater predictability returns to agricultural input and output markets (Successful Farming 2022c).

Limited reductions in fertiliser applications

Whilst farmers in developing countries are expected to reduce nitrogen fertiliser applications, according to the FAO (2022e), based on past experiences, farmers in developed countries “are rather unresponsive to increases in nitrogen-fertilizer prices”. For example, when fertiliser prices spiked in 2008/09, the global average application of phosphate fertilizers only reduced by 8%, with potassium fertiliser applications reducing by 16% (FAO 2022e). And, even if applications of phosphate and potassium are dramatically reduced, only minor yield reductions are expected in fields where these nutrients are present at high enough levels in the soil (FAO 2022e; The Conversation 2022). Indeed, the FAO (2022e) expects that, if prices remain high in 2022/2023, the demand for phosphate and potassium fertilisers may

fall dramatically. In some respects, the case of nitrogen-based fertilisers is similar. In 2008, when farmers aimed to preserve both crop yield and quality, the application of nitrogen-based fertiliser only declined by less than 1% (FAO 2022e). Indeed, even with the high price of fertiliser, the International Fertilizer Industry Association (IFA) only predicts a 3% reduction in fertiliser use in 2022/2023 (FAO 2022e). Some farming industry analysts agree, stating that where it makes sense on paper, farmers will maintain, or even increase, their fertiliser demands – especially for nitrogen-based fertilisers (Chemical and Engineering News 2021).

Increased fertiliser supplies

Attempts are ongoing to boost fertiliser supplies in 2022/2023. For example Nutrien, a global fertiliser company, is increasing potash production by a further 500,000 tonnes in 2022, on top of the additional 1 million tonnes brought on-stream in 2021, which will help to increase global potash exports to between 68 million tons and 71 million tons in 2022 (The Northern Miner 2022). Test drillings have also been made for potash mines in East Germany. Early results look promising (EURACTIV 2022). Nutrien also plans to expand production of nitrogen-based fertilisers but expects that nitrogen-based fertilizers will continue to be expensive until mid-2022, and potentially longer (Chemical and Engineering News 2021).

In Africa, Nigeria is seen as stepping up to the fertiliser challenge. Built on Nigeria's domestic supplies of natural gas, Indorama Nigeria, and the Dangote Group, are increasing production of urea. Set against Nigeria's domestic needs of 1.5 million tons/year, Dangote and Indorama have a combined capacity to produce 4.4 million tons/year, which leaves enough surplus production to make up expected shortfalls across much of Western Africa (Bouët et al 2022). Morocco, which already supplies 33% of the ECOWAS Phosphate market, has recently invested in two new phosphate plants in Nigeria, which have a combined capacity of 2 million tons, which surpasses the total current phosphate needs of West Africa (Bouët et al 2022). In addition, where available, farmers are being encouraged to use organic fertilisers to supplement costly or limited supplies of synthetic fertilisers (The Guardian 2022d).

Bring more land into production for staples

Market forces are expected to bring additional wheat land into production in 2022, especially in Canada, the USA, Europe, and UK through the displacement of other cereal and oilseed crops or via the conversion of grassland to arable production or even by bringing non-

agricultural land into agricultural use (Bentley et al 2022; The Guardian 2022d; New York Post 2022). There are also calls to expand wheat production in high potential agro-ecologies of Africa, especially in the East African highlands and Southern Africa (Bentley et al 2022). The Irish Government is also trail-blazing in its launch of a €12 million crop cultivation scheme to increase barley, wheat, and oat production, which was last used during the Second World War (Financial Times 2022).

Increasing cereal exports

Efforts are also underway to increase cereal exports, from both ongoing harvests and country strategic reserves. Key target countries/regions are the EU and India (Successful Farming 2022b; EC 2022; Bentley et al (2022), Australia (National Geographic 2022), Canada, and Kazakhstan (AllAfrica 2022), and China, Brazil, and South Africa (FAO 2022f). The EU is expecting high cereal and oilseed yields in 2022, which could increase stocks available for export by 30%, and cut the need for cereal imports by 42% (EC 2022). According to the USDA, India is expected to release 12 million tons of wheat for export in the marketing year 2022-2023, up from 8.5 million tons in 2021-22 (Dhansutra 2022). Exports are expected to be destined for neighbouring countries, such as Bangladesh, China, and the Middle East, but some shipments are expected to find their way to African markets such as Egypt, Sudan, and Nigeria (Dhansutra 2022). China also released 500,000 tonnes of soybeans from state reserves (Financial Post 2022). It is also likely that Russia will trade agricultural commodities with so-called friendly countries that are willing to turn a blind eye to sanctions (Progressive Farmer 2022c; The Guardian 2022e).

Global food security outlook

In the words of David Beasley, Executive Director of the UN's World Food Programme (WFP), "Fuel costs are up, food prices are soaring, fertilizer is more expensive, and all of this feeds into new crises" (New York Times 2022b). WFP's chief economist states, "Grain and oil prices are fast approaching or even surpassing levels not seen since the 2008 food and fuel crisis" (The Guardian 2022c). Indeed, in tandem with Russia's invasion of Ukraine, the FAO's Food Price Index (FFPI) reached 140.7 points (Figure 15), surpassing previous records set in the food crises of 2008/2009 and 2011/2012 (Bouët et al 2022; Reuters 2022b). According to the FAO, "the current situation – meaning the war in Ukraine - is just adding to additional food price inflation that we've been witnessing" (CNN 2022).

Increases in the FFPI are primarily attributed to the increased costs of vegetable oil (8.5%), dairy products (6.4%), and cereals (3.0%) (World Bank 2022).

According to Fabrice Montagné, Chief Economist at Barclay's Bank, "the breadth and intensity of this supply shock could have more severe consequences than previous commodity price spikes, by broadening inflationary pressure" (CNBC 2022).

Everybody's problem

One of the major differences between the 2008/2009 and 2011/2012 food crises and the current emerging crisis is that this crisis is being felt across the whole globe. Whilst



Figure 15. The FAO Food Price Index (World Bank 2022; FAO 2022b)

the crisis will be felt disproportionately by the poorest, in effect, it's everybody's problem (Vigour Times 2022; Bentley 2022; Punch 2022; Business Insider Africa 2022; Farmers Weekly 2022b; CNN 2022; The Guardian 2022; Wiggins 2022; New York Post 2022; National Geographic 2022). Driven by a world of lean interconnected supply chains, many countries may only have limited access to supplies of staple food commodities (Chatham House 2022). Rising food and energy prices, shaky supply logistics and unpredictable markets, super-imposed on often fragile economies, weakened after more than two years of Covid-19, lead to fears that parts of the food system may buckle, leading to social and political unrest (New York Times 2022). According to The Globe and Mail (2022) "Countries with low reserves of foreign currency and strategic commodities, high inflation, and weak state finances, and [located] closer to disrupted supply chains, are going to be in bad shape". Protests over the price of fuel and food have already been reported in Spain, Iraq, Albania, Sri Lanka, and Sudan and many more are expected (Euronews 2022; Vigour Times 2022; The Globe and Mail 2022; The Guardian 2022; Channels Television 2022).

Animal production

Often neglected in mainstream analyses, animal production across the globe, especially those reliant on expensive bought feed – such as poultry and pork producers, are caught between exceptionally high

production costs (caused by high feed, energy, and labour costs) and the reluctance of supermarkets to pass on prices to consumers, which would give them room to pay producers a fair price (New York Times 2022; Food Manufacture 2022; FAO 2022d). In the UK, the National Pig Association have already petitioned supermarkets to increase prices paid for pig meat by 50%, threatening a total collapse of the industry if profitability cannot be maintained (The Guardian 2022b).

Which countries will be hardest hit and how long will the crisis last?

Many analysts across the global food system are convinced that the current situation is not a flash in the pan and that high prices of food will persist throughout 2022 and into 2023 (Successful Farming 2022; World Bank 2022; EC 2022).

Figure 16 illustrates the global impact of the emerging crisis on the Consumer Price Index for Food and Beverages. Several countries, including Ethiopia, Angola and Zimbabwe have witnessed increases in food prices of over 30%. Across Africa, most countries have already experienced increases in food prices of between 5% and 30%. In West Africa and several Eastern and Southern African countries, food inflation has already surpassed these figures. Table 1 (below) includes maize prices from principal markets in Cote d'Ivoire, Ghana, Mali,

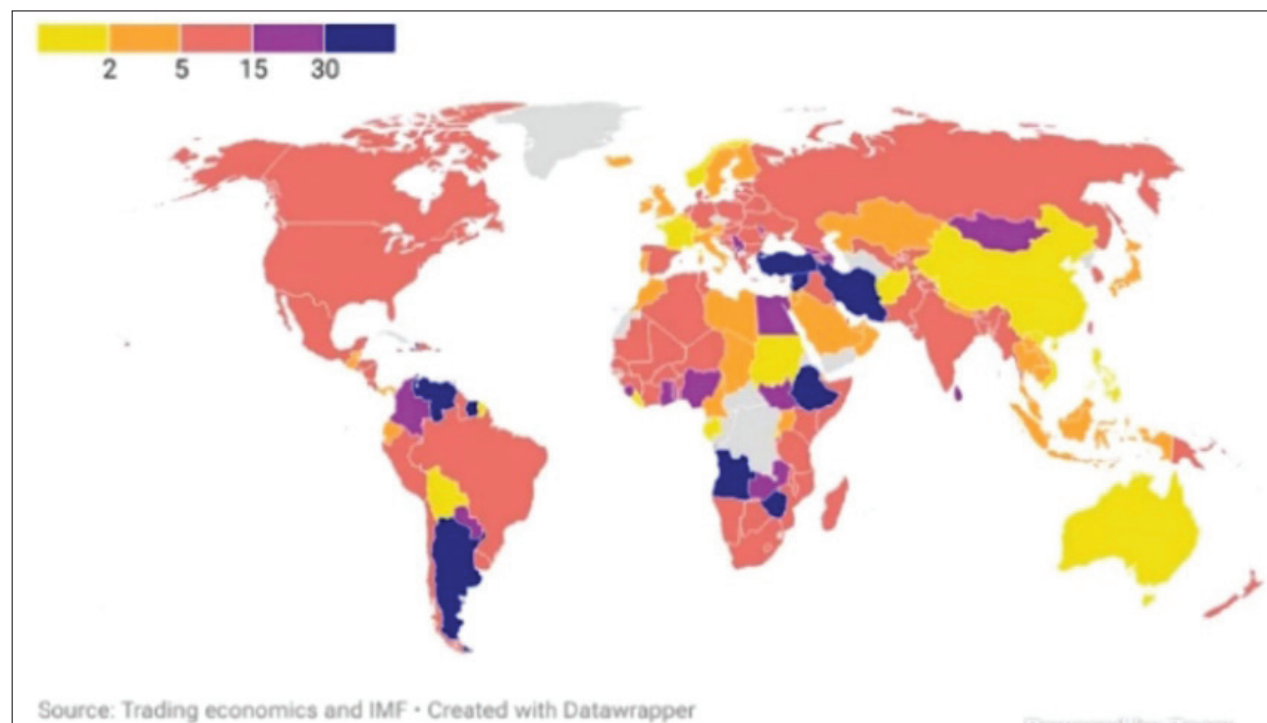


Figure 16. Domestic Food Inflation. (Percentage change year over year, February 22, 2022). (Consumer Price Index for Food and Beverages) - (IFPRI-2022).




































































































Nigeria, and Togo. The symbol  indicates year on year percentage increases that are greater than 15%. Some prices have doubled since the same month in 2021 (AGRA 2022). Maize prices have also rocketed in selected markets across Eastern Africa; 43.21% in Kabale-Uganda, and 97.38% in Addis Ababa-Ethiopia (AGRA 2022).

Table 2 and Table 3 illustrate changes in millet and sorghum prices in selected markets across West Africa. It is important to note that global price inflation of other cereals, such as wheat and maize, have already spilled over in these local African food commodities. Whilst conflict, social unrest, and climate change have undoubtedly contributed, some prices have increased by up to 65% since March 2021 (AGRA 2022).

Table 1. Changes in maize prices in selected West African countries – (AGRA 2022).

Country	Crop	Market	Last Price	1 Month	3 Months	6 Months	1 Year	Next 3 Months*	Next 6 Months*
Cote d'Ivoire	Maize (white)	Korhogo, Retail, XOF/KG*	300	28.00 	30.26 	7.51 	37.14 	-16.72 	
Cote d'Ivoire	Maize (white)	Man, Retail, XOF/KG*	285	10.55 	26.61 	-7.29 	30.85 	-0.14 	
Ghana	Maize (white)	Accra, Wholesale, GHS/100KG	313	-3.42 	-3.42 	-2.08 	71.95 		
Ghana	Maize (white)	Bolga, Wholesale, GHS/100KG	246	-9.74 	0.00 	-5.94 	47.50 		
Ghana	Maize (white)	Kumasi, Wholesale, GHS/100KG	341	-3.69 	-19.42 	-24.28 	10.09 		
Ghana	Maize (white)	Techiman, Wholesale, GHS/100KG	222	1.26 	-2.83 	-26.00 	44.30 		
Mali	Maize (white)	Ansongo, Retail, XOF/KG	281	2.18 	8.08 	12.40 	40.50 	6.28 	17.75 
Mali	Maize (white)	Badalabougou, Retail, XOF/KG	263	-4.36 	5.20 	5.20 	31.50 		
Mali	Maize (white)	Faladié, Retail, XOF/KG	250	0.00 	2.04 	4.17 	42.86 	3.53 	15.36 
Mali	Maize (white)	Gao, Retail, XOF/KG	328	9.33 	16.73 	45.78 	45.78 		
Mali	Maize (white)	Kayes Centre, Retail, XOF/KG	310	3.33 	12.73 	3.33 	24.00 	5.50 	17.81 
Mali	Maize (white)	Niarela, Retail, XOF/KG	250	0.00 	0.00 	4.17 	42.86 	7.84 	18.48 
Nigeria	Maize (white)	Ibadan, Wholesale, Naira/KG**	242	8.30 		-10.06 	23.06 		
Nigeria	Maize (white)	Kano, Wholesale, Naira/KG**	242	11.90 	45.49 	-3.86 	33.23 		
Nigeria	Maize (white)	Kaura Namoda, Wholesale, Naira/KG**	245	23.49 	41.36 	-3.98 	40.92 		
Nigeria	Maize (white)	Lagos, Wholesale, Naira/KG***	230	11.98 	-8.00 	-4.72 	43.03 		
Nigeria	Maize (white)	Maiduguri, Wholesale, Naira/KG**	225	15.50 	33.33 	1.12 	26.76 		
Togo	Maize (white)	Amegnran, Retail, CFA Franc BCEAO/KG	300	1.01 	20.97 	20.00 	100.00 		
Togo	Maize (white)	Anie, Retail, CFA Franc BCEAO/KG	253	1.20 	19.34 	0.00 	64.29 		
Togo	Maize (white)	Cinkassé, Retail, CFA Franc BCEAO/KG	255	5.37 	21.43 	0.00 	41.67 		
Togo	Maize (white)	Kara, Retail, CFA Franc BCEAO/KG	261	-2.97 	29.21 	-1.88 	39.57 		
Togo	Maize (white)	Korbongou, Retail, CFA Franc BCEAO/KG	255	2.00 	15.91 	4.08 	63.46 		
Togo	Maize (white)	Lomé, Retail, CFA Franc BCEAO/KG	350	0.00 	40.00 	16.67 	82.29 		








 = no change;  = low increase (0-5%),  = moderate increase (5-15%),  = high increase (>15%),  = low decrease (0-5%),  = moderate decrease (5-15%),  = high decrease (>15%)

Table 2. Changes in millet prices in selected West African countries (AGRA 2022).

Country	Crop	Market	Last Price	1 Month	3 Months	6 Months	1 Year
Burkina Faso	Millet	Batié, Retail, XOF/KG	263	2.73 ▲	-13.77 ▼	-11.15 ▼	16.37 ☒
Burkina Faso	Millet	Bousse, Retail, XOF/KG	281	4.46 ▲	21.12 ☒	21.12 ☒	56.98 ☒
Burkina Faso	Millet	Doni, Retail, XOF/KG	340	2.10 ▲	-3.95 ▾	22.30 ☒	36.00 ☒
Burkina Faso	Millet	Faramana, Retail, XOF/KG	234	9.35 ↑	20.62 ☒	52.94 ☒	61.38 ☒
Burkina Faso	Millet	Gourcy, Retail, XOF/KG	300	2.04 ▲	10.29 ↑	35.14 ☒	30.43 ☒
Burkina Faso	Millet	Ouagadougou (Sankaryare), Retail, XOF/KG	358	17.76 ☒	16.61 ☒	43.78 ☒	43.78 ☒
Burkina Faso	Millet	Ouargaye, Retail, XOF/KG	261	4.82 ▲	1.56 ▲	6.10 ↑	28.57 ☒
Burkina Faso	Millet	Titao, Retail, XOF/KG	277	9.06 ↑	8.63 ↑	35.12 ☒	67.88 ☒
Mali	Millet	Ansongo, Retail, XOF/KG	325	0.00 ●	25.97 ☒	35.42 ☒	41.30 ☒
Mali	Millet	Badalabougou, Retail, XOF/KG	306	2.00 ▲	20.00 ☒	39.09 ☒	36.00 ☒
Mali	Millet	Faladié, Retail, XOF/KG	300	0.00 ●	25.00 ☒	42.86 ☒	50.00 ☒
Mali	Millet	Gao, Retail, XOF/KG	350	2.04 ▲	26.81 ☒	32.08 ☒	32.08 ☒
Mali	Millet	Kayes Centre, Retail, XOF/KG	338	12.67 ↑	11.18 ↑	14.19 ↑	27.55 ☒
Mali	Millet	Niarela, Retail, XOF/KG	300	9.09 ↑	17.65 ☒	50.00 ☒	50.00 ☒
Niger	Millet	Abalak, Retail, XOF/KG	371	7.54 ↑	27.93 ☒	6.00 ↑	20.06 ☒
Niger	Millet	Bonkaney, Retail, XOF/KG	310	6.90 ↑	3.33 ▲	2.99 ▲	23.02 ☒
Niger	Millet	Goure, Retail, XOF/KG	357	13.69 ↑	19.00 ☒	-0.83 ▾	17.05 ☒
Niger	Millet	Katako, Retail, XOF/KG	314	6.80 ↑	6.80 ↑	1.95 ▲	18.05 ☒
Nigeria	Millet	Ibadan, Wholesale, Naira/KG**	250	-4.58 ▾	-10.71 ▼	-16.67 ▼	24.07 ☒
Nigeria	Millet	Kano, Wholesale, Naira/KG**	239	10.40 ↑	29.64 ☒	-2.51 ▾	30.83 ☒
Nigeria	Millet	Kaura Namoda, Wholesale, Naira/KG**	239	3.58 ▲	32.63 ☒	-7.54 ▼	26.38 ☒
Nigeria	Millet	Lagos, Wholesale, Naira/KG**	258	-2.55 ▾	5.41 ↑	-10.41 ▼	25.67 ☒
Nigeria	Millet	Maiduguri, Wholesale, Naira/KG**	230	8.49 ↑	10.84 ↑	3.95 ▲	29.58 ☒

Table 3. Changes in sorghum prices in selected West African countries (AGRA 2022).

Country	Crop	Market	Last Price	1 Month	3 Months	6 Months	1 Year	Next 3 Months*	Next 6 Months*
Mali	Sorghum	Ansongo, Retail, XOF/KG	250	0.00 ●	2.88 ▲	11.11 ↑	11.11 ↑	1.07 ▲	4.26 ▲
Mali	Sorghum	Badalabougou, Retail, XOF/KG	300	9.09 ↑	20.00 ☒	50.00 ☒	50.00 ☒		
Mali	Sorghum	Faladié, Retail, XOF/KG	300	17.19 ☒	30.43 ☒	50.00 ☒	50.00 ☒		
Mali	Sorghum	Gao, Retail, XOF/KG	250	0.00 ●	0.00 ●	0.00 ●	0.00 ●	2.22 ▲	5.30 ↑
Mali	Sorghum	Kayes Centre, Retail, XOF/KG	320	3.90 ▲	23.08 ☒	25.98 ☒	28.00 ☒		
Mali	Sorghum	Niarela, Retail, XOF/KG	300	11.52 ↑	30.43 ☒	50.00 ☒	65.75 ☒		
Niger	Sorghum	Abalak, Retail, XOF/KG	344	4.56 ▲	16.61 ☒	3.30 ▲	16.61 ☒		
Niger	Sorghum	Bonkaney, Retail, XOF/KG	288	-1.37 ▾	3.60 ▲	1.77 ▲	14.29 ↑	1.08 ▲	7.03 ↑
Niger	Sorghum	Goure, Retail, XOF/KG	345	23.21 ☒	26.37 ☒	8.49 ↑	29.70 ☒		
Niger	Sorghum	Katako, Retail, XOF/KG	294	0.00 ●	5.00 ▲	-8.13 ▼	18.07 ☒	6.04 ↑	14.88 ↑
Nigeria	Sorghum	Ibadan, Wholesale, Naira/KG**	259	-1.34 ▾	-7.68 ▼	-9.30 ▼	27.65 ☒		
Nigeria	Sorghum	Kano, Wholesale, Naira/KG**	227	14.64 ↑	0.89 ▲	-4.95 ▾	34.34 ☒		
Nigeria	Sorghum	Kaura Namoda, Wholesale, Naira/KG**	255	5.72 ↑	2.61 ▲	-5.34 ▼	42.17 ☒		
Nigeria	Sorghum	Lagos, Wholesale, Naira/KG**	258	6.58 ↑	-7.51 ▼	-6.70 ▼	24.70 ☒		
Nigeria	Sorghum	Maiduguri, Wholesale, Naira/KG**	218	12.11 ↑	13.73 ↑	8.75 ↑	22.54 ☒		
Togo	Sorghum	Anie, Retail, CFA Franc BCEAO/KG	295	-0.67 ▾	7.27 ↑	-3.28 ▾	40.48 ☒		
Togo	Sorghum	Cinkassé, Retail, CFA Franc BCEAO/KG	245	4.26 ▲	11.36 ↑	6.52 ↑	37.64 ☒		
Togo	Sorghum	Kara, Retail, CFA Franc BCEAO/KG	275	-0.36 ▾	-1.79 ▾	-14.06 ▼	4.96 ▲		
Togo	Sorghum	Kor bongou, Retail, CFA Franc BCEAO/KG	247	0.00 ●	7.39 ↑	7.39 ↑	23.50 ☒		
Togo	Sorghum	Lomé, Retail, CFA Franc BCEAO/KG	320	1.59 ▲	1.59 ▲	10.34 ↑	7.74 ↑		

Food inflation in sorghum has also been detected in Eastern Africa. In Ethiopia, prices for red sorghum and white sorghum have increased in Addis Ababa-Ethiopia by 91.4% and 50.43% respectively, and sorghum prices in Kabuga Market-Rwanda, and Rumbek Market-South Sudan have increase by 33.33% and 48.07% respectively (AGRA 2022).

Figure 17 (below) illustrates the prevalence of insufficient food consumption across Africa. Rapidly increasing food and fuel inflation, is felt on top of recent shocks, such as COVID-19, and climate change (droughts and floods).

Policy responses (short-term)

Governments should:

- Work to quickly resolve the Russia/Ukraine situation.
- Provide adequate social safety nets for poor consumers, in both developed and developing countries, that account for food and fuel inflation.
- Ensure balance of payments support to the most vulnerable food importing countries and provide support to secure alternative sources of essential foods.
- Avoid food, fertilisers, and, if possible, energy trade sanctions.
- Advise against unnecessary hoarding of food commodities.
- Consider releasing a proportion of available strategic food reserves.

- Avoid imposing export bans or other measures that would limit the free flow of agricultural commodities from food surplus producing areas to food deficit areas.
- Support farmers to underpin crop production during 2022/2023, especially access affordable to fertiliser, fuels, labour, and support with improving nutrient/energy/labour use efficiency, such as precision agriculture etc.
- Support the direct use of food crops and discourage the diversion of potential food crops into livestock production and biofuels.

Policy responses (medium-term)

Governments should:

- Reconsider increasing stocks held in Strategic Grain Reserves to ensure market and consumer confidence.
- Invest in infrastructure (physical, institutional etc.) to support competitive regional trade in sub-Saharan Africa to facilitate the movement of agricultural commodities from surplus to deficit areas.
- Increase investments in sustainable intensification of crops in regions that are highly dependent on food imports.
- Invest in the development of climate -resilient and green supply chains, based on renewable energy and environmentally sensitive agriculture.
- Invest in developing circular food systems, which reuse and recycle plant nutrients from organic wastes.

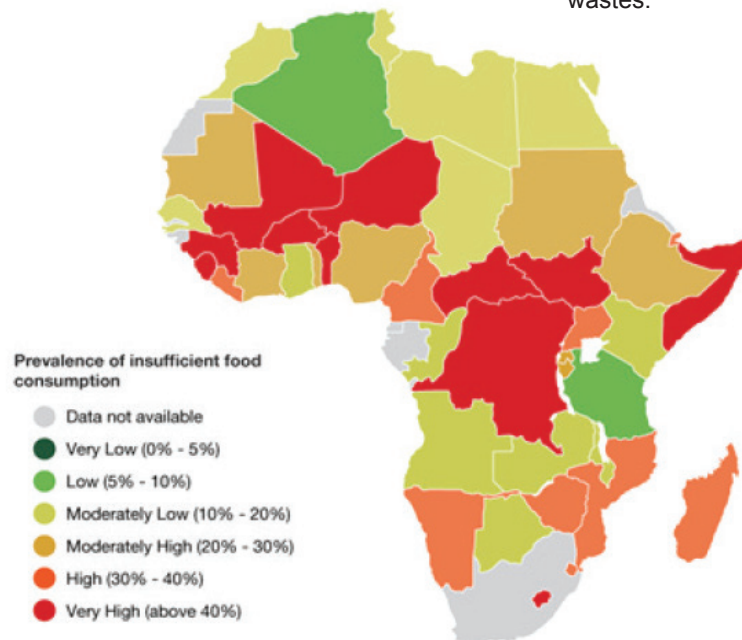


Figure 17. Prevalence of insufficient food consumption (Nhemachena et al 2022)

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