



*Lukas Kornher und Joachim von Braun
Center for Development Research, University of Bonn*

Executive Summary:

- Since the beginning of the Covid-19-pandemic, international food prices have become more volatile and have risen sharply. They have now reached the level of prices during the food crises of 2007/2008 and 2011. The FAO Food Price Index rose from 95 in 2019 to 135 in January 2022 and food prices are not expected to fall to pre-crisis levels anytime soon. In the context of increasing climate risks, these market and price risks are serious threats to political stability.
- Russia's military attack on Ukraine further drives up food prices. Together the two countries account for 20% of global maize exports and 30% of global wheat exports. The hampered trade flows directly affect major importing countries in the Middle East and Africa, and indirectly poor people in many other countries too. This will increase hunger.
- The rise in the food import bill and pandemic-related interventions have affected markets and value chains in food systems. Rising input prices (fertilizer and energy) and higher transport costs have made agricultural production significantly more expensive.
- The needed development-, economic-, and foreign policy actions are country and context specific. Important elements are:
 - Increased consideration of food security issues in the context of the UN, G20 and G7 agendas in 2022, including the UN 2021 Food Systems Summit's recommendations for action, taking the complex war, Covid19, and climate stress situations into account.
 - Economic sanctions that directly or indirectly impact food security of third countries and the global poor need careful design considerations. The World Trade Organization (WTO) should be strengthened, for example to prevent short-term export stops and restrictive trade policies by individual countries.
 - Strengthening sustainable productivity growth, especially in low-income countries.
 - Support for flexible social security systems, expansion of nutrition programs, and emergency assistance. Scaling humanitarian actions in and around hunger-prone conflict zones.
 - Investment trade facilitation, such as through improved infrastructure and (digital) technology for managing customs systems.

Problem statement

This policy brief discusses the causes of rising and volatile food prices since the beginning of the Covid-19 pandemic and identifies development policies to prevent renewed price spikes and outlines support measures for low- and middle-income countries (LMICs) to reduce the negative impact of high and volatile prices through economic and social policies.

The global Covid-19 pandemic is contributing to increasing hunger. The number of people suffering from hunger has increased by approximately 100 million to between 720 and 811 million since 2019.¹ Current food price trends are now exacerbating food insecurity.

International food prices rose sharply with the onset of the Covid-19 pandemic. The FAO Cereal Price Index has increased from 96 in 2019 to 141 in January 2022, and the Vegetable Oil Price Index from 83 to 185.² These price fluctuations primarily affect poor populations in LMICs and threaten the stability and reliability of the global food system. In some cases, these price changes occurred abruptly. For example, the price of wheat rose from U\$214/ton in March 2020 to about U\$400/ton in November 2021; the price of rice was U\$441/ton in February 2020 and climbed to about U\$550/ton in April/May 2020; and the price of maize rose from about U\$150/ton in early 2020 to over U\$300/ton in May 2021.³ Comparable increases of about 50% are shown by the reference price indices of the FAO, the World Bank, and the International Grains Council (IGC) (Fig. 1). The escalation of the armed conflict between Russia and Ukraine drove international wheat and maize prices up by around 10% within just 7 days (21st – 28th of February).

A similar trend is observed for local food prices in LMICs. Food price inflation has increased sharply in many regions since 2020. In Africa, average price changes for all food groups were over 10% in 2020. In 2021, price increases for most food items were slightly lower. In Asia, food price changes were slightly higher than in Africa, averaging about 50% for some products compared to 2019. The average

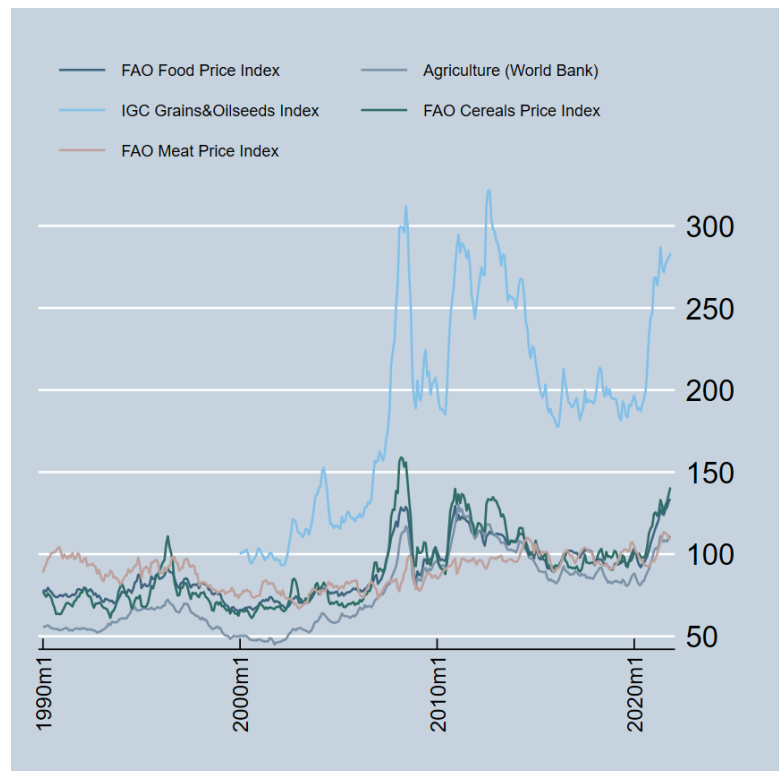


FIGURE 1: Food price trends

Source: FAO Food Price Index of the Food and Agriculture Organization, The World Bank Commodity Price Data (pink sheet) and International Grains Council (IGC).

price changes illustrate that local price spikes are not just exceptions but a general trend. However, the averages cover up extreme values. For example, cereal and tuber prices quadrupled between 2019 and 2021 in several markets in Syria and Lebanon. In several markets in Zambia, Sudan, South Sudan, and Ghana, prices for maize, cassava, or rice doubled. However, these food price increases at national levels are not solely due to the Covid-19 pandemic, but are often a combination of several factors.

Higher staple food prices reduce the real income of poor consumers who spend a significant portion of their income on food. Price spikes force households to switch to cheaper and less preferred foods that contain fewer nutrients or are of lower quality - ultimately exacerbating malnutrition.⁴ Vegetable and fruit prices have also risen just as sharply in many places, despite shorter supply chains and reductions in demand, which has particularly negative consequences for healthy diets.

Causes of recent food price developments

The causes of price changes can be divided into three categories: Root causes (also called exogenous shocks); conditional causes (market conditions and political environment); and internal causes (also called endogenous shock amplifiers).⁵ Root causes include short-term and long-term changes in demand and supply. Concentration of production and exports in a few countries and the lack of information and transparency were described as conditional causes during the past food crisis. Internal causes include factors that additionally amplify the effect of root causes, such as discretionary trade policy measures (e.g., export stops) or the changing structure of food demand, for example, due to the increase in speculation in agricultural commodity futures markets. Development policy should engage with measures in all three areas.

Food markets cannot be analyzed in isolation. Interlinkages of agricultural markets with financial and energy markets as well as input markets continue to increase and contribute significantly to food price dynamics. This is further amplified by climate shocks. International food trade linkages have both negative and positive impacts on food security. On the one hand, trade reduces dependence on local weather patterns and plays an important role in improving global food security. However, the linkages also create potentially new vulnerabilities because different actors around the world, that are active in food markets, influence food prices through their trade and marketing decisions.

In assessing the effects of food price inflation, it is also important to consider macroeconomic developments during the Corona period. Globally, economic growth rates were far below the forecasts. The Indian economy for instance shrank by 6% in 2020/2021 and in December 2021 employment was 2.9 million below the level in 2019/2020. Lower employment mainly affects women.⁶ The military conflict between Russia and Ukraine may substantially slow down post-Covid recovery (see more below). In view of low or shrinking economic growth and reduced employment, which are also seen in other regions of the world, price increases in basic foodstuffs

have even more serious effects on the socio-economic wellbeing of the population.

Assessment of causes and effects

Disrupted supply chains contribute to the rise in prices for agricultural inputs. Higher input and energy prices and the shortages of agricultural labor have led to increases in production costs (Fig.2), which in turn affect food prices. The increase in fertilizer prices can be attributed to a combination of factors: Disruptions in the agricultural input supply chain, China's restriction on the export of fertilizers up to and during 2022, as well as rising energy prices and the subsequent cuts in ammonia production. Labor shortages due to mobility restrictions as part of Covid-19 measures also contributed to the increase in production costs. All this led to an increase in the costs of global food supplies and thus higher prices. Russia and its ally Belarus also account for a significant share of global fertilizer exports. Supply chain disruption as a result of the military conflict in combination with export sanctions against Russia put additional pressure on energy and fertilizer prices. Short-term developments can have long term effects: The impact of fertilizer price increases may negatively affect soil fertility in the long term and could lead to a sustained reduction in food supply.⁷ At the same time, growing climate risks affecting agricultural productivity may lead to higher food prices in the long-term. Early in the pandemic, several food exporting countries imposed export restrictions to stabilize domestic food supplies.⁸ In the first three months of the pandemic, global agri-food trade experienced slight declines, but quickly returned to pre-pandemic levels, particularly for trade in staple foods, and was overall less affected than trade in goods.⁹ Increased freight rates (Fig. 2) and supply bottlenecks, combined with a backlog in transportation, continue to hamper trade.

Local market risks, as well as the lack of market integration, are causes of local price spikes. Market closures and restrictions on mobility under the Corona protection measures caused additional costs for traders and the food-processing industry which contribute to price increases. In addition, unclear regulations and coordination failures between neighboring countries at the onset of the pandemic led to supply shortages due to long waiting times for customs clearance. For example,

food and beverage companies in Africa cited sharply increased procurement costs at the start of the pandemic as a reason for price increases.¹⁰ In India, where lockdown measures during the pandemic have been particularly severe, agricultural labor shortages, higher transportation costs, and the temporary closure of key wholesale markets hampered the smooth functioning of agricultural supply chains.¹¹ In many countries, such as Ethiopia and Syria and possibly now in Eastern Europe, conflict situations exacerbated the food situation. In East Africa, the desert locust infestation in 2020 and very low precipitation in the past rainy season cause local food shortages. In some areas, hunger developments require attention even if food prices do not increase because of simultaneous decline in purchasing power and in food availability, which can be the case under severe drought and conflict conditions, for instance at the Horn of Africa. Sound monitoring and assessments of hunger causes is needed in all such contexts.

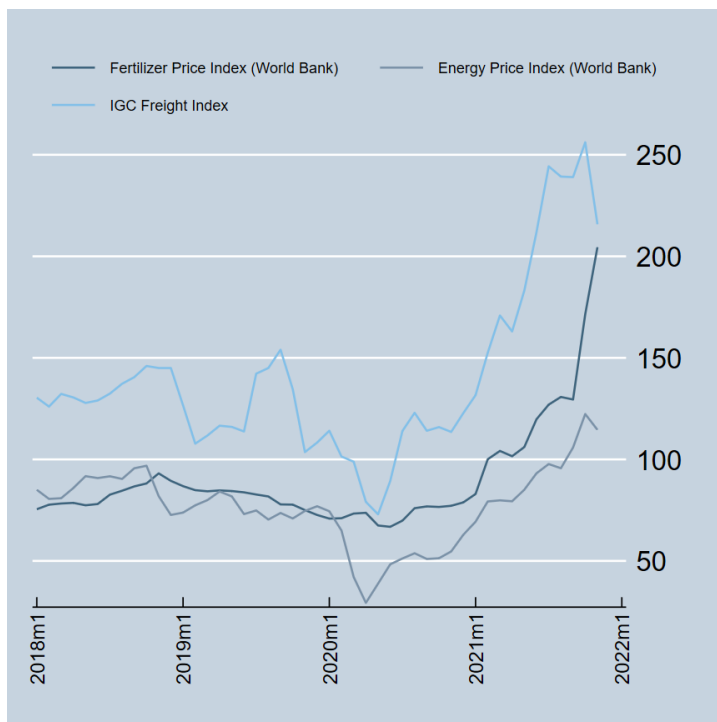


Figure 2: Input price and transport costs trends
 Source: The World Bank Commodity Price Data (pink sheet) und International Grains Council (IGC).

Higher production costs are largely transmitted to consumer prices. The production cost effect was amplified at the beginning of the Covid-19 pandemic as demand shifted from commercial

buyers, such as restaurants and hotels, to private consumers and public purchases as part of emergency food assistance.¹² Indonesia's government-owned food reserve, BULOG, doubled rice purchases and food rations issued in 2020. Many import-dependent countries, such as Egypt, Bangladesh, Kyrgyzstan, the Philippines, and El Salvador, pursued similar strategies and increased food imports to protect public food programs. Increased demand from consumers and governments, related to food insecurity (hoarding), is less price responsive. Increased household stockpiling has been observed in both developed and poorer countries, such as Ethiopia and Bangladesh. The Chinese government even urged the population to increase stockpiling.¹³ Poor consumers, especially in LMICs, are often unable to pay a higher food price to insure themselves against potential future shortages. These distributional effects amplify the impact of food price increases on food security.

Geopolitical tensions and the military intervention by Russia in Ukraine lead to shortages in food exports. Unlike during the global food crises of 2007/2008 and 2011, global food supplies have been stable over the past two years. Global grain inventories were around 24% of total supply at the start of 2020, significantly higher than before the 2008 price crisis (18%), which means that short-term production shortfalls can, in principle, be absorbed unless political restrictions take effect. It is important to note that China alone holds more than half of the global cereal stocks. However, global food exports remain highly concentrated in a few countries. The armed conflict between two of the world largest cereal exporters, Russia and Ukraine, will deeply affect international cereal and oilseed markets. Considering that Russia and Ukraine together account for about 20% of global maize exports and 30% of global wheat exports effects are large. Both countries are also important suppliers of oilseeds and vegetable oil. The United States Department of Agriculture (USDA) predicted that Ukraine would account for 12% of global wheat exports, 16% for corn, 18% for barley and 19% for rapeseed this year.¹⁴ Given the current battles for Ukrainian seaports, particularly Odessa, and the closure of Russian ports, it seems unlikely that these numbers hold; about 24 mil. tons may not find its ways into international markets until July 2022.¹⁵ In view of now tight international markets,

bilateral trade partners in the Middle East and Africa will be strongly affected. For instance, Egypt imports about 70% of its wheat from Ukraine and Russia. Other significant importers are Turkey, Bangladesh, and Indonesia.

China's agricultural policy is also a major source of uncertainty, given its heavy dependence on imports of animal feed. In late December, President Xi Jinping warned against underestimating the risk of food shortages. "The rice bowl must always remain firmly in the hands of the Chinese people. It must contain Chinese-produced food. We must guarantee grain security." With increasing living standards, the same applies to the supply of meat and vegetables. Measured in terms of global food trade, an aggressive import strategy by China or reduced exports could lead to further turbulence and supply shortages on the world market.¹⁶ In recent years, China was also a significant recipient of Ukrainian maize exports (about 10-12 mil. tons) in recent years.

It is premature to speculate about long-term effects of a potentially deep destruction of the Ukrainian economy in the current war, which would not only lead to structural change in the world's grain markets, but also to high poverty in Ukraine itself - the country which was suffering under the largest policy made famines in Europe in the 1920s and 1930s.

Demand from institutional investors (so-called financial market speculation) could again drive food price increases in the future. In the wake of macroeconomic turmoil, such as the financial crisis around the turn of the millennium, agricultural commodities often become a popular asset class for financial institutions and investors. As a result of the global financial crisis, speculative activity increased dramatically and contributed to food price spikes during the food price crises of the 2000s.¹⁷ In subsequent years, agricultural futures trading became more regulated. However, this regulation was rolled back in the US. The trading volume of agricultural commodity futures has not systematically increased since the beginning of 2020. On the other hand, the volatility of futures prices, an early warning indicator of abnormal market activity, has increased significantly since

the beginning of the pandemic (Fig. 3). High energy prices and the departure from zero interest rate policies could also impact agricultural commodity futures trading.



FIGURE 3: Daily wheat and maize price volatility
Source: Foodsecurityportal. Excessive Food Price Variability Early Warning System.

<https://www.foodsecurityportal.org/tools/excessive-food-price-variability-early-warning-system>

Courses of action for development policy

Management of extreme price developments requires trade and market policies at an international level, national and local policies for sustainable production, and social policy support to mitigate the impact of high price volatility on poorer populations.

International policy actions:

- The complex global and regional food situation due to war, Covid19, and climate change stress should be high on the agenda of the UN, G20, and G7 in 2022, including the UN 2021 Food Systems Summit's recommendations for action. Conflict prevention and resolution is to be part of the food security agenda.
- Economic sanctions against aggressors need to consider indirect impacts on emerging economy countries and the poor. The World Trade Organization (WTO) should be strengthened, for example to prevent short-term export stops and restrictive trade policies by individual countries.
- The introduction of daily position limits as soon as trading activities on the commodity futures markets show abnormalities.

National and local policy actions:

- Measures to counteract rising production costs, e.g. through improved access for smallholders to agricultural inputs and appropriate extension services for sustainable agriculture. Agricultural productivity must be continuously increased in the face of rising food prices and the challenges of climate change, including support for small-scale irrigation with sustainable energy systems and sustainable land use.¹⁸
- Investment in trade facilitation, e.g. through improved infrastructures and also (digital)

Endnotes

¹ FAO, IFAD, UNICEF, WFP and WHO (2021). [The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all Rome](#), FAO.

² FAO Food Price Index, FAO, Rome.

³ Data shows reference export prices retrieved from the GIEWS FPMA Tool of the FAO.

⁴ von Braun, Gerber, Haile, Algieri (2017). [Food Price Volatility - Implications for Development Policy](#). (ZEF Policy Brief 26)

⁵ Kalkuhl, von Braun, Torero, editors. (2016). [Food price volatility and its implications for food security and policy](#). Cham: Springer.

⁶ Dev (2022). [How budget can generate higher growth and jobs. Indian Express](#). Jan 2022.

⁷ Haile, Kalkuhl, von Braun (2014). [Inter- and intra-seasonal crop acreage response to international food prices and implications of volatility](#). *Agricultural Economics*, 45(6), pp. 693–710.

⁸ Kornher and Sakketa (2020) [COVID-19: Impacts on food trade - Is global food security at risk?](#) Lebenszeichen Blogpost. Universität Bonn.

⁹ Arita, Grant, Sydow, Beckman (2022). [Has global agricultural trade been resilient under coronavirus \(COVID-19\)? Findings from an econometric assessment of 2020](#), *Food Policy*, 107.

¹⁰ Baumüller, Kubik, Dallimore, Getahun, Velia (2021). [Impact of Covid-19 on Africa's food and beverage manufacturing companies: Evidence from selected African countries](#). ICAE Conference Paper, Delhi.

¹¹ Gulati, Jose, Singh (2021). [COVID-19: Emergence, Spread and Its Impact on the Indian Economy and Migrant Workers](#). ZEF Working Paper Series, Working Paper 207.

¹² FAO (2021). [Agricultural trade & policy responses during the first wave of the COVID-19 pandemic in 2020](#). FAO, Rome.

¹³ Patton and Pollard (2021). [Chinese stock up on staples after government 'just in case' advice prompts confusion](#). Reuters.

¹⁴ USDA, [World Aggregate Supply and Demand \(WASD\)](#), various editions.

¹⁵ Ukrainian cereal exports usually peak around July and August. In Ukraine all ports are closed by the end of February. Russia stopped commercial trade in the Asowian Sea. Pre-war expectations were that Russia would export 7-8 mil. tons of cereals (mainly wheat) and Ukraine would export 6 mil. tons of wheat and 10 mil. tons of maize until July 2022.

technology for managing customs systems is of increasing importance.

- To mitigate the risks of poverty and hunger, low- and middle-income countries should be supported to strengthen crisis-resistant and flexible social protection programs and, where such programs do not exist, to build them up, e.g. cash transfer programs and employment programs, as well as nutrition programs through school and health systems. In addition, impact-oriented emergency programs with the civil society should be expanded.

¹⁶ Erling (2022). [Bezugsmarken – Chinas zweite Währung](#). Table China # 255.

¹⁷ Tadesse, Algieri, Kalkuhl, von Braun (2014). [Drivers and triggers of international food price spikes and volatility](#). *Food Policy*, 47, 117–128. and Algieri (2016). [Conditional price volatility, speculation, and excessive speculation in commodity markets: sheep or shepherd behaviour?](#) *International Review of Applied Economics*, 30(2), 210–237.

¹⁸ See ZEF research on [From Potentials to Reality: Transforming Africa's food production](#) (Baumüller et al. 2020).

This Policy Brief was developed with the financial support of the German Federal Ministry for Economic Cooperation and Development (BMZ) in the context of the research program "Volatility of Food Markets" <https://www.zef.de/volatility.html>.

IMPRINT:

Center for Development Research (ZEF)
Genscherallee 3 | 53113 Bonn | Germany
E-Mail: presse.zef@uni-bonn.de
Phone: +49-(0)228 - 73 18 46

March 2022



zefbonn
 zefunibonn
 zefbonn
 zefbonn
www.zef.de