



European Commission

# The European Commission's Knowledge Centre for Global Food and Nutrition Security



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## The impact of Russia's war against Ukraine on global food security – March 2022

This note represents an effort of the Knowledge Centre for Global Food and Nutrition Security to extract, synthesize and organize available information on the threat that Russia's war against Ukraine poses to global food security, particularly on developing countries. **This note does not reflect an official position of the JRC or any other services of the European Commission**, but is rather based on analysis of 70 papers including analyses from specialized organisations such as WFP, FAO, IFPRI, World Bank, HARVEST, FEWS NET among others published between 28 February – 18 March. The materials selected were mostly written in English.

A Communication from the European Commission on food security will be published on 23 March, according to a provisional timetable.

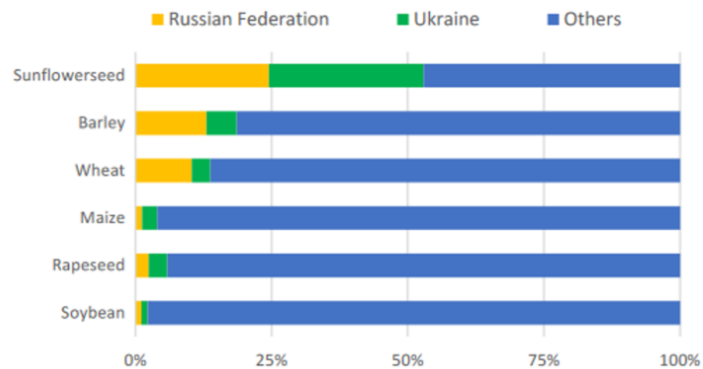
**The Russia's war against Ukraine impacts global food security through several inter-connected dimensions:** global agricultural production and quantities available for exports, availability and affordability of fertilisers, and soaring energy and agricultural commodities prices.

### Impact on global agricultural production and exports

Overall, world cereal production in 2021 exceeds the 2020 one by 0.7% and estimated world wheat production in 2022 would exceed the 2021 one by 1.9% (FAO).

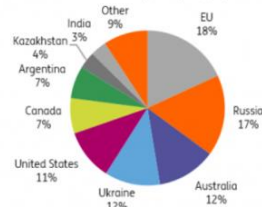
Ukraine is one of the world's largest grain and oilseeds producers. According to USDA estimates, in 2021/2022, Ukraine would have produced 42 million tons (MT) of corn, 33MT of wheat, and 17.5MT of sunflower seeds. This relative importance is well reflected by the weight of Ukraine in global export supply. According to USDA, Ukraine would have respectively accounted for 17%, 12% and 50% of corn, wheat, and sunflower oil exports in 2021/2022.

Figure 1: Share in global production of selected crops (2016/17-2020/21 Avg.)

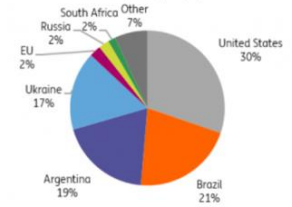


Source: FAO

2021/22 estimated wheat export split (%)

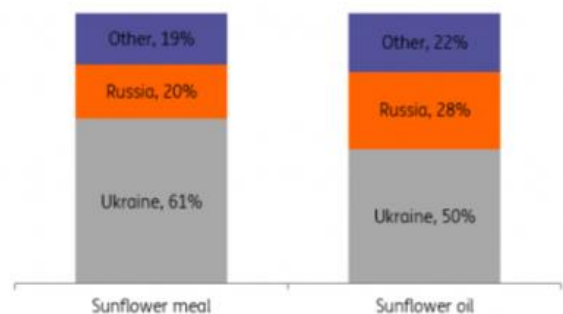


2021/22 estimated corn export split (%)



Source: USDA, ING Research

2021/22 estimated sunflower seed product exports (%)



Source: USDA, ING Research

The European Commission's Knowledge Centre for Global Food and Nutrition Security

Advancing knowledge towards zero hunger and sustainable food systems

## Impact on Ukrainian production

About 95 percent of Ukraine's wheat is winter wheat, planted in the fall and harvested during July and August of the following year (World Data Centre). 2022 winter wheat is already in the ground and crop conditions are good in general (JRC). Yields could be negatively affected if farmers cannot apply fertilizers. Farmers may also not have the possibility to harvest these fields (6.5 Mha according to IDDRI).

For Corn, Barley, Sunflowers, beets, planting occurs in April-May and harvesting from August to October. Lack of fuel, farm inputs (fertilizers, seeds), labour, loans, and chaos around transportation and logistics, could prevent farmers from planting (11 Mha according to IDDRI) in the coming weeks in the worst case, or could lead to reduced cropped areas and yields.

According to TIME, Ukraine is running out of fuel, none is left for agriculture and, according to Civil Eats, expected shipments of seeds and diesel have not arrived and farmers may fear working in the fields. Also, Ukraine is highly dependent on Russian and Belarus fertilizers (IFPRI).

FAO estimates that between 20 and 30% of these crops will either not be planted or remain unharvested during the 2022/23 season, and that the yields of these crops are likely to be adversely affected. According to Reuters, area sown for spring crops 2022 could decrease by 40%.

## Impact on production outside Ukraine

In Russia, even though it is unlikely that food would be included in sanctions, depending on Russia's ability to maintain current level of exports, farmers may react by reducing planting area (ING).

At global level, farmers may apply less fertilizer due to their high price. This may lower crop yields (multiple sources). The risk is higher in developing countries where high input prices could be prohibitive for many smallholder farmers.

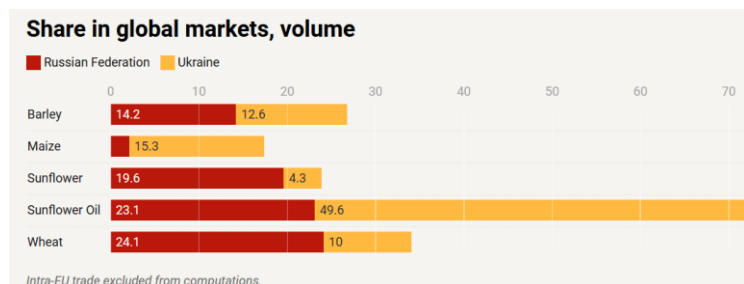
IFPRI and FAO highlight, taking into account high energy prices, a potential risk of accrued competition between food crops and biofuel.

However, multiple sources estimate that some countries would have the potential to increase production (Australia, Argentina, India and USA), as a result of ad hoc national measures and attractive market prices, even though seeds and fertilizers availability as well as crop rotation patterns may represent obstacles (The Economist).

Finally, some countries may be willing to become more self-sufficient in cereals (New Humanitarian). In Nigeria for instance, there is a plan to meet 70% of the country's demand in cereals in five years (Outlook India). Saudi Arabia and Egypt are also willing to boost domestic production (Reuter, Foreign Policy).

## Impact on Ukrainian exports

Ukraine is an important global supplier of grains and oilseeds, including vegetable oils.



Source: IFPRI

According to USDA, for the season 2021/22, Ukraine should have been responsible for 12% of global wheat exports, 17% percent of global maize exports, as well as 18% of global barley exports and 15% of global rye exports. Ukraine is also the world's top exporter of sunflower oil, accounting for half of the world's sunflower oil exports in 2019/20.

Ukraine exports in average 80% of its corn production (33.5mt in 2021/22 according to USDA). Ukraine still had approximately 40% of this quantity to be exported at the beginning of the conflict (ING) because corn exports normally occur in the first part of the calendar year (Harvest).

For wheat, 70% of total Ukrainian production is exported (24mt in 2021/22 according to USDA). Ukraine still had about 25% of this quantity to be exported at the beginning of the conflict (ING). The bulk of wheat exports normally occurs towards the end of the year (Harvest).

The Black Sea serves as a major conduit for grain shipments from Ukraine (AMIS). 95% of Ukrainian grains transit through Odesa, Mariupol and Kherson (Tek Deeps).

The war has already led to port closures, the suspension of oilseeds crushing operations, the introduction of export licensing requirements for some crops (wheat, corn, sunflower seeds oil) and the banning of export for others (barley, rye, oats, millet) (FAO, IGC and other sources).

Damages to transport (including railroads), storage and processing infrastructures will have negative effects on the - current and future- capacity to export grains (FAO and other sources). Additionally, insurance for vessels for shipment in the Black Sea will be difficult to arrange (Business Post).

However, the quantity of grains not exported by Ukraine for the season 2021/22 could be offset by additional exports from India and Australia (Reuters, Money Control). ING, looking at the reduction of exports from the Black Sea, from both Ukrainian and Russian sides, estimates that additional exports from India, the US, the EU and Brazil will only partially offset lower shipments over the remainder of the current season.

For the season 2022/23, uncertainties prevail regarding Ukrainian cereal exports which could be reduced up to 50% (Agrar Heute).

## Impact on exports from other countries

In regards to Russia, also a major producer and exporter, especially of wheat, barley, sunflower seeds oil, the impact of Russia's war against Ukraine on Russian exports is more complicated to analyse. Most of Russia's Black Sea terminals were operational as of mid-March (ING). However, volumes

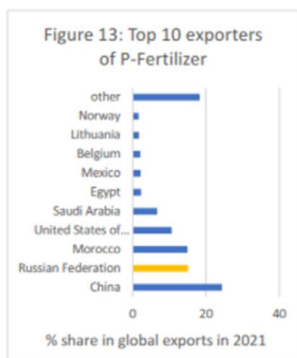
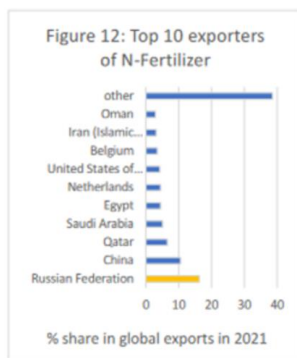
may be hampered by difficulties in arranging payments, high freight insurance costs, and overall reluctance of buyers to trade with Russia (WFP, ING, SPGLOBAL), amidst uncertainty around sanctions.

Finally, a number of countries want to increase grain reserves and have already announced restrictions on agricultural commodities export (Argentina, Russia, Ukraine, Hungary, Serbia, Bulgaria, and Indonesia for palm oil) (DW, Euroactiv, News-24, Reuters).

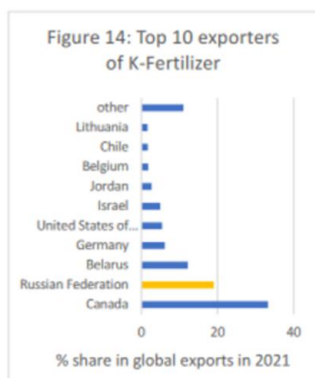
### Impacts on the fertilizer market

The war puts at risk both the availability and affordability of fertilizers.

The Russian Federation is the world's top exporter of nitrogen fertilizers and the second leading supplier of both potassic and phosphorous fertilizers (FAO). Russia account for 15% of global trade in nitrogenous fertilizers and 17% of global potash fertilizer exports. Belarus, an ally of Russia, accounts for an additional 16% of global market share of potash exports (IFPRI).



Source: Trade Data Monitor (TDM), FAO calculations



Price of nitrogen and phosphorous fertilizers have surged in 2021. On the demand side, the high crop prices registered in 2021 boosted affordability of fertilisers. On the supply side, soaring energy prices, especially of natural gas, played a major role (FAO). Gas represents almost 80% of the production costs of fertilizers (RTBF). The prices of urea, a key N fertilizer, have more than trebled over the past 12 months (FAO). Prices are now 40% higher than a month ago, before the invasion of Ukraine (Yahoo Finance).

Economic sanctions and the decision of Russia and Belarus to suspend their exports of fertilizers could lead to supply disruptions and further exacerbate the pressure on prices (multiple sources).

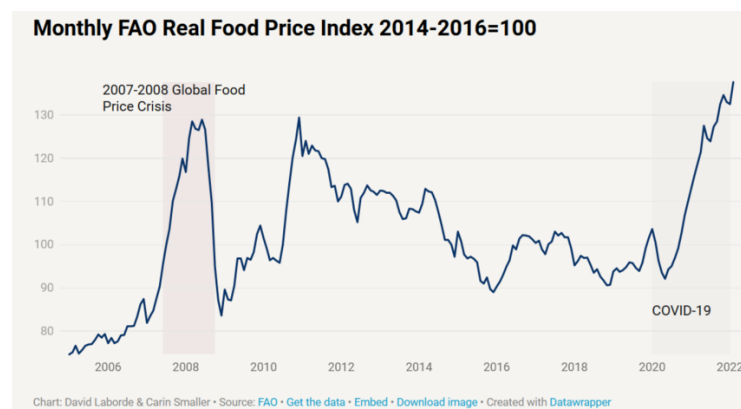
Confronted to high fertilizers prices, farmers could decide to reduce cropped areas and application rates (especially in developing countries) with possible implications on yields (IGC, The New Humanitarian).

More generally, agriculture absorbs high amounts of energy directly, through fuel, gas and electricity use, and indirectly, by using agri-chemicals such as fertilizers, pesticides and lubricants (FAO). This will increase production costs and translates into higher food prices globally (multiple sources). The price of oil rose above USD 100 a barrel, a level not reached since 2014 (Le Monde).

### Impacts on agricultural commodity prices

Global food prices have been almost continuously rising since June 2020 due to a multitude of factors, including weather anomalies and Covid-19 pandemic (FAO). (Reuters) notes that soybean oil price has climbed by almost 40% in 2022 and the price of durum wheat (used to make pasta) soared by 90% in 2021, due to drought and record heatwaves in Canada.

FAO's Food Price Index reached an all-time high in February 2022 due to the sharp surge in the prices of vegetable oil and dairy products and the increase in the price of grains (Tellereport). The index is composed of a weighted average of the price indices of five commodity categories: cereals, vegetable oils, dairy products, meat and sugar. In February 2022, the global food price index averaged 140.7 points, an increase of 3.1 points from the last peak level in February 2011. It is worth noting that the rise in food prices following Russia's war against Ukraine has not been fully captured in the February report (Tellereport).



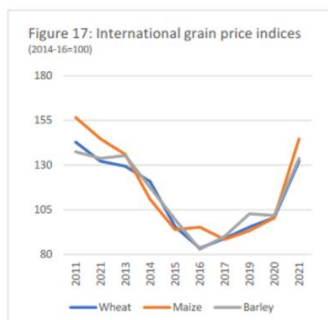
Even though there is no shortage of rice at global level (multiple sources), total grains production would barely meet total consumption in 2021/22, and global wheat stocks are set to fall to a nine-year low by the end of the 2021/22 season (IGC). There is also a lack of availability in the short-term (France Info). This makes grain markets highly sensitive to fluctuations in supplies, and the volatility of grain markets is currently exacerbated by the decision of some countries to pile-up stocks (Ouest France), such as China (Bloomberg).

The prices of wheat and corn futures has increased respectively by 80 and 60% compared to 6 months ago (Irish TIME).

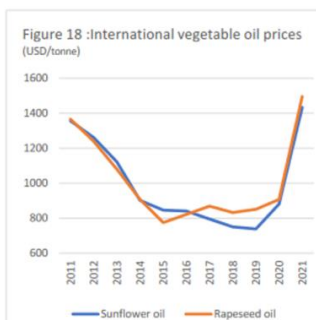
It is expected that grain and sunflower seed prices remain high through 2022/23, indicating that reduction in supplies from

Russia and Ukraine could only be compensated by alternative sources (FAO/IFPRI).

Increase in price of animal feed raises the interest for broken rice, as feed makers are trying to replace corn with rice (OANN). This pushes up rice price also.

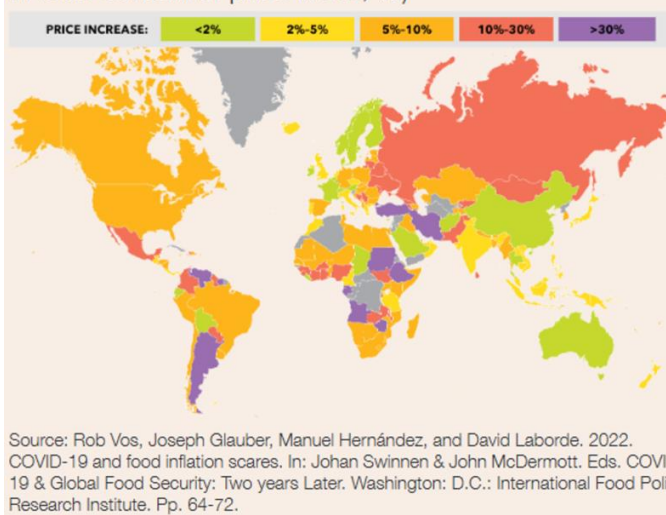


Source: FAO, International Grains Council (IGC), Oil World



In such context, domestic food price inflation has been considerable in many countries around the world.

**Figure 2: Domestic consumer food price inflation around the world, January 2022** (year-on-year change in food consumer price index, %)



Source: Rob Vos, Joseph Glauber, Manuel Hernández, and David Laborde. 2022. COVID-19 and food inflation scares. In: Johan Swinnen & John McDermott. Eds. COVID-19 & Global Food Security: Two years Later. Washington: D.C.: International Food Policy Research Institute. Pp. 64-72.

### Impact on global food security

This note does not cover the food security situation in Ukraine and neighbouring countries hosting refugees, but focuses on developing countries. The European Commission and the UN organisations have warned about a risk of famine in Ukraine with the collapse of food supply chains in the country and fast-spreading poverty.

Before the war, global food security was already deteriorating due to several factors, including conflicts, climate extremes and economic shocks linked to the Covid-19 pandemic and high food prices. The World Bank stated in the recent Global Economic Prospects report that the pandemic not only reversed gains in global poverty reduction for the first time in a generation but also deepened the challenges of food security and rising food prices for many millions of people. FAO assessed that 44 countries, including 33 in Africa, 9 in Asia and 2 in Latin America and the Caribbean, are in need of external assistance for food and that conditions are projected to worsen significantly in West and Southern Africa, while the situation is alarming in East Africa. Close to 12% of the global

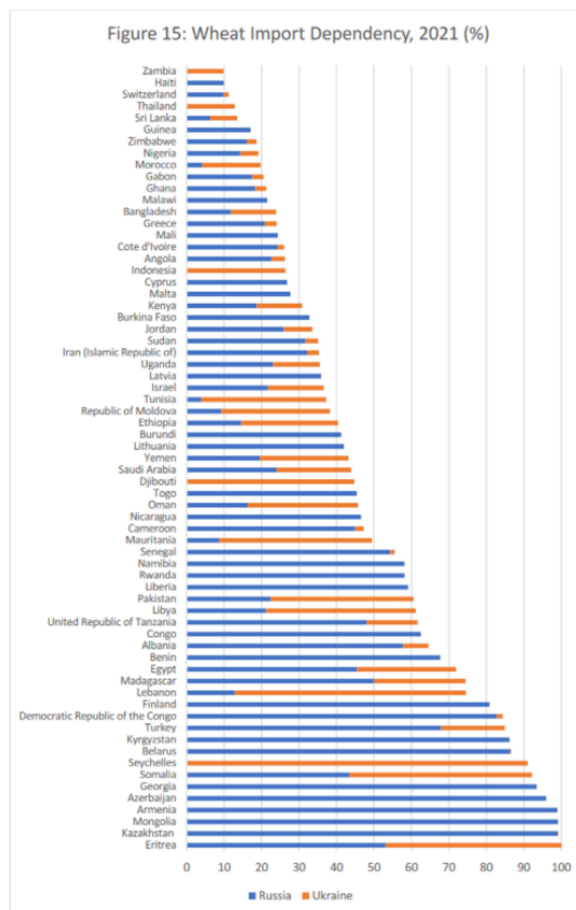
population was severely food insecure in 2020, 148 million more than in 2019 (FAO).

The impact of Russia's war against Ukraine on global food security involves several dimensions.

**Firstly**, for the countries highly dependent on grain imports (and vegetable oil) from the Black Sea. For these countries, the disruption of the supply chain has immediate implications. In order to avoid shortages, these countries need to look for alternative sources. Lebanon sourced 54 percent of its total wheat (grain and flour) imports from Ukraine, followed by Tunisia (49 percent), Libya (47 percent), Pakistan (43 percent), and Indonesia (27 percent) (Fews Net). Importing wheat and other grains from North or South America takes time and is extremely expensive due to shipping costs, and transportation delays could cause shortage (DW / Fews Net). 95% of Ukraine's wheat exports went to Asia (including the Middle East) or Africa in 2020 (VOX).

Countries highly dependent on grain imports from Russia may face similar issues, depending on the impacts of economic sanctions, especially on Russian-affiliated wheat companies (DW-IFPRI).

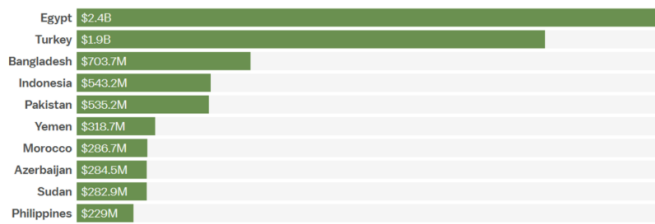
Nearly 30 countries rely on combined Russian/Ukrainian imports for 50% or more of their wheat supply. Several of these countries fall into the Least Developed Country (LDC) group, while many others belong to the group of Low-Income Food-Deficit Countries (LIFDCs) (FAO). For the Middle East and North Africa, a region highly dependent on Ukrainian and Russian grains, FAO recalls that hunger levels have more than doubled compared with two decades ago.



Source: FAO

## Top importers of wheat from Russia and Ukraine

Imported value in 2020



Source: International Trade Centre

**Secondly**, the countries that rely on imported grains (and vegetable oil) – for a significant proportion - to cover the dietary needs of their population. Soaring grain prices will adversely affect food security. In more than 40 countries with WFP operations, imported cereals such as wheat and maize account for 30% or more of dietary energy (WFP). North Africa and the Middle East import over 50% of their cereals needs and a large share of wheat and barley from Ukraine and Russia (IFPRI).

**Thirdly**, all countries will be impacted by global food prices inflation, locally produced or imported, due to soaring energy and fertilizers prices. By pushing up local inflation, high costs of imported energy reduce purchasing power and poor households' access to food (WFP). Possible increase in rice price could impact a large spectrum of poor countries in Africa and Asia (OANN).

Higher staple food prices in vulnerable countries would further constrain resources of poor households, exacerbating the scale and severity of existing food insecurity, with poor urban households among the worst affected due to high market dependence (Fews Net).

With regards to fertilisers, higher costs will result in lower use and reduced yields, especially for smallholder farmers who are dependent on farming for their income (World Bank). For instance, smallholder rice farmers in Bangladesh – country that buys large amount of fertilisers from the Black Sea – may become net buyers instead of net sellers (The New Humanitarian, NPR).

Additionally, soaring food prices may also compromise WFP ability to supply food to the areas with the direst needs. Food procurements cost have already increased by 39% since 2019 (WFP). Before the war, WFP had collected only 50% of the USD 18 billion needed to assist about 140 million people worldwide in 2022 (NPR), and now WFP is asking for additional USD 580 million for Ukraine.

Finally, the decline of economic activities in Russia and a weakening of the Ruble against the USD are expected to disrupt remittances flows from Russia to Central Asian countries with possible negative effects on food security. Remittances provide a financial lifeline to many of these countries. For instance, in the Kyrgyz Republic and Tajikistan, remittances in 2020 were respectively 31 percent and 27 percent of GDP (World Bank / FAO).

Overall, FAO's simulations suggest that the global number of undernourished people could increase by 8 to 13 million in 2022/23, with the most pronounced increases taking place in Asia-Pacific, followed by sub-Saharan Africa, and the Near East

and North Africa. On top of World Bank's concerns are MENA's already fragile countries – like Syria, Lebanon and Yemen – where the Ukrainian crisis risks to dramatically jeopardize access to food. Last year, the MENA region accounted for 6% of the world's total population, but over 20% of the world's acutely food insecure people. The MENA region is currently facing a major drought that could adversely impact winter wheat yields and lead to crop failure in parts of Morocco and Algeria (JRC).

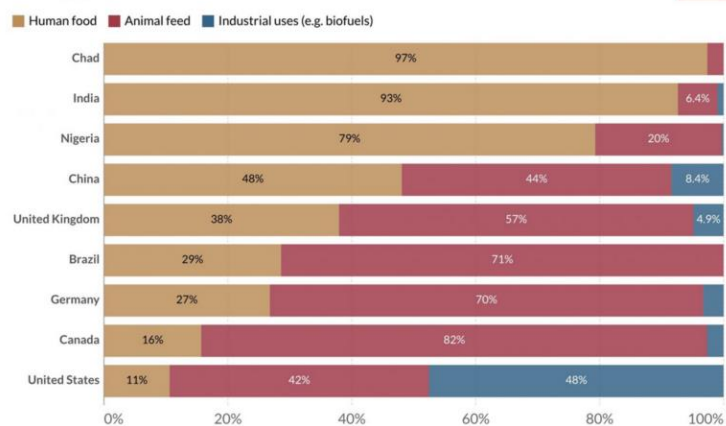
Poorer countries are struggling the most to recover from the pandemic's economic fallout. About 60 percent of low-income countries are currently in, or at high risk of, debt distress, compared with 30 percent in 2015 (WFP). This will compromise their ability to put specific measures in place to cope with the new crisis. Several Middle East governments and especially those of Egypt, Lebanon, Libya, and Turkey will find it extremely difficult to pay for the increased prices of grain and may be forced to reduce or even abolish subsidies for bread (United Kingdom news). As happened across the Arab world in 2011, rising food prices, layered on top of other economic, social, and political frustrations, could help fuel social unrest (New Humanitarian). Protests against high food prices already took place in Iraq (News-24), Kenya and Sudan (Daily Sabah).

## The war reveals even more the importance of resilient and Sustainable Food Systems

Many sources (FAO, IFPRI, WORLD BANK, AMIS among others) stress the importance to keep international trade in food and fertilizers open to mitigate the impact of the war, especially for low-income food import-dependent countries. Diversifying food supplies and domestic production could also contribute to make food systems more resilient to shocks. Targeted social protection interventions, as during Covid-19 pandemic, will be necessary to alleviate the hardship caused by the war (FAO).

The challenges posed by this war add urgency to the need for more resilient and sustainable food systems, and confirm the relevance of the game changing solutions brought forward during the UN Food System Summit in 2021. Among them, the reduction of food waste, the reduction of chemical inputs in farming, and the promotion of sustainable and healthy diets have a special resonance in this context.

### Share of cereals allocated to food, animal feed or fuel, 2017



Source: Our World in Data based on Food and Agriculture Organization of the United Nations  
OurWorldInData.org/agricultural-production • CC BY

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## List of materials analysed

[IFPRI How will Russia's invasion of Ukraine affect global food security?](#)

[HARVEST - Russian Movement Within Ukraine: Implications for Food Security?](#)

[Devex Dish: How Russia's war in Ukraine endangers global food security?](#)

[Ukraine conflict could hit food supplies, worsening Yemen hunger crisis](#) (Reuters)

[Guerre en Ukraine: au Moyen-Orient et en Afrique, l'approvisionnement en blé inquiète](#) (Le Monde)

[Guerre en Ukraine : « L'Afrique est très vulnérable à la hausse des prix des produits énergétiques et alimentaires »](#) (Le Monde)

### AMIS MARKET MONITOR

[Russia-Ukraine Conflict: Implications for Remittance flows to Ukraine and Central Asia](#) (World Bank)

[WFP ramps up food operation for Ukraine and warns the world's hungry cannot afford another conflict](#)

[Ukraine war 'catastrophic for global food'](#) (BBC)

[Why the EU's potash sanctions are looming over supermarket prices](#) (Politico)

[Wheat rises to 14-year top as Russia-Ukraine war tightens supplies](#) (Market Screener)

[Les boulangeries tiennent bon : le pain est deux fois plus cher à cause de la guerre](#) (Nouvelles du Monde)

[Guerre en Ukraine : "Les prix" de l'alimentaire "flambent à cause d'un manque de disponibilité à court terme", explique le directeur d'Agritel](#) (France TV Info)

[Guerre en Ukraine : quels produits alimentaires coûteront plus cher en France?](#) (L'Expansion)

[Business Post: How the conflict in Ukraine will hit global food security?](#)

[The Middle East will suffer from the grain shortage due to the war in Ukraine](#) (United Kingdom News)

[Russia-Ukraine conflict highlights wheat supply vulnerability](#) (Hellenic Shipping News)

[Repercussions of the Russia-Ukraine war for Africa](#) (Daily Sabah)

[Ukraine war detonates EU food security debate, but will sustainability be collateral damage?](#) (Food Navigator)

[How the Russian Invasion of Ukraine Might Impact ASEAN Economies](#) (The Diplomat)

[Wheat prices drop from record high; soybeans rise 1.2%](#) (Market Screener)

[The explosion of grain prices due to the war in Ukraine and the prospect of hunger and social unrest in the world?](#) (Tek deeps)

[Guerre en Ukraine et hausse des prix : quels sont les secteurs sous très haute tension?](#) (La Depeche)

[Nigeria's need for wheat is rising—and so is the price](#) (OZ)

[Compounded stress: The impact of the war in Ukraine on the Middle East and North Africa](#) (World Bank)

[Food crisis grows as spiralling prices spark export bans](#) (Reuters)

[Ukraine war piles pressure on global food system already in crisis](#) (The Guardian)

[Agricultural expert warns: Putin will use hunger as a weapon](#) (Agrarheute)

[Global food security flashes a "red light" under multiple blows](#) (Teller Report)

[The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict](#) (FAO)

[Lack of 'Plan B' Puts Zimbabwe Staple Crop at Risk as War Rages](#) (Bloomberg Quint)

[Blé d'Ukraine : vers de nouvelles émeutes de la faim?](#) (La Tribune)

[Wojna w Ukrainie to cios dla Afryki. Nadciaga kryzys żywnościowy](#) (Forsal)

[Comment la guerre en Ukraine entraîne le monde vers une nouvelle crise alimentaire?](#) (News-24)

[How Russia's invasion of Ukraine will worsen global hunger](#) (The New Humanitarian)

<https://www.foodnavigator.com/Article/2022/03/02/ukraine-conflict-to-bring-higher-food-prices>

[Ukraine: Russian Invasion Threatens World's Food Security](#) (Outlook India)

[Russia's war on Ukraine threatens a global food security crisis](#) (FT)

[Which countries are most exposed to interruption in Ukraine food exports?](#) (Investment Monitor)

[Russia-Ukraine conflict: What it means for grain and oilseed markets](#) (Think ING)

[Analysis: Russia-Ukraine conflict highlights wheat supply vulnerability](#) (Reuters)

[Russia's war on Ukraine is dire for world hunger. But there are solutions](#) (NPR)

[Forget Oil. Putin's War Is Wrecking the Wheat Market](#) (Foreign Policy)

[What the Russian invasion of Ukraine could mean for global hunger](#) (VOX)

[China Buys Up U.S. Corn, Soybeans as Ukraine War Roils Trade](#) (Bloomberg)

[The Field Report: What the Invasion of Ukraine Means for the Food Supply](#) (Civil Eats)

[Ukraine: Agricultural Overview](#) (WDC)

[War in Ukraine and food security: what are the implications for Europe?](#) (IDDRI)

[Ukraine halts export of key foodstuffs as concerns mount over EU food security](#) (Euroactiv)

[Russia's invasion of Ukraine drives global food insecurity](#) (DW)

[Russia to limit grains exports to license holders: report](#) (SP Global)

[Ukraine's Growing Fuel Crisis Will Cause Global Hunger and Worsen Inflation](#) (TIME)

[Farmers told not to panic about fertiliser amid supply chain concerns](#) (Independent)

[La dépendance aux engrais russes, une épine dans le sol européen](#) (RTL BE)

[Ukraine et Russie en guerre: les dizaines millions de tonnes de céréales indisponibles à l'export menacent la sécurité alimentaire de la planète](#) (Wiki Agri)

[ENTRETIEN. «Des famines se préparent»: comment la guerre en Ukraine menace l'alimentation mondiale](#) (Ouest France)

[En Egypte, une dangereuse dépendance au blé de la mer Noire](#) (Les Echos)

[Analysis: Strong Asian rice demand for animal feed sparks food supply worries](#) (OANN)

[Africa already paying the price for Europe's unexpected war](#) (Irish TIME)

[The Russia-Ukraine crisis poses a serious food security threat for Egypt](#) (IFPRI)

[Ukraine winter wheat crops in good state - deputy agriculture minister](#) (Reuters)

[Prix des engrais : la soupe à la grimace pour les agriculteurs](#) (RTBF BE)

[Food security implications of the Ukraine conflict](#) (WFP)

[CROP PROSPECTS and FOOD SITUATION – March 2022](#) (FAO)

[RUSSIA-UKRAINE CONFLICT](#) (IGC)

[Colin McLean: Ukraine crisis brings new pressure to troubled global food supply system](#) (Herald Scotland)

[Fertilizer prices just hit a record high sparking fears of global starvation and the worst food insecurity level since World War II](#) (Yahoo Finance)

[How will the war in Ukraine affect the world's food supply?](#) (The Economist)

[JRC MARS Bulletin - Crop monitoring in Europe - March 2022 - Vol. 30 No 3](#)

[JRC/ASAP - ANOMALY HOTSPOTS OF AGRICULTURAL PRODUCTION – February 2022](#)