War in Ukraine: Perspective on Global Food Crisis

BCG Global Advantage and Social Impact Practice Areas

Prepared: 13 July 2022
The war continues to be first and foremost a humanitarian crisis, and the top priority for all continues to be the safety and security of people.

Moreover, the continuity of the war has resulted in profound economic impact, not only within Ukraine but globally — as supply chains face disruption, commodity prices rise, and unprecedented levels of sanctions take hold.

We continue to examine the most pressing issues and questions on the minds of our clients and teams.

This edition shares the latest update on the global economic impact of the war, as well as its exacerbating effect on the global food crisis. The document outlines the challenges for the global food system, specific public and private sector impacts, and implications for leaders to strengthen food system resilience.
Perspective on Global Food Crisis

- Global Food Crisis trends
- Public & private sector impact
- Implications for leaders
## Summary | Unprecedented food system crisis unfolding in three waves

### Global Food Crisis trends

<table>
<thead>
<tr>
<th>Wave</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td><strong>Humanitarian crisis</strong></td>
</tr>
<tr>
<td>W2</td>
<td><strong>Mid-term negative loop</strong></td>
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<tr>
<td>W3</td>
<td><strong>Long-term impact</strong></td>
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The War has become a **tipping point** for a fragile, concentrated food system, already suffering from **recent shocks**: (A) **climate disruption** through extreme weather events, (B) **COVID-19 spending** leading to reduced budgetary flexibility to increase or reallocate public sector funds.

### Public & private sector impact

<table>
<thead>
<tr>
<th>Sector</th>
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</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>Five country archetypes based on self-sufficiency and hunger levels help policymakers identify response &amp; resilience-building actions; humanitarian aid &amp; fertilizer subsidies are key solutions for most impacted</td>
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<tr>
<td>Private sector</td>
<td>Ripple effects can impact the whole value chain and consumer markets through shortages, higher costs &amp; prices (inputs, food, and transport) and potential barriers to global trade</td>
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</table>

### Implications

**Public, private and social sector** need to act now to prevent negative long-term impacts: from short-term relief and technical assistance to longer-term incentives, trade agreements, supply diversification and productivity investments.
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The War in Ukraine is precipitating a food system crisis in three waves

**WAVE 1**

**Humanitarian crisis**

- Food scarcity & high prices
- Unprecedented food humanitarian catastrophe: 1.6B could not get enough to eat, increasing by 440M in 2022
- 20M tons of grain trapped in Ukraine (1/4 of 2021 annual production), 75M tons may be trapped by Fall 2022
- Supply volatility leading to global food insecurity & major price spikes

**WAVE 2**

**Mid-term negative loop**

- Trade & yields disruption
- Fertilizer supply shortage reduces availability, increases prices
- Devastating impacts on yields over next 2-4 years, likely to lead to food price volatility (above current inflation)
- Concentrated production & trade flows challenge flexibility of global food system to respond

**WAVE 3**

**Long-term impact**

- Reduced systemic resilience
- Emergency spending likely to displace long-term investments in the agricultural sector and Sustainable Development Goals (SDGs)
- This could result in further decreases in food system resilience

**Underlying challenges**

A Climate disruption

B Covid-induced fiscal stress

Source: BCG case experience & analysis
Grain supply disruptions and higher prices are creating a global hunger crisis, with famine risk levels at all-time highs.

**Humanitarian crisis**

High reliance on Ukrainian grain which is trapped in siloes along the Black Sea

- **20M** tons of grain trapped in siloes in Ukraine
- **50%** of wheat needed by the World Food Program is trapped in Ukraine

Resulting high prices hurt poor consumers the most particularly in low-income countries reliant on imports

- **90%** of wheat imports in East Africa come from Russia and Ukraine
- **23%** higher FAO food price index than one year ago

Food shortage and famine risk creating change leading to an unprecedented humanitarian catastrophe

- **1.6B** people who could not get enough to eat
- **49M** people at risk of famine, an all-time high

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1. Food & Agriculture Organization of the United Nations. Source: FAO; WFP; BCG case experience & analysis
Egypt, Turkey, China among countries most reliant on Russia & Ukraine

**Main importers by total imports, 2019 $B**

- **Egypt** 73%
- **Turkey** 75%
- **Indonesia** 30%
- **Philippines** 19%
- **Nigeria** 26%

**Key developments**

- Ukraine 2022-2023 wheat exports set to fall 47%
- 90% of Ukraine sunflower oil exports shipped by sea
- China to import corn from Brazil due to Russia blockade

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**Global UKR+RUS share**

- 25% of $39B global wheat exports
- 56% of $10B global sunflower oil exports
- 16% of $36B global corn exports

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**Geopolitical and local social tension risks**

Food central to geopolitical tensions, e.g., Russia blocking Ukrainian key grain exports ports

MENA most exposed to immediate food shortages, potentially leading to social unrest

West Africa and Sahel already seeing increases in hunger risks due to import reliance and low agricultural productivity

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1. All values in USD

Source: USDA; Eurasia Group; Financial Post; OEC; UN Comtrade; Reuters; BCG case experience & analysis
Fertilizer and fuel supply challenged by war shock; crop yields at risk due to decreased input affordability and accessibility

Fertilizer & fuel prices skyrocketing; could risk yields for up to four years

Sanctions impact key Russian & Belarusian fertilizer exports

Fertilizer export restrictions exacerbate global shortages

1. Fertilizer prices displayed are an average of DAP and Urea fertilizer prices; 2. Includes fertilizers in aggregate, where prominent fertilizers are urea (nitrogen), di-ammonium phosphate (phosphate) and potash (potassium).

Source: World Bank; EIA; OEC; CIA World Factbook; UN Comtrade; BCG case experience & analysis

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**Vietnam**
Raised export tax rate on fertilizers to cool domestic prices

**India**
High fertilizer prices led to price caps on Di-Ammonium Phosphate purchases

**United States**
Considering export restriction of crude oil to ease soaring domestic fuel prices

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Russia also led global exports of natural gas in 2019, a key feedstock for the fertilizer industry

17% share
Ensuing protectionism and export restrictions to create further volatility in an interconnected global food system

*Net trade balance* (exports minus imports), 2019 $B

### Overall Agrifoods

### Cereals deep-dive

Exporters considering and imposing export bans to protect local food markets

- **India**: Hot weather led to wheat and sugar export bans, reversing earlier pledge to boost shipments
- **Argentina**: Blocked soybean oil, livestock and soybean meal exports as prices skyrocket
- **Indonesia**: Temporarily banned palm oil product & palm kernel exports, mandating producers to set aside 20% of supply for local buyers

Note: All values in USD. 1. HTS Code Chapter 1 to 15; 2. HTS Code Chapter 10. Source: OEC; UN Comtrade; Eurasia Group; Reuters; BCG analysis
Food system funding will come under further pressure

The funding gap to achieve SDGs, including a resilient food system, was high before the war

$17.9T
Gap in financing needed to meet the **UN's Sustainable Development Goals** in the period 2020-2025

"We **risk going from having a gap** to achieve the SDGs to **having an abyss**."  
— UNCTAD Secretary General

Many additional urgent priorities will also need to be addressed by donor funds

$2.2B
EBRD¹ package announced in March to support the **Ukrainian private sector**

$1.4B
IMF support for Ukraine to cope with **economic shock** caused by War

$4.5B
G7 commitment to addressing **global food security** in 2022

$170B
Response envelope under consideration by the WBG² for **developing countries** facing **compounding crises**

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1. European Bank for Reconstruction and Development; 2. World Bank Group  
Source: EBRD; IMF; Reuters; WBG; BCG case experience & analysis
The War is a tipping point for an already fragile food system characterized by underlying challenges.

**WAVE 1**
- Humanitarian crisis
- Food scarcity & high prices

**WAVE 2**
- Mid-term negative loop
- Trade & yields disruption

**WAVE 3**
- Long-term impact
- Drag on systemic resilience

**Underlying challenges**

A. **Climate disruption**: Extreme weather events lead to reduction in yields & potential impacts on distribution

B. **Covid-induced fiscal stress**: Depleted treasuries & borrowing capacity, with many countries facing distress

Source: BCG case experience & analysis
Agricultural yields are deteriorating and upcoming harvests face risk from extreme weather events, exacerbating War impacts

Climate risks challenge agriculture

**Extreme weather** (e.g., heatwaves, floods, hurricanes) have **wiped out crops**, worsening yield uncertainty

**Water scarcity** has reduced agricultural productivity in markets that **must ration water**; California harvests to suffer

**Annual food yields** have seen 5.3% lower growth since 1961; **yields set to fall** 10-25% for each degree of warming

**Arable land & productivity** reduced due to droughts; **share of land affected to triple** by 2050

Extreme weather conditions to hit resource-poor countries the hardest

**Extreme variability**
in rainfall observed in over 27 countries

- Significant rainfall or vegetation deficit
- Significant excess rainfall

**3.3-3.6B** people **highly vulnerable** to climate impacts

**Hotspots** concentrated in South Asia, Central / South America, & sub-Saharan Africa

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1. ‘Significant excess rainfall’ is defined as current rainfall (3-month average) more than 30% above normal (20-year average). ‘Significant rainfall or vegetation deficit’ is defined as current rainfall (3-month average) more than 20% below normal (20-year average) OR current vegetation deficit defined by Normalized Difference Vegetation Index (NDVI) more than 10% below normal.

Source: IPCC; Eurasia Group; BCG case experience & analysis
Low-income countries\(^1\) in debt distress or at high risk doubled to ~60% since 2015

Low-income countries indebtedness (%)

Cost of debt servicing rises for developing countries\(^2\)

External debt service as a share of exports, developing countries by income group (%)

At least **100 countries will have to reduce spending on social programs to meet debt payments**\(^1\)

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1. According to the World Bank Atlas method, countries with Gross National Income of $1,085 or less in 2021. Source: IMF; UNCTAD; BCG case experience & analysis
AGENDA

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The disruption is uneven, leading to different implications

51 countries severely exposed to the impacts from the current food crunch

Interconnected impacts across global value chains, for upstream, downstream & financial sector players

**Inputs**
- Volatility in input supply (e.g., fertilizer) increases prices (as much as 300%)
- Supply crunch for customers, higher earnings (50%+ above expectations) for companies

**Production**
- Input costs, prices received lead to planting decisions to minimize disruption
- Canadian farmers are planting 6% more wheat, 13% more durum at the expense of canola, down 7%

**Trade/Aggregation**
- Net-exporters expected to fill gap left by Russia and Ukraine (e.g., Turkey, Brazil, India)
- However, protectionism and export bans hinders international business

**Distribution**
- Truck freight prices increased 25.8% between June 2021 and May 2022
- ~20% of container vessels trapped at congested ports, creating supply challenges for distributors

**Consumer/Retail**
- CPG companies exposed to one-time costs due to withdrawal from Russia
- Long-term supply risks (e.g., environmental impact of using palm oil over Ukrainian sunflower oil)

**Investors & Banks/Funds**
- Concessional capital likely to decline with inflation increase (2022 projections: 6.7% globally)
- Other asset classes more appealing with market volatility driving increased diversification

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1. Includes analysis of current food insecurity levels, ongoing conflict, climate risks, debt-to-GDP ratio, import reliance, and other measures of fiscal health and humanitarian need

Source: AgriCensus; Winsight; BCG case experience & analysis

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# Public sector | Impact varies across country archetypes; food aid & monetary subsidies key solutions for most adversely affected countries

<table>
<thead>
<tr>
<th>Self-sufficiency</th>
<th>Facing major hunger &amp; famine risks</th>
<th>Exposed to productivity and hunger risks</th>
<th>Reliant on agricultural input imports</th>
<th>High-income, reliant on food &amp; input imports</th>
<th>Net food exporters capable of filling system gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example countries</td>
<td>Haiti, South Sudan, Sri Lanka, Yemen</td>
<td>Cuba, Ethiopia, Nigeria, Pakistan</td>
<td>Colombia, Kenya, Peru, Philippines</td>
<td>Germany, Japan, Switzerland, United Kingdom</td>
<td>Brazil, Canada, India, United States</td>
</tr>
</tbody>
</table>

**Key focus areas**

- **Immediate food aid and cash transfers**
- **Subsidies for staples and fertilizer**
- **Forward contracts & minimum support prices**
- **Climate-smart ag, storage & distribution**
- **Tax incentives**
- **Commercialization of non-staple crops**
- **Regional trade agreements**
- **Novel farming methods (e.g., permaculture)**
- **Skills training and agricultural job creation**
- **Food loss and waste reduction**

**Source:** BCG case experience & analysis
### Food availability

Ukraine/Russia supply **12% of traded calories**, disrupting food availability

War not only risks **harvested** crops but also produce most **recently planted and upcoming seasons**

**Fertilizer price pressure** leads to producers planting fewer crops, different crops or skipping fertilizer — cumulatively impacting global food availability in the medium term

Consumer and industrial companies relying on food commodities face increasing pressure to **diversify sourcing**

### Food prices

Prices for key consumer staples have **skyrocketed**, esp. grains & oilseeds, and could continue to do so

Downstream businesses and processors face **cost increases** and decision to pass down to consumers

Food **affordability challenges household spending** in durables and long-term resilience-building

Some **producers and net exporters benefit** from short-term price hikes that can support investment decisions

### Transport prices

**Bottlenecks** in the Turkish Straits, a critical **chokepoint**, impact global transport

The Ukraine war, climate disruptions, and underinvestment in Black Sea infrastructure has resulted in **skyrocketing shipping costs**

With Ukrainian airspace closed and airlines avoiding Russian airspace, **air freight rates are also spiking**

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*Source: BCG case experience & analysis*
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Implications for public, private, and social sector leaders

**Public sector**

- Support humanitarian assistance efforts
- Develop resilience plan to direct resources (e.g., budget priorities and allocation)
- Strengthen plans for just energy transition and agricultural climate goals
- Increase volume and carbon competitiveness of key exports (e.g., wheat)
- Support commercialization of alternatives to staples (e.g., indigenous whole grains)
- Revisit key agricultural incentives (e.g., tax exemptions, timebound subsidies, etc.)

**Private sector**

- Develop resilience plan to identify chokepoints, and map resources to adapt during times of uncertainty
- Balance near-term profits with market potential in Global South and long-term gains
- Diversify value chains, especially sourcing, and types of commodities, where possible
- Invest in reducing food loss and waste, especially in the downstream segments
- Accelerate climate-smart practices to stabilize prices and increase traceability

**Social sector**

- Deliver humanitarian assistance & provide technical assistance to capacity building
- Advocate for increases in climate-related aid, debt restructuring, and coordination of climate action
- Support strengthening of food & fertilizer import facilities in highly exposed locations
- Advocate for innovative trade policies (e.g., duty free protocols in regional blocs) and financial mechanisms to increase capital flows

Source: BCG case experience & analysis
Teams across BCG are actively monitoring impact

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