



Executive
Perspectives

War in Ukraine: Perspective on Global Food Crisis

BCG Global Advantage and Social Impact Practice Areas

Prepared: 13 July 2022

Introduction to this document

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

War in Ukraine: Global Update and Global Food Crisis

AGENDA

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

The War in Ukraine is precipitating a **food system crisis over three waves**, impacts could last as long as **3-5 years**

W1: Humanitarian crisis | Food insecurity, price spikes; 1.6B people could not get enough to eat, increasing by 440M people in 2022

W2: Mid-term negative loop | Lower fertilizer availability leads to reduced yields; risks compounded by protectionist measures, now impacting 5.5% of global calories; concentrated production & trade flows limit flexibility of response

W3: Long-term impact | Reduced systemic resilience and widening investment gap to meet global nutrition needs

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

The disruption is uneven across countries, with MENA most affected, and value chain sectors

Public sector | Five country archetypes based on self-sufficiency and hunger levels help policymakers identify response & resilience-building actions; humanitarian aid & fertilizer subsidies are key solutions for most impacted

Private sector | Ripple effects can impact the whole value chain and consumer markets through shortages, higher costs & prices (inputs, food, and transport) and potential barriers to global trade

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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> Global Food Crisis trends

- > Public & private sector impact
- > Implications for leaders

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

Grain supply disruptions and higher prices are creating a global hunger crisis, with famine risk levels at all-time highs

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 FAO¹ 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

MENA, China & South/SE Asia most dependent to direct War risk

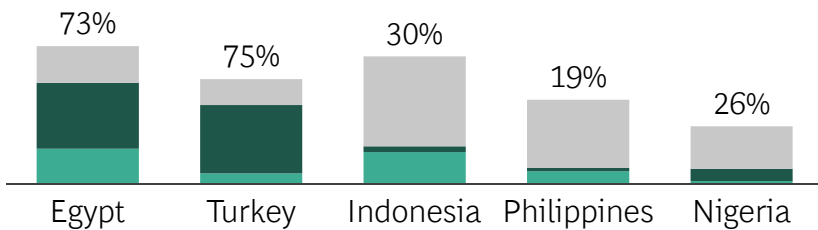
Egypt, Turkey, China among countries most reliant on Russia & Ukraine

Global UKR+RUS share **Main importers** by total imports, 2019 \$B¹
% indicate proportion of total country imports



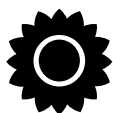
25%

of \$39B global wheat exports



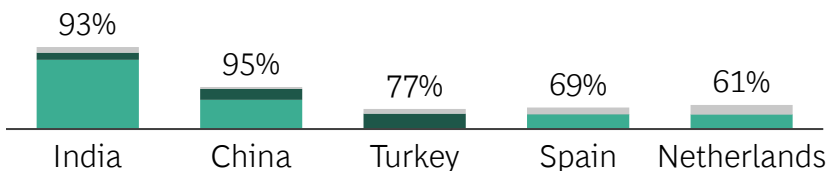
Key developments

Ukraine 2022-2023 wheat exports set to fall 47%



56%

of \$10B global sunflower oil exports

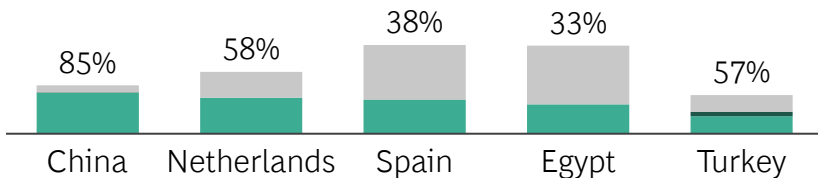


90% of Ukraine sunflower oil exports shipped by sea



16%

Of \$36B global corn exports



China to import corn from Brazil due to Russia blockade

Rest of world Russia Ukraine

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**

1. All values in USD

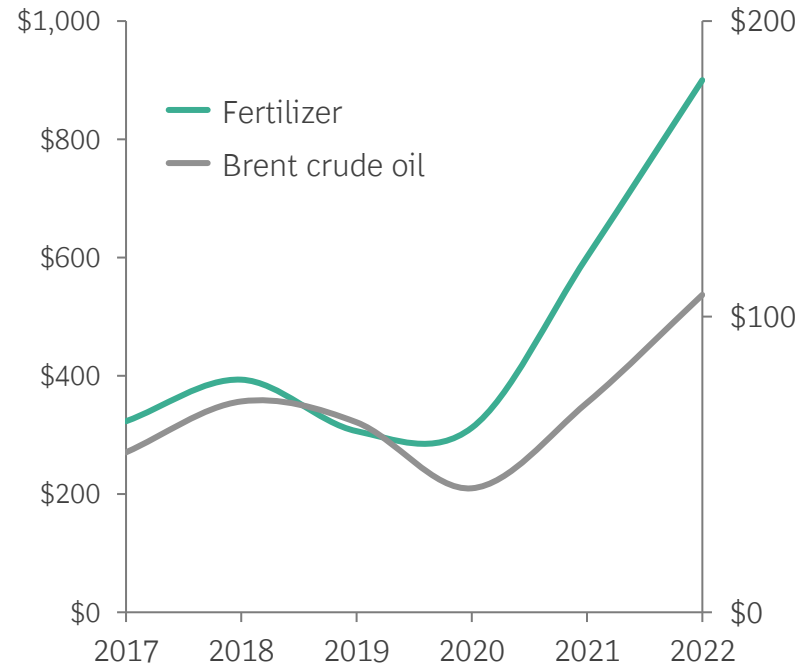
Source: USDA; Eurasia Group; Financial Post; OEC; UN Comtrade; Reuters; BCG case experience & analysis

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

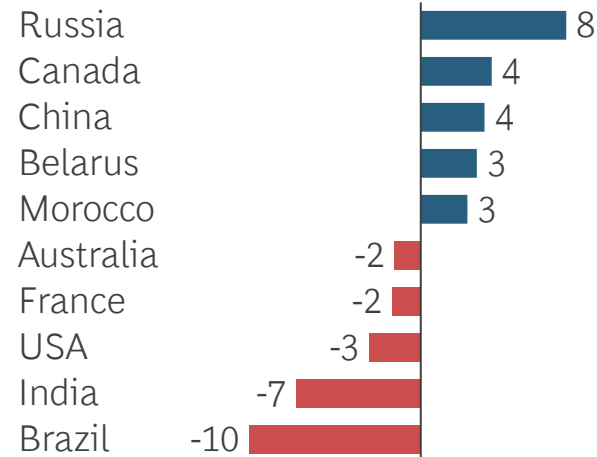
Fertilizer price¹
(\$ per MT)

Brent crude oil price
(\$ per barrel)



Sanctions **impact key Russian & Belarusian fertilizer exports**

Fertilizer trade balance (exports minus imports),
top & bottom 5 countries, 2019 \$B²



**17%
share**

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

Fertilizer export restrictions exacerbate global shortages



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

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



Mid-term
negative loop

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

Africa, Middle East & Asia net importers of significant Agrifoods & Cereals values

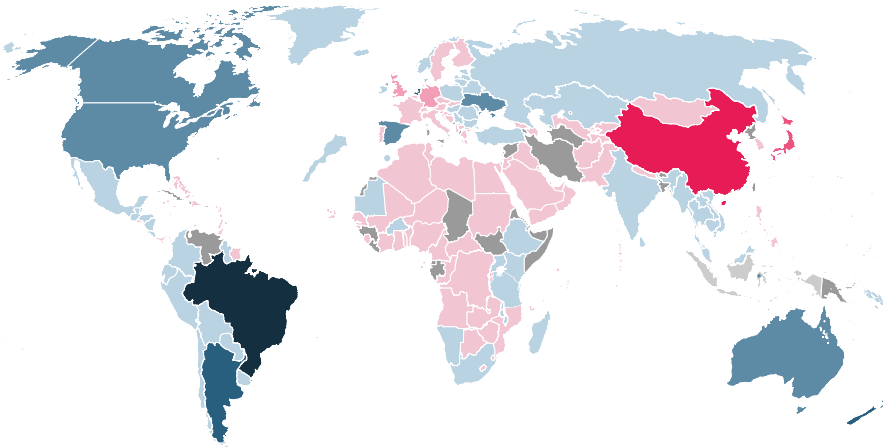
Net trade balance (exports minus imports), 2019 \$B¹



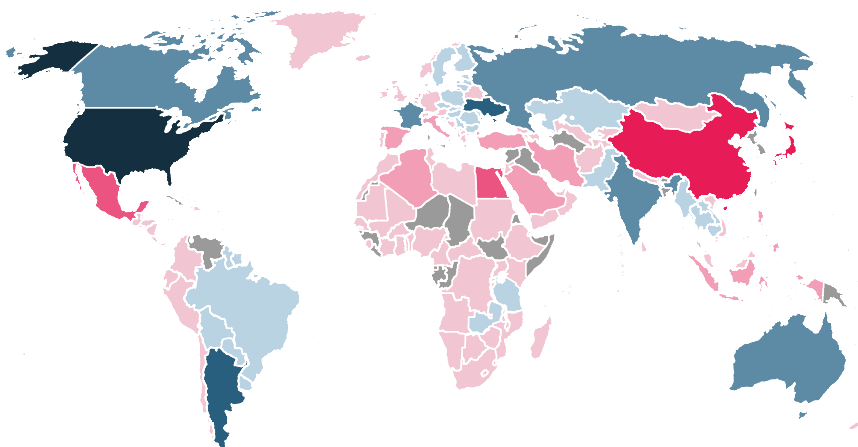
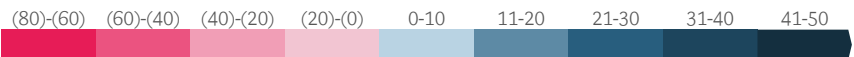
Overall Agrifoods¹



Cereals deep-dive²



Net trade balance (\$B)



Net trade balance (\$B)



Exporters considering and imposing export bans to protect local food markets

Current protectionist measures affect 5.5% of global calories



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



Long-term impact

Prepared: 13 July 2022

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**

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



Climate
disruption

Prepared: 13 July 2022

Agricultural yields are deteriorating and upcoming harvests face risk from extreme weather events, exacerbating War impacts

Climate risks challenge agriculture

Extreme events

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

Agricultural impact

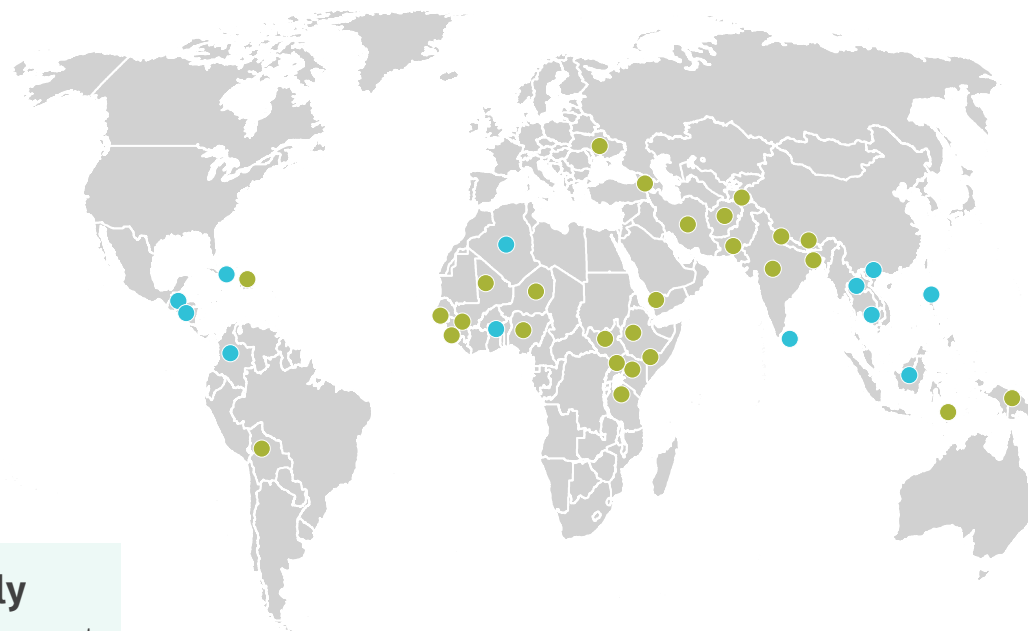
Annual food yields have seen 5.3% lower growth since 1961; **yields set to fall** 10-25% for each degree of warming

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 countries¹**

- Significant rainfall or vegetation deficit
- Significant excess rainfall



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

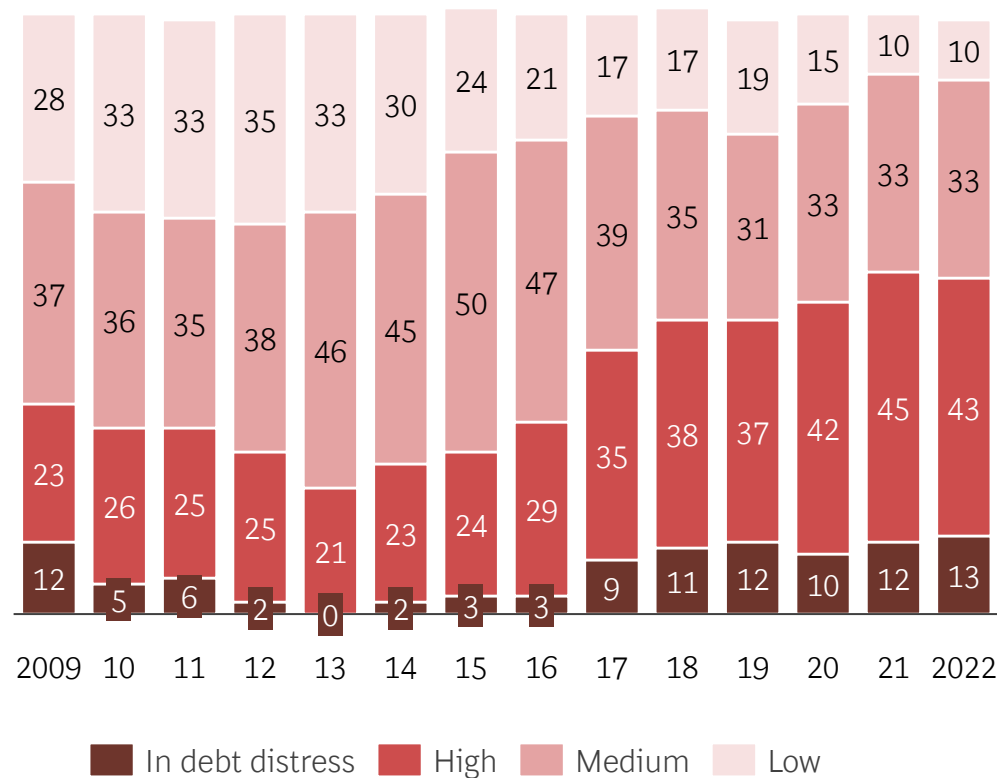
Hotspots concentrated in South Asia, Central / South America, & sub-Saharan Africa

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

Covid-induced high debt levels across ~60% of low-income countries limit fiscal capacity to respond to food challenges

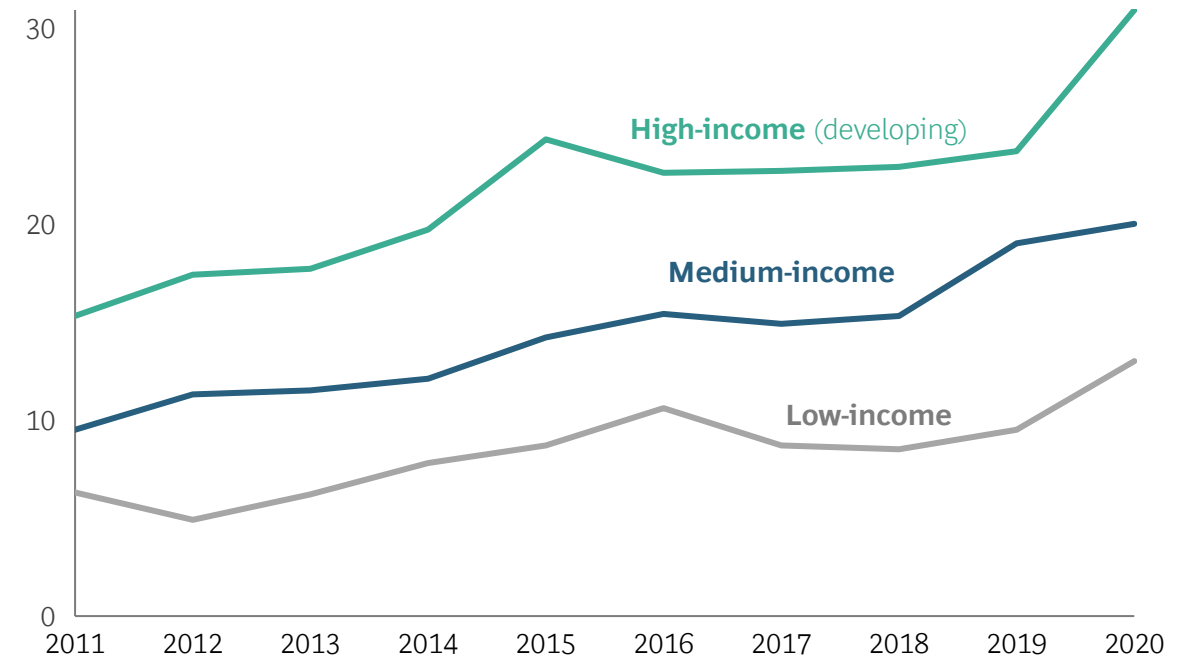
Low-income countries¹ in debt distress or at high risk doubled to ~60% since 2015

Low-income countries indebtedness (%)



Cost of debt servicing rises for developing countries²

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 payments¹**

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

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Perspective on Global Food Crisis

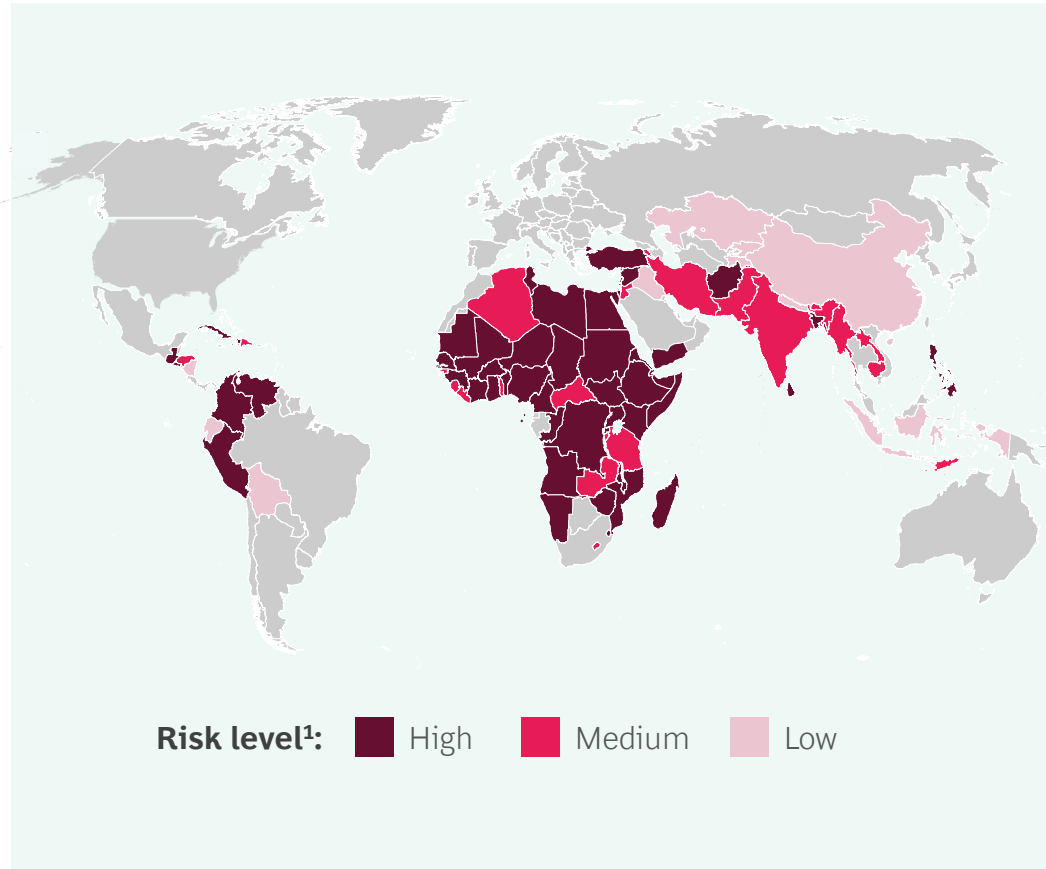
- Global Food Crisis trends

- **Public & private sector impact**

- Implications for leaders

The disruption is uneven, leading to different implications

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



Public sector perspective

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

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

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%

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)

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

Investors & Banks/Funds



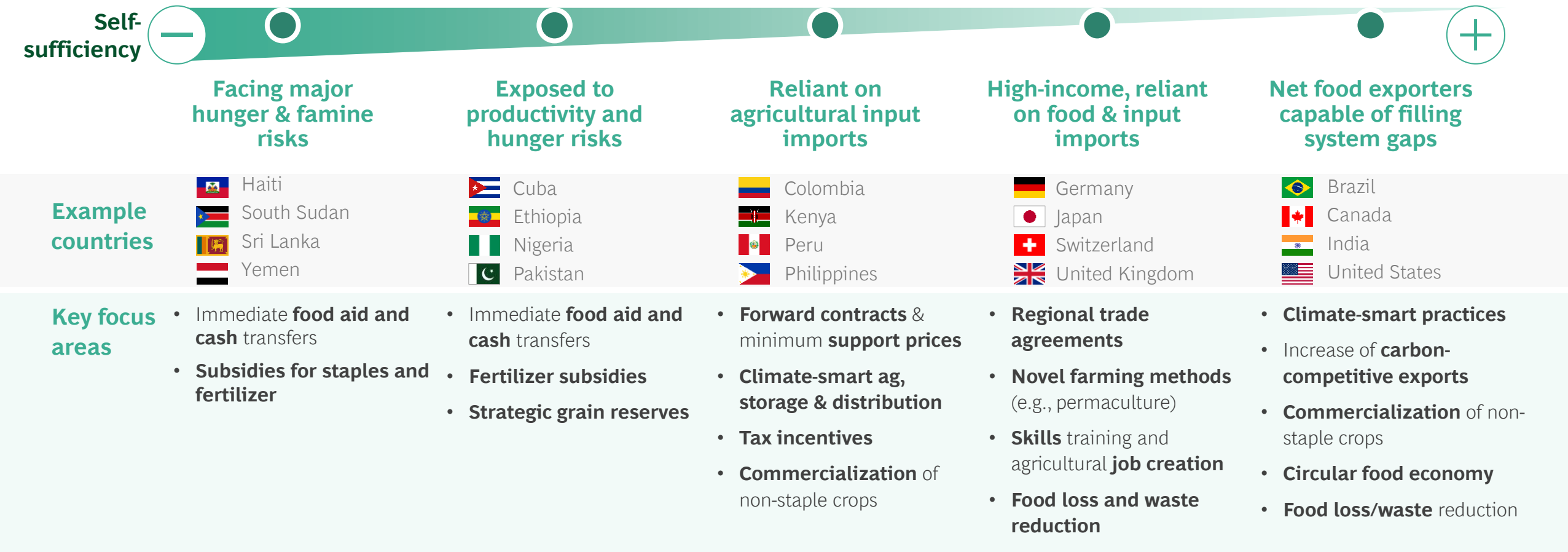
Concessional capital likely to decline with inflation increase (2022 projections: 6.7% globally)

Other asset classes more appealing with market volatility driving increased **diversification**

Private sector perspective

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

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



Private sector | Significant, long-term impacts for entire value chain demonstrated by three key indicators

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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➤ Implications for leaders

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

Teams across BCG are actively monitoring impact

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