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The Food and Energy Crisis – Weathering the Storm

Attached is the document titled “The Food and Energy Crisis – Weathering the Storm” for the October 14, 2022 Development Committee Meeting.

DEVELOPMENT COMMITTEE PAPER
THE FOOD AND ENERGY CRISIS: WEATHERING THE STORM

The World Bank Group

October 5, 2022

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List of Acronyms and Abbreviations

AfCFTA	African Continental Free Trade Agreement
AMIS	Agriculture Marketing Information System
BCM	billion cubic meters
CGIAR	Consultative Group on International Agricultural Research
DPF	Development Policy Finance
EMDEs	Emerging Market and Developing Economies
ESP	Energy Storage Partnership
FAO	Food and Agriculture Organization
FCS	Fragile and Conflict-Affected Situations
GAIN	Global Alliance for Improved Nutrition
GAFS	Global Alliance for Food Security
GCRG	Global Crisis Response Group on Food
GHG	Greenhouse gas
GFSP	Global Food Security Platform
GPST	Global Power System Transformation Consortium
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IEA	International Energy Agency
IMF	International Monetary Fund
IRENA	International Renewable Energy Agency
LICs	Low Income Countries
LNG	Liquefied natural gas
MICs	Middle Income Countries
MIGA	Multilateral Investment Guarantee Agency
NRA	Nominal Rate of Assistance
OECD	Organisation for Economic Co-operation and Development
PSW	Private sector window
RETA	Regulatory Energy Transition Accelerator
SDG	Sustainable Development Goal
SIDS	Small Island Developing States
WBG	World Bank Group
WFP	World Food Program
WTO	World Trade Organization

Executive Summary

The first half of 2022 has witnessed one of the largest shocks to global food and energy markets that the world has seen in decades. As economies rebounded from the COVID-19 pandemic, sluggish supply chains struggled to keep up with increasing demand for food and energy, leading to supply bottlenecks that resulted in upward pressure on prices. The war in Ukraine has exacerbated these trends. Trade restrictions arising from concerns about food and energy security have led to major price spikes. Compounding these challenges, increased hydrological uncertaintyⁱⁱⁱ and extreme weather events have reduced harvests and energy production in many parts of the world, adding to market volatility and uncertainty.

While most countries are impacted by these price shocks, poor households are more vulnerable to adverse shocks in the short term. Currently, 2022 is forecast to be the second-worst year for poverty reduction in decades. It is estimated that around 100 million more people are expected to be in poverty as a result of the combined impacts of COVID-19 and inflation. Protecting poor and vulnerable households, across countries at all income levels, is a top priority.

Food and energy sectors, while distinct, are linked in several ways. Natural gas is used both as a feedstock and energy source in the production of ammonia (a base material for nitrogen fertilizer), accounting for 70-80 percent of ammonia production costs. The rapid increase in gas prices has turned into an increase in fertilizer prices. Hence, the food crisis has spread from food importers to producers, with at least 89 countries importing more than 90 percent of their nitrogen-based fertilizers. In addition, as land and certain food commodities (e.g., corn) are diverted towards energy use (4 percent of global agricultural land is currently devoted to producing biofuels), some countries face a difficult choice between securing food or energy supplies. These impacts are compounded by rising prices of petroleum products needed to support harvesting, transporting, and processing of food. The food-energy-water nexus brings additional challenges in an increasingly water stressed world.^{iiiv}

In the face of these challenges, countries can tackle the food and energy price crises in ways that contribute to efficiency, shared prosperity, and sustainability. This will require focusing on three main objectives:

- **Protecting vulnerable households and communities:** Nutrition-sensitive social safety net systems are an urgent and immediate priority. While the COVID-19 crisis has already triggered an unprecedented scale-up in social safety nets, these must be targeted to ensure the affordability of essential foods and energy for vulnerable populations, especially female-headed households that are often disproportionately poorer.
- **Tackling inefficiencies and distortive subsidies:** There is scope to improve the efficiency of both production and consumption in food and energy value chains alike. Globally, governments spend enormous amounts on subsidies that can engender systemic inefficiencies – around US\$635 billion in the agriculture sector, and US\$577 billion for fossil fuel subsidies.^v These funds, which total around US\$1.2 trillion, could be repurposed towards more productive uses - such as investments in resource use efficiency, renewable energy, health, education, and targeted cash transfer programs.
- **Maintaining trade flows and diversifying production:** Trade restrictions are counterproductive and exacerbate supply problems. By facilitating regional integration and trade in food, agricultural inputs, and electricity, countries can increase efficiency and resilience of supply. Supporting trade finance and agribusiness are important levers for accomplishing this. Freer trade offers greater opportunities for private sector participation. In the longer term, expanding and diversifying production into markets that have the appropriate comparative advantages can strengthen resilience to disruptions.

The World Bank Group stands at the forefront of assisting countries facing a crisis of compounding shocks, working closely with partners. This includes a wide-ranging portfolio of analytics, advisory services, financing, and risk mitigation instruments targeted at tackling the immediate crises without compromising long-term goals of efficiency, sustainability, resilience, and inclusion. Failing to do so will deepen poverty and leave the world vulnerable to new and unseen crises in the future.

At a Glance -

Policy priorities for more resilient & efficient food and energy systems

Overarching priorities	
➤ Protect vulnerable households and communities, including through social safety nets	➤ Tackle inefficiencies and distortive subsidies
	➤ Maintain trade flows and diversify production
Sectoral policy priorities	
➤ Food	<p>Prioritize policies that simultaneously: 1) tackle short-term food security challenges, and 2) lay the foundations for a resilient and stronger food system by addressing supply-side impediments and policy distortions that constrain sustainable productivity growth.</p> <ul style="list-style-type: none"> ➤ Facilitate trade in food and agricultural inputs to safeguard food availability and stabilize prices ➤ Repurpose harmful and counterproductive agriculture subsidies (Box 1) ➤ Utilize market-based mechanisms to build buffers, instead of inward-looking policies, such as stockpiling ➤ Enable the private sector by creating a pro-competitive environment with appropriate incentives ➤ Reduce crop loss and food waste by improving supply chain efficiency ➤ Address infrastructure bottlenecks and input supply bottlenecks (e.g., fertilizers) critical to efficient food supply ➤ Prepare to restore Ukraine’s production and trade capabilities ➤ Strengthen the resilience of food systems to risks (incl. conflict, climate) and trade disruptions ➤ Strengthen farmers’ ability to cope with water risks (improved water efficiency and productivity, equitable delivery, and water reliability), including smallholder farmers through farmer-led irrigation development
➤ Energy	<p>Core principles for addressing the energy crisis involve addressing inefficiencies and enhancing energy security through diversification and increases in clean electricity generation, tailored to country circumstances.</p> <ul style="list-style-type: none"> ➤ Accelerate diversification of the energy supply mix and increase clean electricity generation capacity ➤ Repurpose counterproductive fossil fuel subsidies (Box 1) ➤ Increase energy efficiency through reductions in transmission and distribution losses as well as in end-use sectors, especially buildings and industry ➤ Improve the operational efficiency and financial sustainability of utilities and service providers ➤ Reduce demand for fossil fuels by maximizing generation from low-emission energy sources ➤ Continue progress towards affordable, reliable, sustainable, and modern energy for all (SDG 7) ➤ Invest in infrastructure to support the uptake of renewable energy and a resilient grid ➤ Promote regional energy trade, markets, and connectivity ➤ Channel private sector investment and concessional finance for a just energy transition

Context

- 1. Sequential economic shocks triggered by the COVID-19 pandemic and the war in Ukraine have disrupted two of the most important markets in the global economy - energy and food.** The pandemic induced a sharp fall in global demand for commodities, especially oil. However, commodity prices rapidly recovered as demand rebounded while supply adjusted sluggishly, due to capacity constraints and supply bottlenecks. The war in Ukraine has added further turbulence and uncertainty, especially in markets where Russia and Ukraine are significant suppliers of agricultural products, fertilizers, and energy. Russia and Ukraine rank among the top seven global producers and exporters of wheat, corn, barley, sunflower seeds, and sunflower oil; while Russia and Belarus account for one-fifth of the global fertilizer supply.^{vi} Russia is also one of the world's biggest suppliers of fossil energy, accounting for 25 percent of total global exports of natural gas (pipeline and LNG) and is also the second largest exporter of crude oil after Saudi Arabia.^{vii}
- 2. A series of weather shocks in the world's largest food-producing areas have exacerbated already high food and energy prices, worsening food insecurity across many countries.** Extreme weather events in countries like Argentina, Brazil, and the United States add volatility to food markets by reducing exports of key food staples. In addition, many countries including major economies have recorded one of the lowest water levels in decades.^{viii} Recent estimates suggest that climate change has reduced agricultural productivity growth (total factor productivity) by 21 percent, with the largest adverse impacts emerging in Sub-Saharan Africa where productivity growth remains sluggish.^{ix} Export restrictions on agricultural commodities and fertilizers have exacerbated the effects of these shocks. Price fluctuations are often accentuated by transactions in future markets.^x
- 3. High food and energy prices have worsened global food insecurity and access to balanced nutrition.** The world was already off-track on Sustainable Development Goal (SDG) 2 targets—to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. Food insecurity is at its highest level since 2016.^{xi} Given the high share of food in consumer expenditures (on average, about 44 percent for low-income countries (LICs), 28 percent for middle-income countries (MICs), and 16 percent for high-income countries (HICs)), the number of food insecure people is expected to worsen in 2022 and beyond.^{xii}
- 4. Food and energy price increases hurt the poorest households disproportionately and are forecast to stall the pace of poverty reduction in 2022.** The short-run impact of food price inflation alone on poorer households is expected to slow the move out of poverty in 2022. This places 2022 on track to be among the worst years for poverty reduction. The World Bank estimates that in 2022 around 100 million more people are expected to be in poverty vis-à-vis a forecast without the lingering effects of COVID-19 and the war in Ukraine. Lack of access to food, proper nutrition and energy can have long-term impacts on human capital, with lasting productivity damages, greater poverty and inequality.
- 5. Supply disruptions have asymmetric effects on exporting and importing countries.** Higher commodity prices reduce the competitiveness of importers. In addition, higher fertilizer costs reduce agricultural yields, potentially reversing the terms-of-trade gains for agricultural exporters. Importers may be hurt twice: they consume these commodities and use them as inputs to produce other goods for export. These developments have exacerbated inflationary pressures, weighed on economic growth, and contributed to food and energy insecurity, with impacts varying by country and by region (see Annexes 1 and 2).^{xiii} Since future price trends remain uncertain, the focus of this paper is on approaches that build resilience to the intrinsic uncertainty and volatility of supply and market conditions in food and energy markets.
- 6. Fragile and Conflict-Affected Situations (FCS) and Small Island Developing States (SIDS) are highly vulnerable due to compounding pressures from high debt distress, food insecurity, and trade deficits in food and energy.** Annex 2 presents a non-exhaustive list of indicators tracking country or region vulnerability to food

and fuel price volatility. These show that LICs with large food trade deficits also tend to have large fuel trade deficits. Moreover, many of these countries are classified as FCS, SIDS, or both, and face high levels of debt distress. This is accompanied by rising costs of humanitarian assistance. Addressing these challenges requires careful balancing of fiscal capacity against the need for immediate relief and calls for prioritizing expenditures, improving the efficiency of spending, and concessional financing commensurate with the size of the shock. If unaddressed, rising food and energy prices threaten social and political stability, especially in already fragile countries.

7. **LICs have fewer buffers for coping with food and energy market shocks.** All LICs are dependent on food imports and nearly all are also dependent on imports of fuels, especially petroleum products given their lack of refining capacity. Combined with the absence of storage capacity (Annex 3), LICs are heavily exposed to the price volatility of spot markets. Moreover, these countries do not have the fiscal space to smooth the impact of price shocks on vulnerable households, resulting in rapid pass-through to prices. While many MICs have similar exposures, they have been able to mitigate the impact on households, albeit at the cost of reduced fiscal space.

8. **Macroeconomic conditions—indebtedness, exchange rate volatility, higher borrowing costs, and a depleted fiscal space—constrain the ability of developing countries to respond to disruptions in food and markets.** The current crisis has exacerbated existing macroeconomic vulnerabilities. Debt and fiscal deficits are higher than they were before the 2008-09 global financial crisis and the COVID-19 pandemic. Rising inflation has led to expectations of faster monetary policy tightening across the world. Advanced economy bond yields have risen, and measures of equity volatility have seen a sustained increase, creating a concern of further volatility in capital outflows from emerging markets. The U.S. dollar has strengthened, increasing the cost for many emerging and developing economies (EMDEs) of servicing dollar-denominated liabilities, and importing dollar-denominated commodities. Financial conditions in developing countries have reached their tightest level since the start of the pandemic.^{xiv}

9. **In the face of these significant challenges, countries can tackle the food and energy price crises in ways that contribute to efficiency, shared prosperity, and sustainability.** Large explicit subsidies exist in both the food and energy sectors, estimated at US\$635 billion for agriculture and US\$577 billion for fossil fuels. These subsidies can reduce both allocative and production efficiency by incentivizing the overproduction of certain commodities and the inefficient use and mix of inputs. These subsidies also generate significant environmental burdens. In agriculture, subsidies encouraging the overuse of inputs such as fertilizers, water, and land are responsible for 14 percent of annual global deforestation and are often regressive.^{xv} There are nine planetary boundaries that define the safe operating space for humanity, based on the biophysical processes that regulate Earth systems.^{xvi} The world has already exceeded the safe boundaries for nitrogen and phosphorous, largely due to the overuse of fertilizers, exacerbated by subsidies.^{xvii} And agricultural subsidies may incentivize the expansion of agricultural lands, often into forests and natural habitats, accelerating the loss of flora and fauna with impacts on biodiversity and critical ecosystem services like pollination, water purification, and pest control that support healthy economies and healthy populations. In energy, fossil fuel subsidies significantly exceed support to clean energy,^{xviii} resulting in the triple effect of increasing fossil fuel consumption, reducing incentives for investing in energy efficient technologies, and placing cleaner energy at a competitive disadvantage. Some regions could see their growth rates decline because of shortages and inefficiencies of water use that result in losses in agriculture, health, income, and property.^{xix} Deteriorating water quality from ubiquitous contaminants such as nitrates, and salts have severe health impacts that can stall economic progress.^{xx}

10. **Subsidy reforms and policies aimed at improving allocative and productive efficiency can help countries ease the impacts of the current crisis, while building more resilient food and energy sectors to meet sustainability goals.** In the food sector, such shifts can increase sustainable yields in developing countries by around 55 percent, helping to close the current US\$88/hectare yield gap between LICs and HICs, without increasing greenhouse gas (GHG) emissions or losses of biodiversity.^{xxi} In the energy sector, efficiency is key to

increasing energy security, reducing fiscal burdens, and enabling a clean energy transition, with universal access. Tackling these problems does not always entail *greater* spending, but it does call for *better* spending – by repurposing subsidies and removing the major impediments to productivity gains. Doing so would also enable greater private sector participation. Importantly, in most countries, political realities, and the fact that many poor households rely on these subsidies dictates that subsidies should be repurposed towards more efficient and better targeted programs, rather than removing them without replacement.

State of the sectors: key issues

Links between the food and energy sectors

11. **There are strong linkages between agriculture and energy prices.** The agriculture-energy nexus is multi-faceted, influencing every segment of the food value chain from production and processing to marketing. Fertilizer prices are dependent on the price of primary fuels such as natural gas which is used as a feedstock and an energy source in the production of ammonia. Gas accounts for 70 to 80 percent of the production cost of ammonia and the recent spike in gas prices has led to a sharp escalation of fertilizer prices.^{xxii} Between April 2020 and March 2022 fertilizer prices rose by 220 percent, putting significant pressure on agricultural production and costs. While fertilizer prices have since declined slightly, they remain more than three times as high as two years ago. These problems have been exacerbated by growing water scarcity and more variable rainfall which has increased reliance on energy-intensive water supply infrastructure and impacted energy supply, resulting in difficult trade-offs between energy, water, and food.^{xxiii}

12. **Competition for agricultural commodities (like corn) that can be used either for food or as a fuel additive can have impacts on food security.** The war in Ukraine has increased some countries' reliance on biofuels produced from grains and oilseeds, since these have not been as impacted by price increases in diesel and petrol. Greater demand for biofuels was one of the main causes of the 2007-2008 food crisis, suggesting that countries should weigh the mix of food and fuel production carefully, ensuring that the diversion of food to biofuels does not negatively impact food security. In addition, lifecycle assessments of conventional biofuels find that the environmental impacts are dependent on locational and production factors. "Second generation" biofuels derived from non-food feedstocks (e.g., *Miscanthus*, switchgrass, other lignocellulosic plants, and municipal waste) may confer greater environmental benefits when there is no land-use change, though their economic viability remains uncertain.^{xxiv}

13. **Impacts are compounded by rising prices of oil and refined petroleum products that are used for harvesting, transporting, and processing food.**^{xxv} The prices of refined oil products are under pressure from a shortage of refinery capacity, as well as high shipping costs. According to the IMF,^{xxvi} global shipping costs increased seven-fold since the start of the pandemic. This has resulted in higher costs of imported inputs, hitting LICs, landlocked countries, and island states especially hard.^{xxvii}

State of the food sector

14. **Even before the current crises, it was evident that the global food system needed systemic reform to become more efficient, resilient, and sustainable.** This is reflected in adverse trends in the sector – rising global food and fertilizer prices, increasing food and nutrition insecurity, and a slowing and more volatile growth rate of global per capita food production since 2001 (Figure 1^{xxviii}). These trends are a consequence of the impacts of climate change (i.e., extreme weather, as well as changing weather baselines) and market concentration in food value chains,^{xxix} compounded by policies that have condoned unsustainable and inefficient production patterns, and insufficient investment in research and innovation. Among the regions worst affected are the poorest and most vulnerable parts of world, including Africa, South Asia, and Central America.

15. **Agricultural policies and public support are often distortive and not aligned with goals of making agriculture more productive, resilient, and sustainable.** Globally, explicit subsidies total about US\$635^{xxx} billion each year, with the level and support mechanisms utilized varying widely across countries. Figure 2^{xxxi} shows the average level of support by income group, as measured by the Nominal Rate of Assistance (NRA).^{xxxii} The NRA represents the percentage of farm revenue that is supported through budgetary transfers and market interventions. HICs provide the highest level of support to their producers using a combination of subsidies and price policies (primarily restrictive border measures on imports) which are among the most distortive form of subsidies. In contrast, LICs predominantly use border measures to restrict exports to keep prices low for consumers. This effectively amounts to a tax on producers. These policies create strong incentives for producers in HICs and, to a lesser extent MICs, to overproduce certain commodities. On the other hand, policies in LICs and some MICs create a strong disincentive to adopt new technologies, raise productivity, and crop diversity with negative impacts on food and nutrition security, and constraining economic growth by entrapping producers in a low-input low-value production pattern.^{xxxiii}

16. **As a result of these problems the number of food insecure people has been on the rise globally since 2015.** The number of *severely* food insecure people rose sharply since 2020 to its current level of 925 million.^{xxxiv} The war in Ukraine has added a new and sudden negative impact, deepening global food insecurity at a time when it was already trending in the wrong direction.

17. **Cereals, the most widely traded of all food (and feed) commodities, are experiencing significant price volatility.** The immediate impact of the war in Ukraine was a short run decline in global supplies because of disruptions in exports, which in turn triggered a sharp increase in global wheat, maize, and soybean prices. In

Figure 1: Growth rate and volatility of food

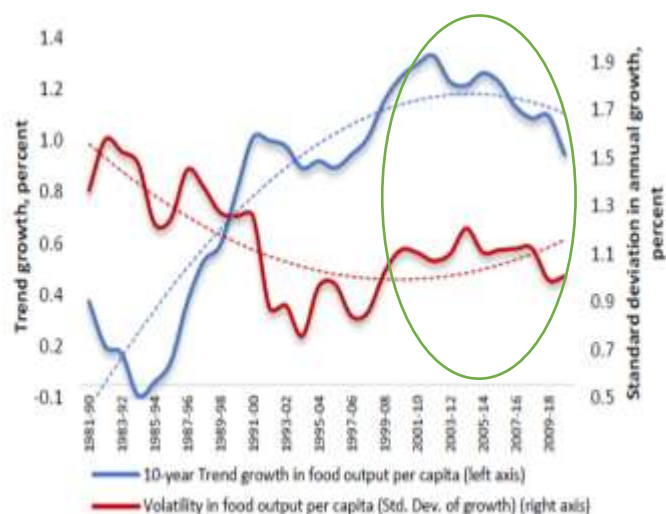
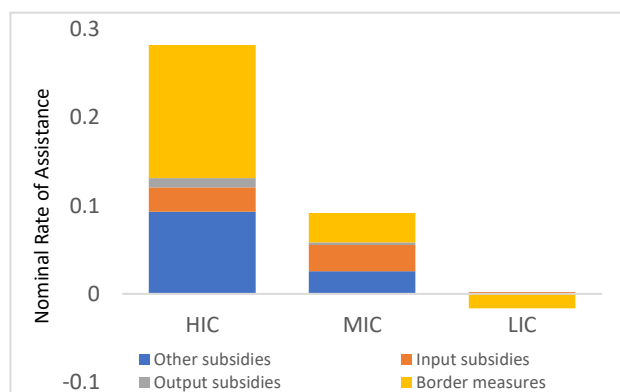


Figure 2: Agricultural Subsidies by Income Category



June and July 2022, however, wheat and maize prices declined, returning close to pre-war levels, likely reflecting increases in exports by other suppliers, market expectations of lower demand due to slowing global growth, the expectation of a strong US harvest, and potentially improving supplies out of Ukraine. Nevertheless, domestic prices are expected to stay elevated in the near term, as global prices transmit to local prices with a lag.

18. **A sharp reduction in the global supply of key fertilizers is likely to prolong and aggravate the present food crisis.** Many of the world's major food producers are importers of fertilizers (see Annex 2). Fertilizer production is also highly concentrated in Russia, which accounts for 11 percent of global ammonia production, 15 percent of phosphate, and 19 percent of potash, with neighboring Belarus producing an additional 17 percent of potash. The consequences of the fertilizer shortage for food production will be country specific and depend on whether the starting point pre-crisis was insufficient fertilizer use, or whether there was excess application which will now be tempered. There is vast variation in fertilizer application, with the over-use in some countries partly driven by distorting subsidies that artificially lower the price of nitrogen fertilizers, accompanied by under-use in other countries – mainly in Sub Saharan Africa.^{xxxv}

19. **There has been a surge in protectionist trade policy measures on food and fertilizers that risk further destabilizing food markets.** COVID-19 related supply disruptions and the war in Ukraine have led to increased protectionism. Between January and June 2022, 83 nations had imposed additional trade related restrictions on food products and fertilizers. These measures can disrupt global markets and exacerbate supply insecurities. Bans on wheat exports cover some 20 percent of world trade and were responsible for a 9 percent increase in wheat prices.^{xxxvi} Moreover, the effects of trade protectionism in one market could potentially spill over to other markets, propagating price surges. For instance, export restrictions in substitute staples such as rice, although currently a very small share of global exports (less than 1 percent as of July 2022), can be devastating if imposed by key suppliers to developing countries. Countries have more incentive to impose export bans when others do so, further exacerbating the problem.^{xxxvii}

20. **Private sector operations in agribusiness have suffered from the build-up of COVID-19 impacts that have accumulated over the past two years.** The private sector plays a critical role across the entire supply chain in producing agricultural inputs and crops, intermediating their trade flows, and transforming and processing commodities into consumable foods, often with the assistance of innovative technologies and business models. Agricultural production in developing countries is often centered around smallholder farms and agricultural MSMEs that provide critical livelihood opportunities for local communities. In the food sector, farmers, commodity traders, processors, and infrastructure and logistics providers all along the agribusiness supply chains have experienced rapid increases in prices of key inputs and transportation costs as well as COVID-19 and war-related disruptions in moving goods. In Ukraine, the challenges faced by the private agribusinesses are compounded by active fighting in many parts of the country and blockage of key export routes. While financing needs have increased, the availability of funds for emerging markets have declined significantly. Heightened risk aversion of, and restricted funding by, commercial banks are impacting the commodity value chain. Recent defaults and bankruptcies among commodity traders led several banks to pull out or curtail their exposure to the commodity sector, with a concomitant flight to quality. Thus, even though commodity prices are increasing, the availability of financing to support the higher value commodity flows is declining.

State of the energy sector

21. **The war in Ukraine has led to soaring prices of fossil fuels, exacerbating energy security concerns.** Fossil fuel prices were already near historic highs before the war in Ukraine, with the rebound in energy demand in 2021 exceeding constrained supply chains. The war further exacerbated the pre-existing energy crisis. The World Bank's Commodity Markets Outlook suggests that elevated fossil fuel prices could continue well into 2023.^{xxxviii} In addition to stoking inflation, the energy crisis is fragmenting global markets, with 30 countries imposing restrictions on trade in energy and a resulting significant price differential opening between Brent and

Ural crude oil. Some countries are also considering electricity export bans in light of continuing energy security concerns.

22. **In the short run, options for responding to price increases are limited.** Energy demand is largely driven by seasonal needs and exhibits limited responsiveness to demand restraint measures. Most countries lack policies that would enable energy users (especially in the power and heating sectors) to optimize energy consumption in reaction to higher prices.^{xxxix} Moreover, the pass-through from the spot prices of commodities like natural gas to prices faced by households, industry, and the power sector, is often slow and incomplete^{xl} which further undermines demand responsiveness.

23. **LICs and MICs are especially vulnerable to the energy crisis.** LICs and MICs generally have weak adaptive capacity. Those that are heavily reliant on energy imports may face affordability challenges. The majority of LICs and MICs have few near-term energy substitution options and have used their limited fiscal space to mute price increases. This has resulted in rationing in some countries, with adverse impacts on the economy. Periods of high fuel prices often create a legacy of unsustainable debt for electric utilities. SOEs maintain a significant presence in electricity and gas value chains and many developing countries still lack structural separation along the electricity and gas value chains. With limited fiscal space, government expenditures devoted to covering operating costs in the energy sector crowd out capital investments in supply reliability and energy access.

24. **Investment in the energy sector has been subdued since the COVID-19 pandemic and has not yet rebounded.** Though global clean energy investment is picking up (especially in the renewable power sector), LICs and MICs are falling behind as investments in their markets remain at, or below, 2015 levels. This is likely to continue in the high global interest rate environment. The war in Ukraine has sent energy prices soaring, inflaming concerns over energy security. At the same time, exporting countries may ramp up production. The combined effect of this may be to divert investment into high-emitting energy projects.

25. **The combined fuel and food crisis threatens to further slow progress on achieving SDG 7 – ensuring affordable, reliable, sustainable, and modern energy for all.** The world is not on track to achieve SDG 7 by 2030, as 750 million people still lack access to electricity. Most of the global population without access to electricity are in the bottom 40 percent of the income strata, 80 percent are rural, and half reside in FCV countries. In Sub-Saharan Africa, where half of the population lacks access to electricity, unelectrified households, businesses, and small-holder farmers rely on increasingly expensive and polluting fossil fuel alternatives, such as kerosene and diesel. While many governments pursue ambitious electrification programs, the impact of budgetary constraints, rising costs of financing, and households' falling capacity to pay threatens to slow down these efforts.

26. **About 2.4 billion people still lack access to clean cooking fuels and technologies,** costing the world more than \$2.4 trillion each year, driven by adverse impacts on health (\$1.4 trillion), climate (\$0.2 trillion), and women's lost productivity (\$0.8 trillion).^{xli} Sub-Saharan Africa fares worst, where only 17 percent of the population has access to modern cooking fuels, followed by Central Asia and South Asia. Household air pollution from cooking with traditional stoves and fuels is linked to nearly 4 million deaths each year (from respiratory diseases), most of them among women and young children. Women and girls spend many hours each week collecting fuelwood, often putting themselves at risk of physical injury and gender-based violence, as well as diverting time from school attendance and income generation. Non-renewable wood-fuels for cooking also account for about 2 percent of global GHG emissions.

27. **The current energy crisis could hamper the clean energy transition.** A fall in the global supply of natural gas has increased competition for and prices of natural gas that is available, posing a challenge for developing countries.^{xlii} To mitigate the impacts of shortages and rising energy prices, several countries have substituted gas with heavy fuel oil, while others have brought mothballed coal plants back into service. While the increased focus on energy security may provide the necessary impetus for countries to accelerate the transition to clean energy in the medium term (e.g., the European Union's REPower Initiative), many of the short-term coping

measures are likely to increase energy-related carbon emissions and risk further entrenching the dominance of fossil fuels in the economy.

28. **The crisis has prompted the adoption of new subsidies to soften the impact of high energy prices on consumers.** In 2021 fossil fuel subsidies totaled around US\$577 billion.^{xliii} MICs account for the highest share of aggregate global energy subsidies. While absolute fossil fuel subsidy expenditures are found to be smaller in LICs, this may simply reflect data limitations – since subsidies often account for a significant share of their GDP. Since February 2022, some 60 countries have adopted new fuel price-related support measures and 41 countries have chosen to maintain existing fuel subsidies. Governments face pressures to provide immediate relief for rising prices of basic commodities and often lack the institutional capacity to provide more targeted relief, leaving few other policy options. Nevertheless, a subsidy once introduced can be difficult to retract, suggesting the need for caution in introducing “band-aid” measures that may have unintended and counterproductive consequences, such as distortions to competition (Annex 5 summarizes an approach to price reform in the energy sector). In addition, subsidies often worsen countries’ long-term fiscal outlook for two reasons; first, the costs to growth from the taxes needed to finance revenue shortfalls usually exceed the (growth) benefits from fuel subsidies; second, subsidies tend to stick even when market prices start decreasing. This expectation of a negative long-term impact deters investment, quickly undercutting the initial stabilizing benefit of the subsidy. Further, limited transparency around these subsidies can worsen distortive impacts.

Recommendations for weathering and recovering from the crisis

29. **While uncertainty and volatility in international food and energy markets persist, countries can take active measures to safeguard food and energy security and people’s livelihoods and build longer-term resilience.** Building on lessons learned from previous crises such as the 2007-2008 food price crisis, measures to respond to the current food and energy crisis should cover three core objectives:

- **Protecting vulnerable households and communities:** Social safety net systems are an urgent and immediate priority to mitigate the sizable disposable income shocks associated with rising food and energy prices. The COVID-19 crisis has already triggered an unprecedented scale-up in cash transfer systems,^{xliiv} which offers a less distorting alternative to conventional price subsidies for protecting those in need. Every country would need to define its own threshold where support is triggered, depending upon social considerations and the country’s economic and fiscal capacity. Where price subsidies are used, these need to be targeted to those in need, with clarity on the exit strategy and an eventual transition to transfers and modern social protection systems.^{xliv} Programs that support communities to build their resilience to shocks and expand productive activities particularly for vulnerable groups are also needed.
- **Tackling inefficiencies and distortive subsidies:** Globally, governments spend over US\$1.2 trillion on subsidies that engender systemic inefficiencies – this is an amount that is roughly equivalent to the annual GDP of large economies such as Indonesia or Mexico. Of this total, around US\$635 billion is devoted to subsidies in the agriculture sector, and about US\$577 billion for fossil fuel subsidies. Repurposing the resources expended on subsidies towards more productive uses can help create fiscal space for transfers. It would also provide a more conducive environment for the private sector, while improving the efficiency of both production and consumption in food and energy value chains alike. Despite the economic and social benefits, repurposing subsidies is politically challenging and must be done carefully. Box 1, which is based on a review of country experiences, describes five guiding principles for successful subsidy reform.
- **Maintaining trade flows and diversifying production:** By facilitating trade in food, agricultural inputs, and electricity, countries can increase the efficiency and resilience of supply. Supporting trade finance for the private sector is one critical mechanism for accomplishing this. Trade in food also promotes

gender equality,^{xlvi} and tends to increase incomes of female headed households more than it does for male headed households.^{xlvii} Deeper regional integration can reduce the prices of essential goods and services while driving economic diversification and job creation. In electricity markets, regional trade enables more efficient operation of the system, mitigating supply shocks, and reducing load-shedding. Trade can also catalyze the development of untapped renewable energy resources while lowering costs because of the scale economies of larger projects. In the West African Power Pool, trade is expected to reduce the average cost of power generation from \$0.23/kWh to \$0.08/kWh and connect 6 million additional people to the grid. Likewise, the East Africa Power Pool and the Southern Africa Power Pool are expected to lower costs by \$1 billion and \$2 billion a year respectively.

Box 1: Guiding principles for successful reform and repurposing of subsidies

Subsidy reform and repurposing can be one of the most important measures governments can take to increase both the impact of their public spending, and the efficiency of both consumption and production of food and energy products. But structural change comes with challenges, and if subsidy reforms were easy, they would have already been done. While crises like the current ones the world is facing can create new opportunities for change, they also raise the stakes for getting things right. Lessons learned from past efforts converge towards five guiding principles for designing and implementing successful subsidy reforms:

1. **Build public acceptance and overcome credibility gaps** by communicating why subsidies are being reformed and how they will be repurposed in ways that are deemed to be fair.
2. **Implement complementary measures to improve the effectiveness and lower the costs of reform.** For instance, removing fossil fuel subsidies may not lead to a significant decline in fuel use, if alternatives like public transportation options are not in place.
3. **Mitigate short-term price shocks through social protection and compensation.** By addressing the needs of the vulnerable households before subsidy reform starts, governments can build trust and credibility, and assuage fears (e.g., using vouchers or cash transfers^{xlviii}).
4. **Smoothing the transition with carefully timed, stepwise reductions in harmful subsidies is typically less disruptive.** Gradual adjustments allow for adaptive improvements and give an opportunity for the economy to adjust to changes in relative prices. When prices are high, subsidy removal is more challenging, but when prices decline there may be opportunities to withdraw subsidies, especially if the economy and consumers have adapted to the higher prices.^{xlix} The Government of Mexico successfully phased out gasoline and diesel subsidies by gradually raising the price by less than US\$0.01 per month between 2012 and 2014, which aided in the political acceptability of the reform policies.ⁱ
5. **Redistribute revenue through long-term reinvestments with equitable or progressive benefits.** This is essential for a “just transition”. The fiscal savings can be invested by compensating the poor, improving efficiency, building human capital, investing in clean energy and resilient infrastructure. For example, investments in social protection programs in Mauritania in 2011 aimed to reinvest funds unlocked from subsidy reforms, and thus contribute to its longer-term development.ⁱⁱ

Priorities for the food sector

30. **Responding to the current food price crisis requires policies that simultaneously tackle short-term food security challenges, while laying the foundations for a resilient and stronger food system that constrain sustainable productivity growth.** Building better food systems will require addressing multiple supply-side impediments. Policies that distort decisions of producers and private sector actors, lead to inefficient agri-food value chains, generate harmful externalities, and waste critical resources such as water and energy need to be repurposed to deliver a sustainable and resilient food system. Governments can undertake several measures to alleviate the immediate pressures on food systems, while building resilience to future shocks:

- **Facilitating trade in food and agricultural inputs is key to safeguarding food availability and stabilizing prices.** Countries need to avoid counter-productive policies, such as grain export restrictions. In the short

term, releasing stocks will help protect the availability and affordability of food supplies. Adhering to commitments made at the World Trade Organization's (WTO) 12th Ministerial Conference, which called for restraint on export restrictions on food and fertilizers, would have an immediate impact on the flow of critical food staples. Discriminatory tariffs against more nutritious foods also need to be addressed. For example, in many developing countries, border taxes on fruits and vegetables are higher than those on grains, while delays at the border and logistical weaknesses impact perishable food products more heavily. Non-tariff measures affecting food trade such as phytosanitary standards should be streamlined to address public policy objectives, while minimizing their cost to trade.

- **Moving away from inward-looking policies such as stockpiling to market-based mechanisms brings multiple benefits.** While strategic grain reserves, or buffer stocks, are needed to absorb sudden onset shocks to global markets, stockpiling grains beyond normal buffer levels, adds to market instability and puts poorer, importing countries at food insecurity risks. It may also be a waste of valuable fiscal resources since agriculture is a seasonal activity, with subsequent harvests providing new supplies. Countries carrying excessive levels of stocks could consider releasing stocks to improve global supply. Annex 3 provides one indicator of stocking - the country or region level cereal stock-to-use ratios.^{lii} It shows that the distribution is highly skewed. Available grains stocks also tend to be highly unevenly distributed across countries - the majority of LICs have zero or very low storage capacity, while the top 5 countries hold about 74 percent of the global cereal stock. The size of grain stocks tends to be associated with production and trade balances, and net grain exporters may at times have larger stores of grain stock than net importers. Nevertheless, excessive stocks are not a long-term solution to food insecurity. Instead, market instruments such as futures and options markets and weather-indexed insurance programs can complement open trade policies. These have the potential to better mitigate food price risks given the limited amount of infrastructure they require, the low costs they impose on public resources, and the financial security they provide to vulnerable producers.
 - **Policies that promote private sector investments through creating an enabling, pro-competitive environment with appropriate incentives.** The private sector has a critical role to play in addressing food insecurity in the short and long run. It is critical for getting existing food stocks to the neediest people, while ensuring continued food production by addressing the last mile challenges of small and medium sized farmers. The sector can be a key driver of structural change through technology and innovation, improving agricultural productivity, resilience, value chain efficiency and the climate footprint (see Box 2).
 - **As part of the global supply response, Ukraine's production and trade capabilities need to be restored.** In the near term, this would include providing (i) revolving working capital to agribusinesses for crop production, harvesting, storage, processing, infrastructure and logistics; and (ii) export financing to traders. Post-conflict interventions in Ukraine should promote higher value addition, storage, infrastructure investment and reconstruction. There are also positive signs that safe passage can be created for some of Ukraine's production.^{liii}
31. **The medium to long-run response should aim to strengthen food systems to make them more resilient to rising risks (conflict, extreme weather events, pests, water shortages, diseases), trade disruptions and economic shocks.** Repurposing private transfers towards the provision of public goods that have a direct link to mitigation, adaptation, and resilience should be prioritized to address climate change related risks. Irrigation and water sector reforms^{liv} are necessary to protect against the hydrological risks that farmers face. Investments need to be accompanied by appropriate incentives and reforms to encourage the cultivation of crops that are suited to the climate and comparative advantages of countries. Currently some of the most water-thirsty crops are grown in some of the driest biomes – encouraged by the availability of free water.^{lv} Efforts to address tensions between farmers and livestock producers,

particularly in areas heavily impacted by climate change such as the Sahel, are also important to enhancing food security in these vulnerable regions.

Priorities for the energy sector

32. **The priorities for addressing the energy crisis involve tackling inefficiencies and reducing risks. In the short term, these include:**

- **Energy efficiency is the “first fuel of choice” as it is almost always faster and cheaper to implement than to build new generation capacity.** Awareness-raising and information campaigns targeted at consumers and industry can increase demand for more energy efficient buildings and appliances and motivate behavior change. For instance, adjusting the thermostat down by just 1 degree Celsius in European buildings alone could curb gas use by 10 bcm per year, equivalent to 6 percent of European gas imports from Russia in 2021.^{lvi} Governments can promote innovative business models with incentives to encourage the use of digital technologies such as smart thermostats and other controls that optimize the load distribution of energy demand for cooling or other uses of electricity. Technological and operational updates can increase efficiency and reduce waste throughout value chains, for instance by tackling electricity transmission and distribution losses, gas flaring and venting, or investing in efficiency measures in energy-intensive sectors. Product standards for appliances and building codes can also reduce inefficiencies. The standards and labelling program of the Government of India, which encourage consumers to buy high efficiency appliances, has resulted in electricity savings of over 50,000 GWh in 2020-21.^{lvii lviii}
- **Adopt actions to accelerate diversification of the energy supply mix.** The reliance on fossil fuels can be reduced by maximizing the use of existing renewable energy capacities, while fast-tracking the deployment of new renewable capacity and streamlining regulatory processes. Most of these projects would be utility-scale wind and solar PV for which completion dates can be brought forward by avoiding delays with permitting. Incentives to accelerate the deployment of residential solar PV can reduce consumer bills. With increasing renewable energy penetration, different kinds of storage will also need to be scaled up quickly to ensure a stable and flexible system, and the role of natural gas as a transition fuel can be carefully considered. Engaging with impacted communities and workers will be critical to ensure that efforts to shift out of fossil fuels and into renewables supports a just transition.
- **Improving the operational efficiency and financial sustainability of utilities and service providers.** Before the current crises, many power utilities had large financial deficits.^{lix} These deficits may now worsen, fueling a vicious cycle of financial stress that leads to lower maintenance, poorer services, weaker cost recovery, and reduced capacity to invest in electrification and the energy transition.^{lx} To alleviate these issues, governments, especially in LICs and MICs, need to ensure that utilities have adequate revenues through tariff reforms implemented in conjunction with measures to protect low-income consumers, while ensuring that tariff shortfalls are fully funded. Governments can also leverage the opportunity to invest in digital infrastructure for utilities to improve their operational performance.
- **Continue progress towards achieving SDG 7 – ensuring affordable, reliable, sustainable, and modern energy for all.** Countries with energy access deficits should expand access to electricity and clean cooking solutions. Modular, decentralized renewable energy solutions, such as solar mini-grids and stand-alone off-grid solar systems, can accelerate progress towards these goals by displacing more expensive and harmful alternatives, such as diesel and kerosene that imperil health. New technologies such as mobile money and super-efficient appliances like LED lighting have created opportunities to step up the progress in energy access in poor rural communities. The clean cooking sector can further utilize market-based clean cooking solutions together with behavior change campaigns.

33. **For the medium to long term, there is a need to rethink energy security and transition strategies:^{lxi}**

- **Security for modern energy systems today means tapping the full range of instruments available including demand-side management using smart technologies, building resilience and the use of market mechanisms.** It means accounting for emerging risks such as climate change impacts, cyber security, and a possible critical-minerals supply crunch. A careful assessment and management of the climate risks to enhance the resilience of energy system, including hydropower that is highly susceptible to climate change impacts, need to be mainstreamed in energy policy planning. Using market mechanisms, such as transitioning from feed-in tariffs to auction systems to harness global competition, can help to bring down energy prices and facilitate the deployment of renewable energy. The current crisis is a reminder of the need for countries to adopt a long-term energy strategy that provides a secure, affordable, and sustainable energy transition.
- **Seven principles to accelerate progress towards SDG 7 and secure a sustainable energy transition include:** 1) prioritizing efficiency in all-end use sectors; 2) accelerating energy supply diversification underpinned by electrification and renewable deployment; 3) strengthening institutions, including power utilities and energy networks; 4) optimizing the use of transition fuels and managing the associated risks; 5) promoting regional and international cooperation, including through trade; 6) leveraging all sources of capital, including concessional capital to catalyze energy transition financing; and 7) ensuring a just transition for all.

34. **In general, these food and energy policy reform packages have economy-wide, distributional and inter temporal effects.** An evaluation of these policies could be undertaken through evidence based causal assessments. At a time of severe stress in food and energy markets, precautionary principles are a priority, such as preventing irreversible harm or social unrest, pending a more complete analysis of reform impacts. This would warrant sequencing of interventions to mute large distributional impacts of shocks, accompanied by a credible exit strategy from distortionary interventions and avoiding the creation of vested interests. Synergies with other sectoral and fiscal policies are particularly important in this regard.

What the World Bank Group is doing

35. **The WBG has a wide-ranging portfolio of analytics, advisory services, financing, and risk mitigation instruments that are targeted at tackling the immediate crises, without compromising long-term goals of efficiency, sustainability, and resilience.** The WBG has also developed a Roadmap to respond to the impacts of the war in Ukraine ([“WBG Response to Global Impacts of the War in Ukraine: A Proposed Roadmap,”](#) April 12, 2022), with a follow-up paper, [“Navigating Multiple Crises, Staying the Course on Long-Term Development”](#) published on August 3, 2022. In addition, the WBG’s [Climate Change Action Plan 2021-2025](#) articulates the approach to climate change-related challenges. Accompanying this Plan are Country Climate and Development Reports that provide country-level diagnostics on integrating climate and development considerations. Priorities for addressing this crisis are also guided by the [WBG’s Green, Resilient and Inclusive Development \(GRID\) approach](#) paper, with an emphasis on a response that enhances long-term sustainability, resilience and inclusiveness. This approach aligns with key [IDA20 policy commitments](#), such as expanding adaptive safety nets, building resilience, promoting sustainable energy for all, and boosting agricultural productivity.

36. **The WBG support builds on partnerships with others to address the food and energy crises.** Examples include work with the G7 and G20, the IMF, CGIAR, WFP, FAO, WTO, IFAD, the International Energy Agency (IEA) and International Renewable Energy Agency (IRENA).^{lxii} The World Bank is an active participant in the Food Workstream Working Group of the United Nations Global Crisis Response Group on Food, Energy and Finance (GCRG) and it is engaged in the ‘Global Alliance for Food Security’ (GAFS). There is also ongoing collaboration with the CGIAR, and the Global Alliance for Improved Nutrition (GAIN), among others, to strengthen technical aspects of project design and incorporate the latest research on new innovations and technologies (e.g., biopesticides). The World Bank convenes the Energy Storage Partnership (ESP), comprised of forty institutions

collaborating to develop a knowledge base in energy storage solutions tailored to the needs of developing countries. The World Bank is also actively engaged in the Global Power System Transformation Consortium (GPST), the international Clean Energy Ministerial forum, the Regulatory Energy Transition Accelerator (RETA) as well as many other global initiatives that contribute to energy transition and security. The aim of these efforts is to maximize synergy and complementarity with other relevant initiatives, recognizing the magnitude of challenges faced by the global community.

37. **The World Bank Group offers tailored solutions, taking account of country vulnerabilities, opportunities, and priorities.** For instance, in SIDS and FCV contexts there is an emphasis on addressing poverty and building resilience, especially amongst the vulnerable.^{lxiii} The Climate Change Action Plan (CCAP) guides the overarching approach to addressing the climate challenge while addressing food security challenges (SDG 2) and providing affordable, reliable, and sustainable energy for all (SDG 7). As outlined in the CCAP, investment priorities in the energy sector depend on each client's context and strategic priorities. In some countries the emphasis may be on removing market barriers for green technologies, repurposing distortive subsidies that have negative impacts (such as health effects), or global externalities, and ensuring a just transition. In other countries still working to provide energy access to all, investments in low-carbon -on-grid and off-grid capacity may be more of a priority. Likewise promoting greater food security through interventions that improve productivity, resilience, and efficiency by addressing supply-side constraints and other impediments, remains an overarching priority, especially at a time of food price inflation. In addition, the World Bank Group plays an important role in facilitating and crowding-in private sector investments in these priorities. Drawing on lessons learned, the WBGs engagements aim to unlock investment opportunities for the private sector; such interventions include supporting policy and sector reforms, institutional capacity building, improving investment climate, and early project development. These are achieved through upstream project preparation, direct investments and mobilization activities by IFC and MIGA. IFC and MIGA are also developing new mobilization platforms to engage new investors and enable increased delivery for priority sectors, including IFC's Global Food Security Platform.

38. **In recognition of the need for cross-sectoral interventions, there are a large set of country programs aimed at tackling common challenges.** For instance, there are advisory programs and lending operations aimed at building and modernizing social safety nets to protect vulnerable households (see Annex 4 for examples). A significant amount of analytical work, advisory services, and policy lending addresses inefficiencies and resource misallocation, for example through Development Policy Financing operations, with pillars related to public expenditure management and financial sustainability in key sectors. Country programs have been developed to assist countries repurpose inefficient subsidies in ways that protect the vulnerable, maintain trade flows, and diversify sources of supply.^{lxiv lxv}

39. **There are numerous joint food and energy investments aimed at building a productive, green, resilient, and inclusive agriculture sector.** For example, in Africa there is a Joint Implementation Plan with IFC and MIGA to reach 1 million farmers to improve food security. Decentralized Renewable Energy solutions projects provide alternatives to high price and high polluting fossil fuels. World Bank operations are also supporting the construction of solar powered cold storage and irrigation systems in several countries including Rwanda, Gambia, and Nigeria.^{lxvi}

40. **A range of WBG programs encourage countries to maintain open trade policies:**

- Programs provide support and long-term investments, such as the West Africa Food System Resilience Program and the East Africa Food Security and Resilience Program. These promote intra-regional food trade with the objective of promoting greater resilience in the region.
- IFC provided working capital to a leading processor of staple foods in Yemen to expand access to flour, sugar, and dairy products in a country affected by conflict and high levels of food insecurity. IFC also

extended a financing facility to a leading commodity trader to support its storage and trading operations for grains and fertilizers in Benin, Malawi, South Africa, Tanzania, Zambia, and Zimbabwe.

- MIGA is working to support trade finance for countries affected by disruptions to supply chains for staple foods and fertilizers. Partnering with IFC, EBRD, and others, MIGA's Trade Finance Program will target (i) Ukraine (including through blended finance) and (ii) countries experiencing food insecurity. Trade finance will be made available for urgent imports of food supplies and short-term loans for the agricultural sector, addressing humanitarian needs and contributing to food security, including in Ukraine and its export markets—especially in the Middle East and Sub-Saharan Africa.

Food sector

41. **Previous experience suggests that it is vital to help countries affected by the sudden onset of food and fertilizer price spikes to meet their most urgent needs in ways that do not compromise longer-term development goals.** Assistance seeks to provide alternatives to adopting inward-looking policies such as export bans or blanket subsidies of fertilizer imports, which have adverse consequences for efficiency and resilience to shocks. Between April 1 and June 30 2022, the World Bank has approved around 32 new lending operations with food security components across all global practices (See Annex 4a for some recent examples).^{lxvii} Most are cross sectoral and utilize a broad variety of mechanisms such as strengthening social safety nets in Congo and Cote d'Ivoire, providing emergency wheat supply in Lebanon and Egypt, improving sustainability through natural capital restoration programs in Uzbekistan and MENA region, and improving efficiency and agricultural productivity in Angola, Burkina Faso, and Malawi.

42. **The WBG response seeks to provide countries with comprehensive, targeted and streamlined solutions to address the impacts of the crisis.** The WBG approach addresses the following priorities:

- **Facilitate trade in food and agricultural inputs:** To build international consensus (G7, G20, others) and commitments to avoid export restrictions that increase global food prices. It also involves trade financing to facilitate trade flows.
- **Support vulnerable households and communities:** Scale up targeted, nutrition-sensitive social safety nets, with productive co-benefits such as skills acquisition. Expand programs to vulnerable communities and groups to support livelihoods, including food production.
- **Support production and producers:** Take actions to enhance next season's production. Take advantage of major advances and cost declines in use of digital technology for these purposes.
- **Invest in sustainable food and nutrition security:** Investments should strengthen the provision of public goods and remove distortive regulations.
- **Improve water productivity and support farmers:** Irrigation expansion, where it is sustainable and combined with improved water management and other interventions, could assist in meeting food needs for up to 4.1 billion people, within planetary boundaries. Farmer-led Irrigation Development (FLID)^{lxviii} builds smallholder farming system resilience.
- **Addressing food loss and waste:** This improves food security, reduces greenhouse emissions, saves on food imports and dependency on fragile supply chains. A novel methodology has been developed and applied to 6 countries and more are forthcoming.^{lxix}

43. **The World Bank is implementing a comprehensive, global response to the ongoing food security crisis, with up to US\$30 billion in existing and new projects planned for the 15-month pipeline through FY22 Q4 and FY23 in areas such as agriculture, nutrition, social protection, water, and irrigation.** This response includes new financing for projects in agriculture, gender livelihoods and entrepreneurship, and social protection to cushion the effects of higher food prices, and water, women's economic empowerment, local community development, and irrigation. The majority of resources are targeted to Africa and the Middle East, Eastern Europe and Central

Asia, and South Asia. Where possible, interventions are focused on vulnerable groups, such as the Panama social cohesion project targeted towards helping indigenous women to expand food production. This response is deployed through the full range of Bank financing instruments and is complemented by analytical work and integrative approaches. Another example is the Indonesia Human Capital DPF which includes support for strengthened government policies on the nutrition of pregnant women and childhood stunting. Several Umbrella Trust Funds underpin these initiatives with analytical work that supports policy dialogue.

44. **The response will also include financing to support actors in the value chain.** Easing supply chain restrictions will require a cross-cutting approach, including producers, processors, distributors, and consumers of agricultural products. The World Bank gained extensive experience in response to the 2007-2008 global food price crisis through the temporary Global Food Crisis Response Program^{lxx} that received donor contributions and channeled funds to 49 affected countries through 100 projects. The Bank has also built a new facility to respond to the food security crises through the IDA Crisis Response Window. The World Bank also hosts the Global Agriculture and Food Security Program,^{lxxi} which is a financial intermediary fund dedicated to improving food security in LICs and could be replenished to help fund the response to the current global food crisis.

45. **IFC supplements the World Bank's commitment of US\$30 billion in new and existing projects with the Global Food Security Platform (GFSP) as the overarching umbrella for a private sector led response.** The GFSP of up to US\$6 billion,^{lxxii} including own account financing and mobilization, is established for investments in sustainable agribusinesses and related sectors in the food supply chain. IFC interventions will include providing working capital and longer-term financing to resume production in Ukraine, help diversify production in Asia and Africa, and support the supply of lower carbon crop inputs (full range of key themes is detailed in Box 2). Given the heightened risks of post-conflict and greenfield interventions in new production areas, IFC will need blended finance instruments to engage at scale. Besides exploring new client relationships, IFC will proactively manage its portfolio to prioritize impacts on liquidity and elevated working capital needs, as well as consider opportunities for new areas of collaboration. IFC's advisory platforms and upstream capabilities will be utilized to support investments under the GFSP. In conjunction with GFSP, IFC expects up to US\$1 billion in concessional financing from existing blended finance facilities (such as the GAFSP and IDA Private Sector Windows). New multilateral and bilateral sources could also support the projects enabled by the Platform.

46. **The interventions under IFC's GFSP are envisioned in conjunction with transactions that are currently being prepared as part of the response to the global food crisis.** The most immediate examples include IFC's US\$20 million working capital facility for Agrofertil, Paraguay's most important distributors of seeds, fertilizers and agro chemicals to support efficient production of soy, corn and wheat, for export markets. Another example is IFC's financing of up to US\$200 million to fund the increase in working capital needs for Olam to finance its food staples deliveries to West and Central Africa as well as South and South-East Asia.

47. **In addition, IFC is implementing the Africa Trade and Supply Chain Recovery Initiative which supports food, nutrition, and energy security through private sector activities, including critical imports of food, fertilizer, and energy in the face of rising prices, to complement the GFSP.** The IDA Private Sector Window (PSW) will be instrumental in supporting IFC's investments, by providing a 30 percent Pooled First Loss Guarantee benefitting investments in IDA PSW-eligible countries in Africa. Further, IFC and MIGA will work together to support trade finance across impacted markets. IFC's upstream approach will also address constraints to private sector development across targeted sectors.

48. **MIGA is working to scale up its response to the global food crisis utilizing its full suite of instruments to support public and private sector actors across the agricultural value chain.** Partnering with IFC on the GFSP, MIGA will support the private sector's response to the food crisis targeting the most challenging markets through the application of its political risk insurance covers, while leveraging IFC's upstream and advisory work in the sector. To help maintain and diversify trade flows in agricultural inputs, including for Ukraine, MIGA will utilize its trade finance capacity working with the IFC through the IFC-MIGA Global Trade Finance Program (GTFP), as

well as with other partners. MIGA is working to build on its experience supporting efficient and sustainable fertilizer production in South Asia by utilizing its non-honoring cover to back finance to state-owned enterprises for fertilizer production. MIGA is also in discussions with its European commercial banking partners with operations in Ukraine to provide MIGA's regulatory capital relief product to help maintain working capital loans in support of the agricultural sector.

Box 2: Private sector support to addressing food insecurity

Private sector mobilization will be key to addressing long-term food insecurity. Key areas through which the private sector can improve the global food system include:

- i. **Increasing efficiency of crop production:** The food crisis has highlighted the need to boost production of key staples as well as non-traditional substitute crops for African and Asian markets. IFC will identify countries that are good candidates for scaling up of its agribusiness investments, with a focus on building climate resilience, reducing emissions, and optimizing resource use by deploying and scaling the use of appropriate technologies.
- ii. **Improving access to fertilizers:** IFC and MIGA will help to ease supply chain issues by providing working capital support for competitive producers as well as trade finance solutions for traders of fertilizers and crop nutrition products.^{lxxiii}
- iii. **Greening fertilizer production and use:** IFC and MIGA will continue to focus on improving the climate impact of fertilizers. These efforts include (i) preserving and improving soil health through climate smart agriculture practices; (ii) farmer education programs for proper use of fertilizers; (iii) incorporating organic matter into fertilizer application programs; and (iv) ensuring new fertilizer production capacities use best-in-class technologies for efficiency and emissions and evolve by accommodating newly emerging technologies.
- iv. **Reducing crop loss and food waste and improving supply chain efficiency:** Disease and pest control to reduce crop losses and improved storage and logistics solutions to reduce food waste can significantly increase the availability of food, while lowering the climate footprint and resource utilization of food systems. IFC and MIGA focus on the appropriate use of crop care products as well as cold storage and logistics solutions to reduce farm-to-table losses. The response will also include attracting financing for technologies and business models that improve supply chain linkages and market access.
- v. **Mitigating infrastructure bottlenecks critical to efficient food supply:** IFC will facilitate the creation of alternative transportation routes for Ukrainian exports. IFC and MIGA will also address logistics constraints globally with regard to the agricultural supply chain for foodstuffs and crop inputs.

In a cross-cutting effort touching on most of these themes, the Global Food Security Platform will leverage IFC and MIGA's on-going Climate Smart Agriculture focus to increase efficient food production on existing agricultural land with fewer inputs, lower livestock's impact on climate, and reduce waste in supply chains.

Energy sector

49. **The World Bank Group has long supported sustainable energy development through a mix of analytics, policy advice, lending, risk mitigation, private sector financing and mobilization, and partnerships.** Energy sector reforms to address structural issues—e.g., improving governance, strengthening institutional capacity, and addressing inefficient subsidies—have underpinned the Bank's support for an energy transition. In the last quarter of the fiscal year 2022, the World Bank has approved more than US\$700 million related to energy security operations (see Annex 4b for some recent examples), including projects to accelerate the scale up of energy efficiency and renewable energy, regional energy trade and connectivity, as well as initiatives to promote utilities' financial and operational sustainability, which is critical to energy security, transition, and SDG 7.^{lxxiv}

50. **In response to the current crisis, the WBG has provided support to promote energy security with solutions tailored to country needs.** In addition to other ongoing energy sector engagements, WBG support for tackling the current energy crisis covers the following areas:

- **Strategies to enhance energy efficiency in public and private sectors.** These include encouraging green buildings, efficiency in hard-to-abate sectors from transport to heavy industries, as well as measures to bring down household electricity demand by setting cooling and heating standards and control strategies. For instance, in Bulgaria, Poland, and Romania, there is support aimed at reducing fossil fuel imports, promoting diversity of supply, enabling demand-side management, and reducing energy use. Digitalization is a high priority to reduce losses and reduce costs.
- **Harmonization of emergency planning actions across neighboring countries.** This is valuable especially when there are supply risks. For instance, in the South Asia region, the World Bank is supporting country-level risk assessments as well as economic and fiscal studies in a number of countries.
- **Improvements of energy sector performance.** This is achieved by deepening sector reforms and enhancing the operational efficiency and financial sustainability of utilities and service providers. For instance, in South Africa, the World Bank is engaged in a comprehensive effort to assist the government with the energy crisis while transitioning away from fossil fuels. (Annex 5 provides examples of suggested principles of reform.)
- **Maximizing electricity generation from existing renewable energy capacities while accelerating the installation of new renewable projects.** The Regional Investment Project Financing facility promotes grid-connected renewable energy generation in West Africa (Liberia, Sierra Leone, Chad, and Togo). The World Bank, IFC, and MIGA support renewable power generation, including for distributed renewable energy, which reduces the fiscal impact of fossil fuel dependency.
- **Support for the private sector, increasing private capital mobilization and blended finance.** To support the private sector, IFC and MIGA's efforts are focused on (1) support for trade and supply chain finance to keep open the flow of critical commodities and meet near-term financing needs for asset preservation, (2) support diversification of financing sources and scaling mobilization through instruments such as sustainability-linked loans and innovative credit structures using guarantees, as well as supporting technological innovation that allows decarbonization such as energy storage, e-mobility, and alternative energy sources such as green hydrogen with blended finance and (3) working with private sector clients to expand transmission for renewable uptake and off-grid renewable solutions, such as mini-grids and solar home systems.

Conclusions and questions for discussion

51. **The WBG stands at the forefront of assisting countries facing compounding shocks, triggered by the COVID-19 pandemic, the war in Ukraine, and extreme weather events.** This unprecedented set of overlapping shocks have led to increasingly volatile global markets for food and energy and put vulnerable countries at risk of deepening food insecurity, reversals in poverty reduction, as well as broader social and political instability. This will require significant diversification of food and energy supply sources, strengthened safety nets for protecting the vulnerable, and reducing inefficiencies both of production as well as of government spending. At the same time, governments must not allow this short-term crisis to take their focus off longer-term goals.

Questions for Governors

- Do the Governors agree with the diagnostics and overarching recommendations in this paper?
- What are the top three priorities the WBG should focus on to address the food and energy crises?

Annex 1: Regional impacts of food and energy inflation

There is considerable variation in the food and energy price outlook, and the impacts across regions and countries within regions also vary. This Annex highlights some of the key differences and vulnerabilities across the regions.

Food inflation impacts

Although food commodities are traded as global commodities, the impact of the crisis can be heterogeneous by region, even after controlling for factors like development level. Food items can act as substitutes for each other. However, consumers have difficulty switching between items (such as wheat and cassava) due to their dietary habits. Similarly, trade networks are also persistent. For importers, adding new food items and finding new suppliers cannot be instantaneous. Thus, there is some path dependency in determining the impact food inflation on different countries and regions. This section details how different regions have been impacted as of the writing of this paper.

Nigeria and the Sahelian countries of Burkina Faso, Chad, Mali, Mauritania, and Niger remain West Africa's most critical food insecurity hotspots with 19.5 million people and 12.6 million people, respectively, projected to experience crisis or worse conditions. In Sahelian countries, the current food price crisis is primarily an outcome of rapidly depleting food stocks, conflict, and production deficits due to poor rainfall. While crop prospects are favorable for 2022/23 due to improved rainfall, food prices are expected to remain elevated due to high fuel and fertilizer prices in the wake of Russia-Ukraine war. A below-average harvest of essential food and cash crops is expected in large parts of Southern Africa due to poor rainfall performance, multiple tropical storms, and limited access to agricultural inputs. In Malawi alone, food crop production is expected to be below the five-year average and 5.4 million people (33 percent of the population) face moderate or severe chronic food insecurity. A significant driver for reduced cereal production in Southern Africa (especially Malawi and Zambia) during 2022 season was a shift away from maize to more profitable soya, which has been accentuated by export restrictions on cereals in those countries which may depress prices received by producers. In the Horn of Africa, poor rainfalls for the fifth consecutive season have set the stage for an unprecedented drought, and damage from locusts exacerbates these impacts.

In East Asia and Pacific, inflation rates are increasing and recording multi-year highs in many countries, including Lao PDR, Thailand, Indonesia, Philippines, and Singapore. However, levels recorded are generally moderate compared to other parts of the world, partially due to stable rice prices which have mostly remained unaffected by the war in Ukraine. Rice prices are expected to remain stable as the latest AMIS report forecasts good production prospects in 2022, reflecting favorable growing conditions in major producing areas. Nevertheless, as rice is a thinly traded commodity, the risk of large price volatility remains. It is imperative that countries ensure unimpeded flows of trade, avoiding any restrictions on exports which can trigger similar policy reactions by other countries, resulting in a rapid escalation in global rice prices, as was experienced in 2008 where up to half of the rice price spikes were due to countries imposing export restrictions to protect their consumers from high prices.

In Central America, high prices of food and fuel are the main drivers of food insecurity, with many households still recovering from income reductions due to the COVID-19 pandemic and its containment measures. Food insecurity also remains a significant concern in the eastern Caribbean, with an estimated 2.8 million persons (nearly 40 percent of the population) estimated to be food insecure.^{lxxv} In South America, FAO has issued moderate domestic price warnings for wheat and products in Chile, Colombia, and Peru, while extremely high inflation in Venezuela is exacerbating households' access to food.

Food insecurity continues to persist in the MENA region due to several factors. Historic food price increases in Lebanon coupled with lack of storage due to the 2020 port explosion have resulted in 19 percent of its population facing some form of food shortage. In Yemen and elsewhere, ongoing armed conflict and displacement are

further fueling the prevalent food insecurity issues. Climate change is another major concern for the region. For example, in Morocco, cumulative rainfall was 32 percent below the normal year average at the end of May 2022, which resulted in a 17 percent decrease in vegetable production. The recent outbreak of war between Russia and Ukraine has exacerbated these baseline stresses as wheat is one of the key staple foods in the region, which relies heavily on the Black Sea region for its wheat consumption.

Energy inflation impacts

The pass-through of international fuel prices to domestic consumers has been lower in the first four months of 2022 than the previous year. The pass-through has been highest in advanced economies and lowest in oil-exporting emerging market and developing countries (EMDEs). Fuel subsidies prevalent in many oil-exporting countries in the Middle East, North Africa, and Sub-Saharan Africa explain why consumers in those regions may be feeling less pain at the pump, albeit at the expense of mounting fiscal costs and thus, in many cases, future cuts in other public services.

The war-induced gas price shocks are not the primary cause of stress for most EMDEs outside Europe. Some major gas consumers are largely self-sufficient and less impacted by the global supply and trade constraints while others are partly shielded from the shocks thanks to the long-term contracts secured before the outbreak of the war; these contracts have remained stable. However, countries that are purchasing liquefied natural gas (LNG) on the spot market are more exposed. For such countries, a surge in demand due to abnormal seasonal variations and/or extreme weather events such as cold snaps or heatwaves constitute the biggest sources of volatility in the short term.

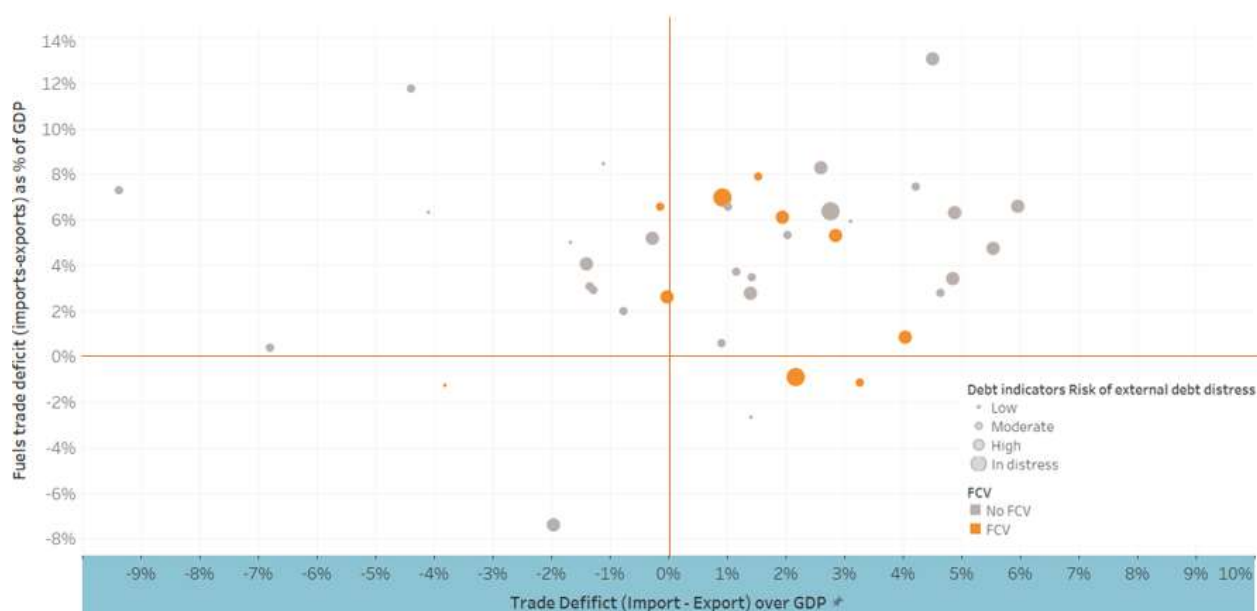
Countries may find limited opportunities for fuel-switching or securing extra supply, given the synchronized price increase of all energy commodities coupled with supply constraints. Overall, global inflation driven by steep gains in energy commodity prices and volatile markets would imperil the entire developing world, albeit in different forms and to varying degrees. According to an IMF study, EMDEs continue to rely on subsidies mainly due to a lack of fiscal and institutional capacity. Dollar appreciation combined with country-specific currency stresses in regions like South Asia have kept import costs elevated. This has pushed some high-debt countries to the edge at a time when energy is crucial to support their rebound from the crippling effects of the pandemic. This demonstrates that while LICs and MICs vary in their levels of exposure and sensitivity to fuel price changes, their adaptive capacity to crisis remains weak and support from organizations like the World Bank Group remain critical.

Annex 2: Indicators of food, fuel, and debt risk factors

This Annex presents a non-exhaustive list of country or region indicators which give a broad indication of each country or region’s risk to food, energy, and debt crises. While these indicators can give a high-level view of which countries are vulnerable to volatile food and energy prices, they are to be treated with caution. Country or region specific factors likely dominate any collective set of indicators in determining their risk factors. In addition, the most recent data available will pre-date 2022 and most of the volatility in these markets.

Figure A2.1 presents the food and fuel trade deficit as a share of GDP for each IDA recipient country. Countries in the top right quadrant of the graph have trade deficits for both food and fuels (i.e., they import more food/fuel than they export). The graph shows that most IDA countries fall into this category, with many of these countries also having compounding vulnerabilities of having fragile and conflict-affected situations, and high risks to debt distress.

Figure A2.1: Food and Fuel trade deficit as a share of GDP for IDA recipient countries



Notes: Figure plots food trade deficits (imports-exports) as a share of GDP on the x-axis, and fuel trade deficits (imports-exports) as a share of GDP on the y-axis for IDA recipient countries. Data is from the Comtrade database and is for the year 2019. The size of the bubble indicates the risk of external debt distress, with larger bubbles having higher risks. Countries in orange are classified as FCV by the World Bank.

Table A2.1 provides a fuller selection of indicators on how vulnerable countries are to food, energy, and debt distress. Indicators are marked in red if they indicate high vulnerability, yellow if they indicate moderate vulnerability, and green if they indicate low vulnerability (see notes section under table for details on the indicator sources). It should be noted that high exposure to trade does not necessarily imply that country or region’s food and energy supplies are vulnerable, particularly if much of the food that is traded are non-essentials, or if energy contracts have been locked in for several years. In addition, as this data predates the crisis, recent events and country- or region-specific circumstances may dominate these indicators in terms of importance. Thus, this information should be used with appropriate caution and in

conjunction with other country level information that is more detailed and more recent than the availability of global statistics.

Table A2.1: Heat map of food, energy, and debt vulnerability indicators

Country or region	Socio-economic vulnerability	Food trade deficit (imports-exports) as % of GDP	Share of total calories that are from imported cereals)	Share of nitrogen fertilizer imported %	Fuels trade deficit (imports-exports) as % of GDP	Emerging Markets Bond Index (EMBI) spread	Total external debt as share of GDP	External Public and Publicly guaranteed debt as share of GDP	External private non guaranteed debt as share of GDP	Risk of external debt distress
Afghanistan*	Very high	1.0%	28.5%	82%	5.3%		15.1%	9.7%	0.1%	High
Albania	Moderate	0.6%	12.4%	100%	1.6%		71.8%	34.9%	28.3%	
Algeria	Low		33.6%	-1386%			3.6%	1.0%	0.2%	
Andorra										
Angola	Very high	0.7%	13.9%	100%	-44.8%	1098.8	125.5%	87.9%	20.1%	
Antigua & Barbuda			29.9%	100%						
Argentina	Moderate	-2.1%	-45.0%	54%	0.3%	2944.7	65.1%	30.6%	11.1%	
Armenia	Low	0.5%	23.4%	100%	5.4%	544.0	103.6%	44.4%	41.4%	
Aruba		0.1%			1.8%					
Australia		-0.2%	-30.3%	70%	-1.7%					
Austria		0.0%	4.6%	100%	2.2%					
Azerbaijan	Low	0.8%	17.4%	100%	-35.0%	265.0	37.0%	32.8%	2.7%	
Bahrain		0.3%	0.0%	-19001%	-1.4%	422.4				
Bangladesh	High		9.2%	70%			18.1%	13.1%	1.5%	Low
Barbados		0.3%	30.1%	100%	4.4%	436.0				
Belarus	Low	0.3%	2.5%	-123%	5.3%		69.1%	33.0%	18.7%	
Belgium		0.3%	15.8%	-368%	2.8%					
Belize	Moderate	0.5%	6.5%	100%	6.4%		96.2%	88.8%	5.3%	
Benin	High	4.0%	22.7%	100%	2.8%		33.5%	28.1%		Moderate
Bhutan			0.0%	100%			123.9%	121.7%	1.8%	Moderate
Bolivia	High	-0.2%	7.6%	-312%	-3.1%	679.0	42.1%	32.4%	6.5%	
Bosnia & Herzegovina		0.6%	12.3%	36%	6.4%		71.5%	26.1%	39.0%	
Botswana	Very high	0.6%	45.9%	100%	4.2%		10.7%	8.6%	0.1%	
Brazil	Low	-0.3%	-7.2%	90%	-0.3%	282.9	37.9%	13.4%	19.5%	
Brunei Darussalam		0.3%	0.0%	100%	-35.3%					
Bulgaria	Low	-2.1%	-63.3%	24%	3.4%		62.0%	17.1%	26.7%	
Burkina Faso*	Very high	0.9%	5.9%	100%	6.6%		25.1%	22.4%	0.0%	Moderate
Burundi*	Very high	2.0%	5.3%	100%	6.1%		22.5%	17.7%		High
Cabo Verde	High	1.8%	48.4%		4.7%		121.5%	118.7%		High
Cambodia	High	-1.4%	-4.0%	100%	8.4%		67.9%	33.8%	18.9%	Low
Cameroon*	High		13.0%	100%			34.0%	28.1%	1.9%	High
Canada		-0.3%	-21.2%	-47%	-3.6%					
Central African Republic*	Very high		3.5%	100%			40.2%	19.2%		High
Chad*	Very high		2.2%				34.1%	27.5%		High
Chile	Low	0.3%	19.4%	80%	3.8%	168.9				
China	Low	0.0%	1.8%	-18%	2.0%	13.5	16.0%	2.8%	4.7%	
Colombia	Moderate	0.6%	18.4%	82%	-5.1%	404.8	57.4%	31.4%	18.4%	
Comoros*	Very high	1.9%	30.6%		0.8%		24.6%	21.1%		High
Costa Rica	Low	0.5%	26.9%	100%	2.5%	475.4	50.3%	20.2%	22.6%	
Côte d'Ivoire	High	1.3%	18.6%	100%	0.4%	709.7	40.9%	32.6%	1.6%	Moderate

Korea		0.2%	25.3%	-90%	5.2%									
Kuwait		0.5%	40.7%	-13441%	-43.0%	23.0								
Kyrgyz Republic	Moderate	0.5%	8.0%	100%	6.5%			111.8%	49.3%	49.0%	Moderate			
Lao P.D.R.	Moderate	-0.1%	-1.8%		4.0%			90.4%	54.8%	30.1%	High			
Latvia		-1.2%	-52.9%	100%	2.9%									
Lebanon*	Moderate	0.6%	37.2%	100%	12.5%	27435.6		265.4%	128.6%	96.6%				
Lesotho	Very high	1.4%	42.8%		7.5%			46.8%	41.4%		Moderate			
Liberia	Very high		31.6%					48.7%	31.8%	1.4%	Moderate			
Libya*			42.6%	-544%										
Lithuania		-1.3%	-56.6%	-410%	3.1%									
Luxembourg		0.0%	2.9%	100%	2.6%									
Macao SAR, China		0.1%	27.9%		0.3%									
Madagascar	Very high	1.0%	13.3%	100%	3.7%			36.8%	26.6%	1.0%	Moderate			
Malawi	Very high	0.5%	2.5%	100%	2.0%			24.2%	18.4%		Moderate			
Malaysia	Low	0.4%	29.1%	-79%	-1.2%	66.2								
Maldives		0.4%	44.7%	100%	8.3%	1448.0		89.6%	76.0%	3.2%	High			
Mali*	High	0.9%	3.5%	100%	7.9%			34.8%	30.4%		Moderate			
Malta		0.1%	29.7%	100%	5.4%									
Marshall Islands*	Moderate													High
Mauritania	Moderate	2.7%	35.7%		13.0%			72.1%	53.2%		High			
Mauritius	Moderate	0.8%	43.9%	100%	7.2%			169.6%	17.5%	93.7%				
Mexico	Moderate	0.4%	15.0%	62%	1.1%	235.0		43.0%	28.4%	9.7%				
Micronesia*														High
Moldova	Moderate	-1.8%	-22.7%	100%	5.0%			71.5%	14.8%	32.0%	Low			
Mongolia	Moderate	0.2%	11.8%	100%	-16.0%	686.4		249.7%	73.1%	150.1%				
Montenegro	Low		29.5%	100%				203.4%	101.6%	92.5%				
Morocco	Low	1.3%	25.6%	-419%	6.0%	420.0		57.3%	38.1%	8.7%				
Mozambique*	Very high	3.1%	22.5%	100%	-0.9%	1244.0		149.2%	72.7%	58.6%	In distress			
Myanmar*	High	-1.2%	-4.6%	88%	-1.3%			16.9%	15.9%	0.0%	Low			
Namibia	Very high	0.8%	30.2%	100%	7.0%	685.0								
Nauru														
Nepal	High	1.3%	7.9%	100%	5.9%			23.6%	21.1%	0.4%	Low			
Netherlands		0.3%	22.1%	-659%	1.4%									
New Zealand		0.1%	13.4%	77%	1.9%									
Nicaragua	Very high	1.1%	20.1%	100%	7.3%			95.7%	46.9%	36.7%	Moderate			
Niger*	Very high	2.5%	3.7%	100%	-1.1%			33.4%	29.3%		Moderate			
Nigeria*	High	0.3%	6.9%	-59%	-8.8%	1063.2		16.3%	6.9%	8.1%				
North Macedonia	Low	0.2%	8.7%	100%	5.4%			87.5%	42.1%	30.6%				
Norway		0.0%	12.2%	-490%	-13.1%									
Oman		0.6%	37.4%	-15961%	-30.1%	353.1								
Pakistan	High	-0.7%	-9.3%	10%	4.3%	1844.6		38.8%	26.3%	4.5%				
Palau														
Panama	Moderate	0.3%	29.2%	100%	3.4%	209.6		201.7%	55.0%	79.1%				
Papua New Guinea*	Very high		22.7%	100%		792.0		72.9%	20.7%	48.2%	High			
Paraguay	Moderate	-1.7%	-28.6%	100%	4.1%	336.1		55.8%	29.0%	13.4%				
Peru	Moderate	0.6%	20.7%	100%	1.2%	193.3		36.5%	13.9%	17.0%				
Philippines	Moderate	0.8%	16.5%	91%	3.5%	131.4		27.2%	15.5%	7.4%				

Poland	Low	-0.1%	-4.1%	-89%	2.6%	-79.7				
Portugal		0.3%	22.8%	18%	2.5%					
Puerto Rico										
Qatar		0.2%	0.0%	-190277%	-35.5%	81.2				
Republic of Congo	Very high	0.7%	21.4%	100%	-36.1%		50.1%	45.8%	0.1%	In distress
Romania	Low		-18.1%	-26%		318.0	57.1%	23.5%	25.9%	
Russia	Low	-0.5%	-22.1%	-559%	-12.6%		31.9%	14.3%	13.3%	
Rwanda	Very high	1.0%	7.3%	100%	3.5%	693.0	80.5%	50.3%	21.3%	Moderate
Samoa	Moderate	0.5%	21.6%	100%	6.3%		54.2%	48.8%		High
San Marino										
São Tomé & Príncipe	High		36.3%				61.6%	50.9%		In distress
Saudi Arabia		0.3%	43.9%	-1404%	0.5%	97.0				
Senegal	High	2.3%	29.0%	48%	5.3%	810.0	70.4%	64.7%	2.8%	Moderate
Serbia	Low		-19.4%	55%		437.0	72.1%	34.4%	32.1%	
Seychelles	Low	0.4%	37.4%	100%	-4.6%					
Sierra Leone	Very high		18.7%				52.0%	31.5%		High
Singapore		0.1%			7.7%					
Slovak Republic		-0.2%	-16.4%	-167%	3.9%					
Slovenia		0.0%	10.4%	100%	2.9%					
Solomon Islands*	High		32.4%				27.7%	8.0%	16.4%	Moderate
Somalia*	Very high						66.9%	37.9%		In distress
South Africa	High	0.2%	4.2%	59%	1.7%	468.5	50.9%	29.6%	10.9%	
South Sudan*	Very high									High
Spain		0.2%	9.9%	28%	2.2%					
Sri Lanka	Moderate	0.4%	18.8%	100%	3.6%	9077.5	69.6%	45.9%	10.9%	
St. Kitts & Nevis			0.0%	100%						
St. Lucia		0.1%	31.9%	100%	4.7%		45.4%	37.3%		
St. Vincent & the Grenadines	Moderate		28.7%				46.6%	43.0%		High
Sudan*	High		13.6%	100%			85.1%	61.5%		In distress
Suriname	Moderate		-7.2%	100%		1703.0				
Sweden		0.0%	-3.8%	100%	1.4%					
Switzerland		0.0%	12.2%	100%	1.0%					
Syria*			10.4%	100%						
Tajikistan	High	2.9%	25.4%	100%	6.6%	1931.0	83.6%	38.4%	27.4%	High
Tanzania	Very high	-0.1%	2.0%	100%	2.9%		40.9%	28.2%	7.2%	Moderate
Thailand	Moderate	-0.6%	-21.8%	91%	4.6%		40.9%	7.9%	17.7%	
The Bahamas			26.3%	100%						
The Gambia	Very high	2.2%	40.3%	100%	3.4%		42.4%	35.3%		High
Timor-Leste*	Very high		28.6%				12.2%	11.6%		Moderate
Togo	Very high	0.7%	9.6%	100%	0.6%		33.6%	23.3%		Moderate
Tonga	Moderate						39.7%	37.8%		High
Trinidad & Tobago	Moderate	0.3%	34.9%	-10560%	-8.0%	269.0				
Tunisia	Moderate	1.9%	30.9%	-97%	6.3%	3075.0	96.5%	60.4%	4.4%	
Türkiye	Low	0.4%	3.6%	40%	0.9%	728.5	60.5%	18.4%	22.7%	
Turkmenistan	High		8.7%							
Tuvalu*										High
Uganda	Very high	0.4%	1.8%	100%	3.1%		45.8%	30.1%	10.4%	Moderate

Ukraine*	Low	-6.1%	-86.5%	28%	7.3%	7978.8	82.9%	26.5%	32.9%
United Arab Emirates		0.2%	35.5%	-6061%	-37.8%	117.0			
United Kingdom		0.0%	3.6%	71%	0.5%				
United States		-0.1%	-4.9%	-8%	0.1%				
Uruguay	Low	-0.6%	-33.3%	100%	1.7%	123.5			
Uzbekistan	Low	0.6%	11.6%	-20%	-2.7%	559.5	53.7%	28.5%	19.9%
Vanuatu	Moderate		31.3%				50.8%	42.7%	Moderate
Venezuela	Very high		23.4%	-83%		29889.6			
Vietnam	Moderate	0.2%	5.5%	32%	3.4%	152.0	36.4%	15.2%	13.3%
Yemen*	Very high	3.9%	60.6%	100%	6.1%		37.8%	33.2%	
Zambia	Very high	0.0%	-1.9%	100%	5.2%	5398.0	165.9%	67.6%	90.8%
Zimbabwe*	Very high	0.7%	11.8%	77%	7.0%		70.6%	25.4%	21.2%

Notes: * Indicates Fragile and Conflict-Affected Situation (FCS) country, † indicates Small Island Developing State (SIDS). Table shows a collection of indicators on vulnerability to food, energy, and sovereign debt. Red indicates high vulnerability, yellow indicates moderate vulnerability, and green indicates low vulnerability. Socio-economic vulnerability is a summary indicator produced by the Agriculture and Food Global Practice of the World Bank to flag countries with high rates of hunger. The indicator is based on the percentage of undernourished, and for countries for which these data are not available, on the percent of severely food insecure. The thresholds (though arbitrary) are necessary to rank the severity of hunger across countries. The thresholds used for percent undernourished/severely food insecure are as follows: (Low): <5%; (Moderate): 5-10%; (High): 10-20%; (Very High): 20+%. These are both FAO data. When neither indicator is available, we rely on poverty (which is based on the \$3 estimate produced by UN GCRG). For poverty the cutoffs are as follows: (Low): <5%; (Moderate): 5-15%; (High): 15-50%; (Very High): 50+%. Food and fuels trade deficit data is from the Comtrade database and is for the year 2019. Share of calories that are from imported cereals is calculated as total calories from cereals and share of cereals that are imported, both from FAOSTAT. Share of nitrogen fertilizers that are imported is from FAOSTAT. Debt indicators are calculated for 2020 and come from World Bank International Debt Statistics Database. For these indicators the thresholds for high vulnerability are taken from Doemeland et al. (2022).^{lxxvi}

Annex 3: Cereal Stocks to Consumption Ratio (in Months)

Country or region	Stocks	Country or region	Stocks	Country or region	Stocks	Country or region	Stocks	Country or region	Stocks
Barbados	0.0	Chad	0.3	Peru	1.1	Bolivia	1.5	Tunisia	2.3
Bhutan	0.0	Benin	0.4	Costa Rica	1.1	Rwanda	1.6	Dominican Republic	2.4
Botswana	0.0	Jamaica	0.4	Türkiye	1.1	Namibia	1.6	Philippines	2.5
Brunei	0.0	Afghanistan	0.4	Mauritius	1.1	Kyrgyzstan	1.6	Kazakhstan	2.5
Burundi	0.0	Gambia, The	0.5	Trinidad and Tobago	1.1	Senegal	1.6	Uruguay	2.5
Cabo Verde	0.0	Togo	0.6	Singapore	1.1	Georgia	1.7	New Zealand	2.6
Central African Republic	0.0	Uganda	0.6	Colombia	1.2	Nicaragua	1.7	Morocco	2.6
Congo (Brazzaville)	0.0	Sudan	0.6	Iraq	1.2	Oman	1.7	Papua New Guinea	2.6
Djibouti	0.0	Guinea-Bissau	0.7	Lebanon	1.2	Angola	1.7	Thailand	2.8
Eritrea	0.0	Armenia	0.7	Guinea	1.2	Japan	1.7	Turkmenistan	2.8
Eswatini	0.0	Congo (Kinshasa)	0.8	Fiji	1.2	Egypt	1.8	Sri Lanka	2.9
Gabon	0.0	Brazil	0.8	Vietnam	1.2	El Salvador	1.8	Russia	2.9

Hong Kong SAR, China	0.0	Kenya	0.8	Burma	1.3	Burkina Faso	1.9	Korea, South	2.9
Korea, North	0.0	Azerbaijan	0.8	Indonesia	1.3	Ghana	1.9	United Arab Emirates	3.1
Lesotho	0.0	Mali	0.8	Switzerland	1.3	United States	1.9	Belarus	3.2
Mongolia	0.0	Nigeria	0.8	United Kingdom	1.3	Bahrain	1.9	Syria	3.2
Niger	0.0	Haiti	0.9	Laos	1.3	South Africa	2.0	India	3.2
Qatar	0.0	Mexico	0.9	Ecuador	1.3	Argentina	2.0	Moldova	3.7
Reunion	0.0	Yemen	0.9	European Union	1.3	Guatemala	2.0	Zambia	3.7
Sierra Leone	0.0	Panama	0.9	Libya	1.3	Uzbekistan	2.0	Serbia	4.0
Somalia	0.0	Mauritania	0.9	Malawi	1.3	Canada	2.0	Zimbabwe	4.1
South Sudan	0.0	Chile	0.9	Liberia	1.3	Jordan	2.0	Algeria	4.4
Suriname	0.0	Bangladesh	1.0	Honduras	1.4	Guyana	2.0	Norway	4.8
Madagascar	0.0	Ethiopia	1.0	North Macedonia	1.4	Bosnia and Herzegovina	2.1	Australia	5.6
Kuwait	0.1	Cameroon	1.1	Malaysia	1.4	Tajikistan	2.2	Saudi Arabia	5.9
Cuba	0.1	Cambodia	1.1	Cote d'Ivoire	1.4	Taiwan, China	2.2	Ukraine	6.3
Nepal	0.3	Tanzania	1.1	Venezuela	1.4	Pakistan	2.3	Paraguay	7.5
Albania	0.3	Mozambique	1.1	Israel	1.5	Iran	2.3	China	9.4

Notes: The stock to consumption ratio was calculated for maize, wheat, and rice by dividing the opening stock with annual consumption. The cereal stock to use ratio was then calculated by taking a sum of stock to use ratios of maize, wheat, and rice stocks weighted by their share in annual consumption. The ratio was then multiplied by 12 to give months of cereal stocks held by a country or region. The data is from USDA PDS and is the average for 2019 – 2021. This is the most recent available data with the largest coverage of countries. While there are numerous other ratios available that measure different aspects storage, the measure reported here (the stock to consumption ratio) provides an indication of the vulnerability of countries to possible food insecurity.

Annex 4a: Examples of food security-related lending operations, April 1, 2022 to June 30, 2022

Project ID	Project Name	Region	Country	Lead GP/ Global Themes	Instrument Type	Total (\$m)
P177305	Angola Smallholder Agricultural Transformation Project	AFE	Angola	AGR	IPF	300
P174867	Horn of Africa - Groundwater for Resilience Project	AFE	Eastern and Southern Africa	WTR	IPF	385
P178434	Emergency Locust Response Program Phase 1 Ethiopia Additional Finance	AFE	Eastern and Southern Africa	AGR	IPF	60
P178566	Food Systems Resilience Program for Eastern and Southern Africa	AFE	Eastern and Southern Africa	AGR	IPF	788
P170482	Communal Climate Action and Landscape Management Project	AFW	Burkina Faso	ENR	IPF	113
P178650	Burkina Faso Emergency Local Development and Resilience Project - Additional Financing	AFW	Burkina Faso	TDD	IPF	123
P177003	CAR Health Service Delivery and System Strengthening Project (SENI-Plus)	AFW	Central African Republic	HNP	IPF	58
P177453	First Additional Financing for the Lisungi Emergency COVID-19 Response Project	AFW	Congo, Republic of	SPJ	IPF	83

P175594	Côte d'Ivoire Social Safety Nets System Strengthening Program	AFW	Cote d'Ivoire	SPJ	PforR	200
P178791	Niger and Mauritania Emergency Additional Financing to PRAPS-2	AFW	Western and Central Africa	AGR	IPF	92
P177674	Fiji Social Protection COVID-19 Response and System Development Project - Additional Financing	EAP	Fiji	SPJ	IPF	49
P177329	RMI Multisectoral Early Childhood Development Project - II	EAP	Marshall Islands	HNP	IPF	27
P174637	Child Nutrition and Social Protection Project	EAP	Papua New Guinea	SPJ	IPF	80
P175493	The Philippines Multisectoral Nutrition Project	EAP	Philippines	HNP	IPF	178
P174135	RESILAND CA+ Program: Uzbekistan Resilient Landscapes Restoration Project	ECA	Central Asia	ENR	IPF	142
P177325	Tajikistan Water Supply and Sanitation Investment Program (WSIP-1)	ECA	Tajikistan	WTR	IPF	45
P178992	DJI - Social Protection Emergency Crisis Response Project	MNA	Djibouti	SPJ	IPF	30
P178926	Emergency Food Security and Resilience Support Project	MNA	Egypt	AGR	IPF	500
P178143	Sustainable Fishery Development in Red Sea and Gulf of Aden	MNA	Middle East and North Africa	ENR	IPF	45
P179010	Tunisia Emergency Food Security Response Project	MNA	Tunisia	AGR	IPF	130
P174798	Fisheries Sector COVID-19 Recovery Project	SAR	India	ENR	IPF	150
P176404	RIGHTS: Inclusion, Accessibility and Opportunities for Persons with Disabilities in Tamil Nadu	SAR	India	SPJ	IPF	162
P177240	Sustainable and Integrated Labor Services (SAILS)	SAR	Maldives	SPJ	IPF	24
P177233	Response - Recovery - Resilience for Conflict-Affected Communities in Ethiopia Project	AFE	Ethiopia	SOC	IPF	300
P172940	Benin Health System Enhancement Program (P172940)	AFW	Benin	HNP	PforR	187
P175828	Cabo Verde Human Capital Project	AFW	Cabo Verde	EDU	IPF	26
P177782	Emergency Project to Combat the Food Crisis in Cameroon	AFW	Cameroon	AGR	IPF	100
P178866	Lebanon: Wheat supply emergency response project	MNA	Lebanon	AGR	IPF	135
P176517	De-risking, inclusion and value enhancement of pastoral economies in the Horn of Africa	AFE	Eastern and Southern Africa	FCI	IPF	327
P176575	Shire Valley Transformation Program - Phase 2	AFE	Malawi	WTR	IPF	134
P178730	SECOND ADDITIONAL FINANCING FOR THE SHOCK RESPONSIVE SAFETY NET FOR HUMAN CAPITAL PROJECT	AFE	Somalia	SPJ	IPF	143
P179095	Scaling-up Shock Responsive Social Protection Project	AFE	Zambia	SPJ	IPF	155

Source: OPCS based on agreed sector/theme criteria and with regional validation in May 2022. Additional AGF operations provided by AGF GP June 13, 2022 and SPJ FS operations provided by SPJ.

Annex 4b: Examples of energy security-related lending operations, April 1, 2022 to June 30, 2022

Project ID	Project Name	Region	Country	Lead GP/ Global Themes	Instrument Type	Total (\$m)
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P171750	Additional Financing: Rooftop Solar Program for Residential sector	SAR	India	Energy & Extractives	PforR	150
P174708	Phase 2 Advancing Sustainability in Performance, Infrastructure, and Reliability of the Energy Sector in the West Bank and Gaza	MNA	West Bank and Gaza	Energy & Extractives	IPF	15
P176060	Clean Energy for Buildings in Uzbekistan	ECA	Uzbekistan	Energy & Extractives	IPF	143
P176683	CAR-Electricity Sector Strengthening and Access Project	AFW	Central African Republic	Energy & Extractives	IPF	83
P176707	Additional Financing for the Energy Access and Quality Improvement Project	AFE	Rwanda	Energy & Extractives	IPF	14
P177563	Additional Financing to Power Utility Financial Recovery Project	ECA	Tajikistan	Energy & Extractives	PforR	80
P177646	Comoros Solar Energy Access Project	AFE	Comoros	Energy & Extractives	IPF	40
P177871	Electricity Sector Modernization and Sustainability Project	ECA	Kyrgyz Republic	Energy & Extractives	IPF	50
P178347	Yemen Emergency Electricity Access Project-Phase II	MNA	Yemen, Republic of	Energy & Extractives	IPF	100
P178914	Emergency Power Restoration Project	AFE	Malawi	Energy & Extractives	IPF	60
P173150	The Gambia Second Fiscal Management, Energy and Telecom Reform Development Policy Financing	AFW	Gambia	Macroeconomics, Trade and Investment	DPF	20

Annex 5: Principles for temporary support interventions

- Emergency interventions for support should represent temporary responses, not a long-term distortion of markets or subsidization of prices.
- Interventions to ensure the sufficiency of supply (such as energy purchases and direct support to energy companies), must avoid competitive distortions.
- Interventions to mitigate impacts on household consumers should be targeted to vulnerable and low-income households and should aim to leverage existing social protection and/or energy/heating/food support programs.
- Interventions to mitigate impacts on commercial consumers must avoid competitive distortions and should be limited to industrial/commercial consumers that are in competition with imports/export markets.
- Short-term government interventions should be careful to avoid unintended deleterious impacts on efficiency, resilience and sustainability. This could be achieved by coupling short term support with measures to accelerate food and energy security in the longer-term.

Endnotes

- ⁱ Brown, Casey & Lall, Upmanu. (2006). Water and Economic Development: The Role of Variability and a Framework for Resilience. *Natural Resources Forum*. 30. 306-317. 10.1111/j.1477-8947.2006.00118.x.
- ⁱⁱ Dolan, F., Lamontagne, J., Link, R. *et al.* Evaluating the economic impact of water scarcity in a changing world. *Nat Commun* **12**, 1915 (2021).
- ⁱⁱⁱ Rockström, Steffen, Noone, et al. (2009) Planetary boundaries: exploring the safe operating space for humanity *Ecol. Soc.*, 14: 03180-14023
- ^{iv} Damania, Richard; Desbureaux, Sébastien; Hyland, Marie; Islam, Asif; Moore, Scott; Rodella, Aude-Sophie; Russ, Jason; Zaveri, Esha. 2017. *Uncharted Waters : The New Economics of Water Scarcity and Variability*. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/28096> License: CC BY 3.0 IGO
- ^v Global explicit fossil fuel subsidies in 2021, including oil, natural gas, coal and electricity; estimated by the IMF <https://www.imf.org/en/Topics/climate-change/energy-subsidies>
- ^{vi} Russia and Belarus together supply about 38 percent of the world's potassic fertilizers.
- ^{vii} In addition, Russia accounts for 18 percent, and 11 percent of total global exports of coal and crude oil respectively. See World Bank. 2022. *The Impact of the War in Ukraine on Global Trade and Investment*. Washington, DC. © World Bank. See also <https://www.iea.org/reports/russian-supplies-to-global-energy-markets/oil-market-and-russian-supply-2> on supplies of crude oil
- ^{viii} <https://earthobservatory.nasa.gov/images/150111/lake-mead-keeps-dropping> (consulted on August 22, 2022)
- ^{ix} Ortiz-Bobea, Ariel, Toby R. Ault, Carlos M. Carrillo, Robert G. Chambers, and David B. Lobell. "Anthropogenic climate change has slowed global agricultural productivity growth." *Nature Climate Change* **11**, no. 4 (2021): 306-312.
- ^x <https://www.economist.com/finance-and-economics/2022/08/22/against-expectations-global-food-prices-have-tumbled>
- ^{xi} FAO estimates that in 2021, 924 million people were severely food insecure, an increase of 74 million from 2020 and 207 million from 2019 and the largest number since 2014 (FAO SOFI report, 2022). People in the direst food insecurity, that is the number of people facing acute food insecurity, has been on the rise since 2016, when the Global Network Against Food Crises started monitoring this indicator. A total of 429 million people faced acute food insecurity in 2021 in 53 countries and territories monitored by the network (with 193 million in crisis or worse conditions).
- ^{xii} Since households in developing countries spend a larger proportion of their income on food and energy, all else equal, price increases in these key sectors have a larger impact on inflation.
- ^{xiii} This paper largely addresses the consequences of these trends on countries that have been adversely impacted. For countries experiencing windfall gains from the resource price boom, there is a significant literature on economically prudent expenditure and savings policies (see e.g., Collier, Paul, et al. "Managing resource revenues in developing economies." *IMF Staff papers* 57.1 (2010): 84-118.).
- ^{xiv} For further details on the impacts of the war see [Global Economic Prospects, June 2022](#) including the Special Focus titled "[Russia's Invasion of Ukraine: Implications for Energy Markets and Activity](#)"; [Commodity Markets Outlook](#), April 2022 including the Special Focus on the [Impact of the War in Ukraine on Commodity Markets](#); [Global Economic Prospects, June 2022](#).
- ^{xv} Detox Development: Repurposing Environmentally Harmful Subsidies (World Bank 2022)
- ^{xvi} Rockstrom, Stefen, Noone et al *op cit*

^{xvii} There is a significant overuse of nitrogen and phosphorus in many middle-and high-income countries. This calls for improved fertilizer use efficiency as a priority to manage the demand. On the other end of the spectrum, inorganic fertilizer application rates in LICs, especially among smallholder production systems in sub-Saharan Africa, was very low even before COVID and the conflict in Ukraine.

^{xviii} [Detox Development: Repurposing Environmentally Harmful Subsidies \(World Bank 2022\)](#)

^{xix} World Bank. 2016. "High and Dry: Climate Change, Water, and the Economy." World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO

^{xx} Damania, Richard; Desbureaux, Sébastien; Rodella, Aude-Sophie; Russ, Jason; Zaveri, Esha. 2019. Quality Unknown: The Invisible Water Crisis. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/32245> License: CC BY 3.0 IGO.

^{xxi} See inter alia A Balancing Act (World Bank 2022); Adamopoulos, T., & Restuccia, D. (2022). Geography and agricultural productivity: Cross-country evidence from micro plot-level data. *The Review of Economic Studies*, 89(4), 1629-1653.

^{xxii} While regulated prices may delay pass-through, impacts of excess demand are eventually felt either through price increases, or supply shortages, or both.

^{xxiii} It should also be noted that both energy and food production are significant contributors to greenhouse gases and that agriculture plays a vital role in building resilience to climate change impacts.

^{xxiv} Jeswani, Harish K., Andrew Chilvers, and Adisa Azapagic. "Environmental sustainability of biofuels: a review." *Proceedings of the Royal Society A* 476.2243 (2020): 20200351.

^{xxv} Higher fuel and energy prices impact food production costs through a wide variety of channels including transport, irrigation pumping costs, costs of harvesting and processing and the costs of several inputs. But more generally an increase in energy costs will eventually have a variety of spillover effects across the economy – impacting both supply and demand, with general equilibrium repercussions.

^{xxvi} <https://blogs.imf.org/2022/03/28/how-soaring-shipping-costs-raise-prices-around-the-world/>

^{xxvii} In the case of maritime shipping, starting in 2015, the 17 largest container lines consolidated into 9 companies through a series of mergers, acquisitions, and bankruptcies. Cross-firm alliances have also intensified in recent years, with three alliances, accounting for over 80 percent of the market. The container logistics industry is not only concentrated horizontally but also is vertically integrated, further boosting the market power of carriers providing fully integrated end-to-end services. Alliances often receive special treatment by antitrust legislations and other economic regulations. Despite antitrust exemptions granted to shipping alliances, many jurisdictions have punished illicit coordination by maritime shipping companies in the past decade.

^{xxviii} Repurposing Agricultural Policies and Support: Options to Promote Sustainable Agricultural Development. © World Bank.

^{xxix} Concentration has increased or is high at several levels of the supply chain: agro-chemicals, seeds, fertilizers, commodity trading, processing and retail. Many of the global market players are organized as conglomerates or are vertically integrated, with power to shape critical aspects of the global food landscape. Four large players control 60 percent of the global seed market and 75 percent of the global pesticides market. Similarly, concentration in fertilizer markets is high although not as pronounced. There are no reliable estimates for the market shares or market power of commodity traders, but shares have been estimated as high as 90 percent of global grain trade for the four largest traders.

^{xxx} Based on 79 countries for which data are available for 2016-2018.

^{xxxi} Repurposing Agricultural Policies and Support: Options to Promote Sustainable Agricultural Development. © World Bank

^{xxxii} Nominal Rate of Assistance (NRA) is a comprehensive measure of support provided to agricultural producers. It captures both support provided through budgetary transfers from governments (or public expenditures) and support provided through trade restrictions and price interventions. It represents the percentage by which the government increases or reduces farm revenues compared to what they would be without government intervention.

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- ^{xxxiii} In practical terms, reforms need be tailored to the needs of each individual country and local contexts which calls for a careful evaluation of the optimal options for reform, reminding us that there is no one-size-fits-all solution.
- ^{xxxiv} According to the Global Network Against Food Crises *acute* food insecurity occurs, “when a person’s inability to consume adequate food puts their lives or livelihoods in immediate danger.” If unaddressed, acute food insecurity leads to starvation. When someone is *severely* food insecure, they have run out of food and gone a day or more without eating. In other words, they have most likely experienced hunger.
- ^{xxxv} On nitrogen thresholds in a context of planetary boundaries see Rockstrom, Johan, et al. "Planetary boundaries: exploring the safe operating space for humanity." *Ecology and society* 14 (2009): 1-33. On impacts of nitrogen on human capital see Damania, R., Desbureaux, S., Rodella, A. S., Russ, J., & Zaveri, E. (2019). *Quality unknown: the invisible water crisis*. World Bank Publications. On the differential fertilizer use and the varying impacts on agricultural yields see Detox Development: Impacts of Environmental Harmful Subsidies (World Bank 2022, forthcoming)
- ^{xxxvi} <https://blogs.worldbank.org/psd/how-export-restrictions-are-impacting-global-food-prices>; World Bank Monitoring of Trade Policy Changes: update #4, June 2022, mimeo.
- ^{xxxvii} As noted with export bans, food prices are suppressed, which disincentivizes local agricultural producers.
- ^{xxxviii} Due to a structural imbalance in the energy system, by late 2021, gas, oil and electricity prices were on the increase before the war, due in part to the cut back of oil and gas investments, with insufficient investments in renewables to fill the gap. Additionally, prices of critical minerals also saw new hikes in 2021-22 due to freight and supply chain issues. These also lead to an increase in solar and wind capex .
- ^{xxxix} An implication of relatively inelastic short run energy demand is that efficiency gains from higher prices will be small relative to the distributional impacts of price driven implicit transfers between consumers and producers.
- ^{xl} Pescatori, M. A., Bluedorn, M. J. C., Koch, M. C., Albrizio, S., & Stuermer, M. (2022). Market Size and Supply Disruptions: Sharing the Pain of a Potential Russian Gas Shut-off to the European Union (No. 2022/143). International Monetary Fund.
- ^{xli} The cost-of-inaction estimates provide values of sustaining the status quo (i.e., continuing to cook with the stove technologies and fuels already in use). These estimates cover health, gender, and climate. The health calculation estimates the cost of morbidity as the cost of one year of life lost to disability, including work absenteeism and medical treatment, resulting from household air pollution (HAP) and the cost of mortality as the cost of a life lost due to HAP. The gender calculation estimates the cost of time spent annually on fuel collection, cooking, and stove cleaning The climate calculation relies on the application of a fixed carbon cost to a global estimate of the carbon footprint of the current global cooking-fuel mix. See ESMAP (Energy Sector Management Assistance Program). 2020. *The State of Access to Modern Energy Cooking Services*. Washington, DC: World Bank.
- ^{xlii} <https://www.iea.org/news/global-natural-gas-demand-set-for-slow-growth-in-coming-years-as-turmoil-strains-an-already-tight-market>
- ^{xliii} <https://www.imf.org/en/Topics/climate-change/energy-subsidies>
- ^{xliv} Gentilini, Ugo. 2022. Cash Transfers in Pandemic Times : Evidence, Practices, and Implications from the Largest Scale Up in History. Washington, DC : World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/37700>
- ^{xlv} A recent IMF publication discusses the temporary use of price subsidies on food staples with clear sunset clauses when other options are exhausted or infeasible. <https://www.imf.org/en/Publications/IMF-Notes/Issues/2022/06/07/Fiscal-Policy-for-Mitigating-the-Social-Impact-of-High-Energy-and-Food-Prices-519013>
- ^{xlvi} World Bank; World Trade Organization. 2020. Women and Trade : The Role of Trade in Promoting Gender Equality. Washington, DC: World Bank.
- ^{xlvii} Artuc, Erhan; Depetris Chauvin, Nicolas; Porto, Guido; Rijkers, Bob. 2021. Protectionism and Gender Inequality in Developing Countries. Policy Research Working Paper; No. 9750. World Bank, Washington, DC.

^{xlviii} Compensatory cash transfers can take different forms, including targeted transfers or uniform and universal payments. The choice of suitable instrument must be determined in view of political and socio-economic needs.

^{xlix} Deciding the optimal timing for subsidy reforms may involve tradeoffs between economic and political requirements. Removing subsidies at high prices will reduce the highest amount of spending, but could imply heightened political pressures as it means shifting costs to consumers. Country context is key, for instance in terms of existing social safety net systems, or levels of domestic production.

^l Arlinghaus, J., and K. van Dender (2017), “The environmental tax and subsidy reform in Mexico,” OECD Taxation Working Papers, No. 31, OECD Publishing, Paris.
<http://dx.doi.org/10.1787/a9204f40-en>.

^{li} IMF, 2013b. Energy Subsidy Reform in Sub-Saharan Africa: Experiences and Lessons. The World Bank, Washington, DC.

^{lii} The stock to use ratio here is used as a measure of vulnerability to potential food insecurity. This ratio may be high for some major exporting countries, where it may not reflect excessive stockpiling. It would nevertheless imply that the country is not vulnerable or at risk of food insecurity, without suggesting stocks are beyond appropriate buffer stock levels.

^{liii} Close to 20 million tons of grain currently clogs up storage space and depresses local prices in Ukraine. Opening export routes at scale may give producers the confidence to plant winter crops in the coming months – if circumstances permit given the risks of active conflict.

^{liv} Waalewijn, Pieter, Remi Trier, Jonathan Denison, Yasmin Siddiqi, Jeroen Vos, Eeman Amjad, and Mik Schulte. 2020. “Governance in Irrigation and Drainage: Concepts, Cases, and Action-Oriented Approaches—A Practitioner’s Resource.” World Bank, Washington, DC.

^{lv} Zaveri, E., et al (2020). Rainfall anomalies are a significant driver of cropland expansion. *Proceedings of the National Academy of Sciences*, 117(19), 10225-10233.

^{lvi} Xxxx In India, the Bureau of Energy Efficiency (BEE) has notified regulations mandating that all new air conditioners be sold with a default setting of 24 degrees Celcius. Estimates suggest that if there is widespread compliance with this standard there could be electricity savings per consumer of between 18 to 24 percent.

^{lvii} See Bureau of Energy Efficiency (2022) “Impact of Energy Efficiency Measures 2020-2021”

^{lviii} As opposed to more traditional approaches that seek to enhance energy efficiency through economic incentives (such as subsidies for efficient purchases or time-of-use energy pricing), information provision (energy efficiency labels) or regulatory requirements (setting minimum energy performance standards), behavioral approaches use levers such as home energy reports, high bill alerts or home energy audits.

^{lix} Vertically integrated utilities and distribution utilities saw an 8 percent drop in the recovery of operating and debt-service costs—before accounting for operating subsidies. Source. World Bank (2021), Utility Performance and Behavior in Africa Today

^{lx} In Sub-Saharan Africa, only 1/3rd of utilities recover their operating and debt service costs, while 35 utilities do not recover costs even with the subsidies that are provided, suggesting scope for considerably improved performance.

^{lxi} The WBG’s Climate Action Plan (CCAP 2021-2025) fully acknowledges countries’ energy priorities, in particular providing affordable, reliable, and sustainable energy for all. Hence, investment priorities in the energy sector depend on the country context. In some countries, the focus may be on replacing fossil fuels, removing market barriers for green technologies, and ensuring a just transition. In other countries still working to provide energy access to all, investments in low-carbon baseload capacity is key – including renewable energy. This implies, that in certain country circumstances some fossil fuels – specifically natural gas – may be useful in accelerating the transition away from coal, while rapidly improving affordable energy access. It is therefore important for countries to have long-term decarbonization strategies which employ cost effective options in providing energy access and with investments designed in a way to avoid having

stranded assets. Other related priorities include: expanding the bandwidth of electricity supply for productive use and by policies that focus on impact for vulnerable households and businesses.

^{lxii} Other examples are UN Global Crisis Response Group, OECD and academia

^{lxiii} As an example, to support SIDs that face a unique set of financing challenges for their clean energy projects, the World Bank's ASPIRE (Accelerating Sustainable Private Investments in Renewable Energy) project has so far helped mobilize \$25 million in investment to install 17.5 megawatts of solar power in Maldives.

^{lxiv} As an example analytical work and policy lending in Jordan has supported gradual reform for pricing and increasing efficiency in the [energy](#) and [water](#) sectors. Subsidies to pre identified vulnerable groups have been better targeted through the anti poverty National Aid Fund.

^{lxv} Results based climate finance facilities can support countries with the implementation of such subsidy reforms, addressing both short-term fiscal pressures and longer-term decarbonization objective.

^{lxvi} Other examples include Food Systems 2030 which seeks to mainstream food systems approaches with a particular view of promoting sustainability, and social and health outcomes. In infrastructure the Energy Sector Management Assistance Program (ESMAP) supports a wide range of energy transition projects towards universal access and decarbonization of the energy sectors, while Programs like Extractives Governance Programmatic Support (EGPS) and Global Facility to Decarbonize Transport (GFDT) are committed to supporting the shift to clean energy from various points of the production to consumption chain.

^{lxvii} Note that the operations in the table are illustrative cases and do not represent the full scale and portfolio of the WBG's interventions

^{lxviii} FLID is conceptualized as a process in which farmers, individual and/or group, drive the establishment, improvement, and expansion of irrigated agriculture, often in interaction with other actors.

^{lxix} The report can be found at [Addressing food loss and waste: A global problem with local solutions](#). Country examples include [Nigeria food-smart diagnostic](#); [Rwanda food-smart diagnostic](#); [Guatemala food-smart diagnostic](#); [Vietnam food-smart diagnostic](#). Two other South Asian examples are being finalized at the time of writing.

^{lxx} <https://www.worldbank.org/en/results/2013/04/11/global-food-crisis-response-program-results-profile>

^{lxxi} <https://www.gafspfund.org/>

^{lxxii} The proposal has been discussed with the board in a technical briefing and is expected to be submitted for approval in FY23.

^{lxxiv} SDG 7 calls for access to affordable, reliable, sustainable, and modern energy for all.

^{lxxv} <https://www.wfp.org/publications/caribbean-covid-19-food-security-and-livelihoods-impact-survey>

^{lxxvi} Doemeland, Doerte; Estevão, Marcello; Jooste, Charl; Sampi, James; Tsiropoulos, Vasileios. 2022. Debt Vulnerability Analysis : A Multi-Angle Approach. Policy Research Working Paper; No. 9929. World Bank, Washington, DC. © World Bank.

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