United Nations | Department of Economic and Social Affairs

Monitoring the vulnerability of least developed countries to impacts of the war in Ukraine[1]

Vulnerabilities of least developed countries to the war

The devastating war in Ukraine threatens to further reduce the development progress of many least developed countries. As the world's most vulnerable countries, many least developed countries (LDCs) are negatively affected by the impacts of the war on food and energy markets. LDCs have to face the economic consequences of the conflict, while dealing with the ongoing COVID-19 pandemic, the worsening impacts of climate change and persistent inequalities.

Many LDCs are at risk of being severely impacted because of their simultaneous exposure to multiple transmission channels between the war and development as well as their high structural vulnerabilities to external shocks in general. Those that are food and oil import dependent are directly exposed to reduced supplies and higher international prices for affected staples such as wheat and maize, other affected food products such as sunflower oil, and fossil fuels. High levels of external debt, limited access to international financial markets, and low fiscal space, often depleted due to financing responses to and recovery from the COVID-19 pandemic, reduce the ability of many LDCs to react to the crisis. Most people in LDCs and their Governments lack the resources to absorb higher prices, resort to alternative sources of supply or reduce consumption. Poverty remains widespread, with 33.6 per cent of the LDC population living below the international poverty line before the pandemic in 2019, and social protection is very limited in most LDCs, further exacerbating the impact of high prices on food security. Previous crises have shown that food price increases can disproportionately harm the nutrition of women and children, with the potential of long-term consequences for health and cognitive development.

Impacts on food could last beyond the current period as well: the reduced availability and affordability of fertilizers could affect a broad range of agricultural products, by reducing domestic production in LDCs and further raising food prices in international markets. Moreover, as high food prices incentivize greater production, there are concerns that ecosystems could be threatened, particularly in countries already facing high levels of deforestation.

It is important to acknowledge that impacts of the war will vary across LDCs. Most LDCs are import dependent for *both* food and energy. In particular, there are only four LDCs that are net exporters of cereals (Cambodia, Lao PDR, Myanmar, Zambia). While wheat is the main staple only in a few LDCs, imports are often from Russia and Ukraine.

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[1] Note prepared by Matthias Bruckner under the guidance of Shantanu Mukherjee, Director, Economic Analysis and Policy Division, Department of Economic and Social Affairs of the United Nations. Excellent support by Annette Becker is highly appreciated.

On the other hand, there are eight LDCs that are net exporter of fossil fuels, potentially benefitting from higher prices on international markets.[2] For example, if Angola exports the same quantity oil as in 2021 and prices stay on average at $100 per barrel, its current account surplus would improve by more than $11 billion. This provides opportunities to address vulnerabilities caused by higher food prices, continue investing in expanding productive capacities and address the severe level of external debt.

Besides export structure, pre-crisis fiscal and external balances are key factors of heterogeneity among LDCs. Generally, LDCs entering the crisis with lower levels of external debt and sound macroeconomic fundamentals remain in far better position to address some of the impacts domestically.

Monitoring methodology

Due to the evolving nature of the crisis, it is essential to closely monitor the situation by considering both indicators for relevant structural vulnerabilities of LDCs and more rapidly moving indicators on relevant price and supply changes. It is also important to consider impacts holistically, as interlinkages across the indicators determine overall vulnerability and coping capacity.

The monitoring – presented as a dynamic heatmap – is a first attempt at achieving this through a set of currently 46 indicators (see Annex I). It covers exposure and extent of disruptions in key markets (wheat, rice, food, fertilizer, fossil fuels and select metals for which Russia is a major exporter). Indicators on vulnerabilities caused by import dependency are based on the latest available data, generally from year 2021 or 2020. The monitoring for wheat, rice and food also includes monthly country-level data on wheat and rice stocks as well as food prices. In addition, the monitoring includes information on the latest available international price indices for wheat, rice, food, fertilizer and fossil fuels to provide information on the extent of global disruptions.[3]

The monitoring also covers vulnerabilities and resilience related to macroeconomics and external financing, social systems, ecosystems and climate change. On financing, it currently focuses on external debt as well as overall fiscal space, whereas the macroeconomic situation is monitored with indicators on current account imbalances and key prices (consumer goods, foreign exchange and central bank reserves or overnight interbank loans). High poverty rates and low social protection indicate the share of population most affected by market disruptions. Given widespread concerns that reactions to the crisis could further increase deforestation and habitat destructions, e.g., due to increased incentives to expand production of palm oil, the monitoring also includes indicators on latest deforestation rates and biodiversity. Lastly, lack of residence to climate change is currently measured by the global adaptation index.

Even though the monitoring provides information on all developing countries to allow for comparisons, the focus on LDCs is a key factor in determining suitable indicators. For example, as Russia hosts very few migrants from LDCs, the monitoring does not include remittances, even though the remittances channel is a key source of vulnerability for several Central Asian economies that have a high ratio of remittances from Russia to gross national income. Similarly, the high share of Russian gas imported through pipelines

[2] Of these, two (Democratic Republic of the Congo and Niger) are only marginally net exporters and two (Mozambique and Myanmar) are net oil importers.

[3] Unfortunately, country specific prices indices are currently not readily available for most countries of concern.

in total energy supply is highly relevant for several Central and Western European countries but not included in this monitoring given the low share of gas imports in energy supply in LDCs.

The monitoring is presented in form of a heatmap. Price indices are colored in relation to their historic peaks. For example, as food prices as measured by FAO reached their historic high, the food price index is coded in dark red. Despite recent increases the global oil prices currently remain below the peak in early March and significantly below historic high from June 2008 and are, hence, coded in medium red. Other indicators are predominantly coded based on their distribution across countries, while taking into account potential outliers. Green colors indicate that a country might see an improvement in its development progress, e.g., by benefiting as net exporter from higher global prices.

The monitoring complements, and contributes to, the work undertaken by the Global Crisis Response Group of the Secretary-General of the United Nations as well as the analysis and monitoring provided by the relevant entities of the United Nations system and other international organizations. It constitutes work in progress, so indicators of the monitoring will be adapted further in the coming months based on continuous examination of the relevance and viability of relevant additional or alternative indicators.

Annex: List of indicators and data sources

Indicator	Short definition	Scope	Data period	Data source
Food price index	Price index based on international export prices of five food commodity groups	Global	Latest month	FAO, World Food Situation
Food price volatility	Number of commodities in international food markets characterized by excessive price volatility, covering nine commodities	Global	Latest month	IFPRI, Food security portal
Food export restrictions	Share of food products in global food markets (measured in calories) affected by export bans and licensing	Global	Latest week	IFPRI, Food security portal
Food consumption insufficiency	Percentage of population with a poor or borderline food consumption score (FCS)	Country	Latest available day	WFP
Food inflation	Year-on-year change in food prices	Country	Latest available month (varies by country)	Trading economics, based on national data
Cereal import dependency	Net cereal imports divided by cereal supply (production plus net imports)	Country	2018-2020 average	FAO, FAOSTAT food balances
Dietary sourcing flexibility index	Entropy index of food sources	Country	2016-2018	FAO, State of Food and Agriculture 2021
Undernourishment prevalence	Percentage of population that is undernourished	Country	2019-2021 average	FAOSTAT, Suite of Food Security Indicators
Wheat price index	Price index based on ten quotations, January 2000=100	Global	Latest 14-day average	International Grain Council, market information
Wheat share in cereal supply	Share of food supply in kcal from wheat in food supply in kcal from all cereals	Country	2018-2020 average	FAO, FAOSTAT food balances
Wheat import dependency	Share of net imports in wheat in total domestic wheat supply (production plus net imports)	Country	2018-2020 average	FAO, FAOSTAT food balances

Wheat imports from Russia and Ukraine	Share of wheat imports from Russia and Ukraine in total wheat imports	Country	2022	UNCTADStat
Wheat stocks-to-use ratio	End-of-month stocks in wheat divided by domestic wheat consumption	Country	Latest month	USDA, PSD Online (usda.gov)
Rice price index	Price index based on ten quotations, January 2000=100	Global	Latest 14-day average	International Grain Council, market information
Rice share in cereal supply	Share of food supply in kcal from rice in food supply in kcal from all cereals	Country	2018-2020 average	FAO, FAOSTAT food balances
Rice import dependency	Share of net imports in rice in total domestic rice supply (production plus net imports)	Country	2018-2020 average	FAO, FAOSTAT food balances
Rice stocks-to-use ratio	End-of-month stocks in rice divided by domestic wheat consumption	Country	Latest month	USDA, PSD Online (usda.gov)
Fertilizer prize index	Based on 5 market prices for phosphate, potash and urea	Global	Latest month	World Bank Commodity Price Data
Fertilizer imports from Belarus, Russia and Ukraine	Share of fertilizer imports from Belarus, Russia and Ukraine in total fertilizer imports	Country	2022	UNCTADstat, Trade matrix
Fertilizer dependency of crop production	Ratio of the value of net fertilizer imports to value of crop production	Country	2021	UNCTADstat, Trade matrix and FAOSTAT, Value of production
Fertilizer import dependency	Share of net fertilizer imports in fertilizer consumption	Country	2021	FAOSTAT, Fertilizer by nutrient
Fossil fuel import dependency	Net imports of oil, oil products, gas, coal and coal products as share of total domestic energy supply	Country	2020	UNSD Energy Balances
Oil price	Brent crude oil futures prices	Global	Latest available price	Trading economics
Oil import share	Net oil imports as share in total merchandise imports	Country	2022	UNCTADstat, Trade matrix
Gas price	Natural gas prices (US futures)	Global	Latest available price	Trading economics
Gas import share	Net gas imports as share in total merchandise imports	Country	2022	UNCTADstat, Trade matrix
Coal price	Newcastle coal futures prices	Global	Latest available price	Trading economics

Coal import share	Net coal imports as share in total merchandise imports	Country	2022	UNCTADstat, Trade matrix
Aluminum price	Aluminum futures	Global	Latest available price	Trading economics
Net exports of aluminum	Net exports of aluminum as percentage of total exports	Country	2022	UNCTADstat, Trade matrix
Copper price	Copper futures	Global	Latest available price	Trading economics
Net exports of copper	Net exports of copper as percentage of total exports	Country	2022	UNCTADstat, Trade matrix
Nickel price	Nickel futures	Global	Latest available price	Trading economics
Net exports of nickel	Net exports of nickel as percentage of total exports	Country	2022	UNCTADstat, Trade matrix
Interest rate	Interest rate set by Central Bank on reserves, interbank loans or other flow	Country	Latest available data	Trading economics, based on national data
Exchange rate change	Year-on-year change in exchange rate (LCU/USD)	Country	Latest available date	Trading economics, based on national data
Current account	Current account deficit as percentage of GDP	Country	2022	World Bank WDI
Inflation rate	Year-on-year change in consumer price index	Country	Latest available month (varies by country)	Trading economics, based on national data
External debt	External debt as percentage of gross national income	Country	2021	World Bank IDS
Expected debt servicing	Expected debt servicing as percentage of exports of goods and services and primary income balance	Country	2023 for expected debt servicing, 2021 or earlier for exports	World Bank IDS
Fiscal balance	General government net lending/borrowing as percentage of GDP	Country	2023 (estimates)	IMF Fiscal Monitor (April 2023)
Biodiversity habitat index	Estimate for the effect of habitat loss, degradation and fragmentation on the expected retention of terrestrial biodiversity	Country	2022	Environmental Performance Index, based on CSIRO

Deforestation rate	Annual forest area change rate	Country	2020	UNSD SDG database, based on FAO
Global adaptation index	Multidimensional index measuring the vulnerability and resilience to climate change	Country	2021	University of Notre Dam
Social protection coverage	Proportion of population covered by at least one social protection benefit	Country	2021	UNSD SDG database, based on ILO
Multidimensional poverty index	Index capturing deprivations in health, education, and living standards that a person faces simultaneously	Country	Latest available year	UNDP and Oxford Poverty and Human Development Initiative