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The global food and economic crisis' impact on food system resilience: Sri Lanka
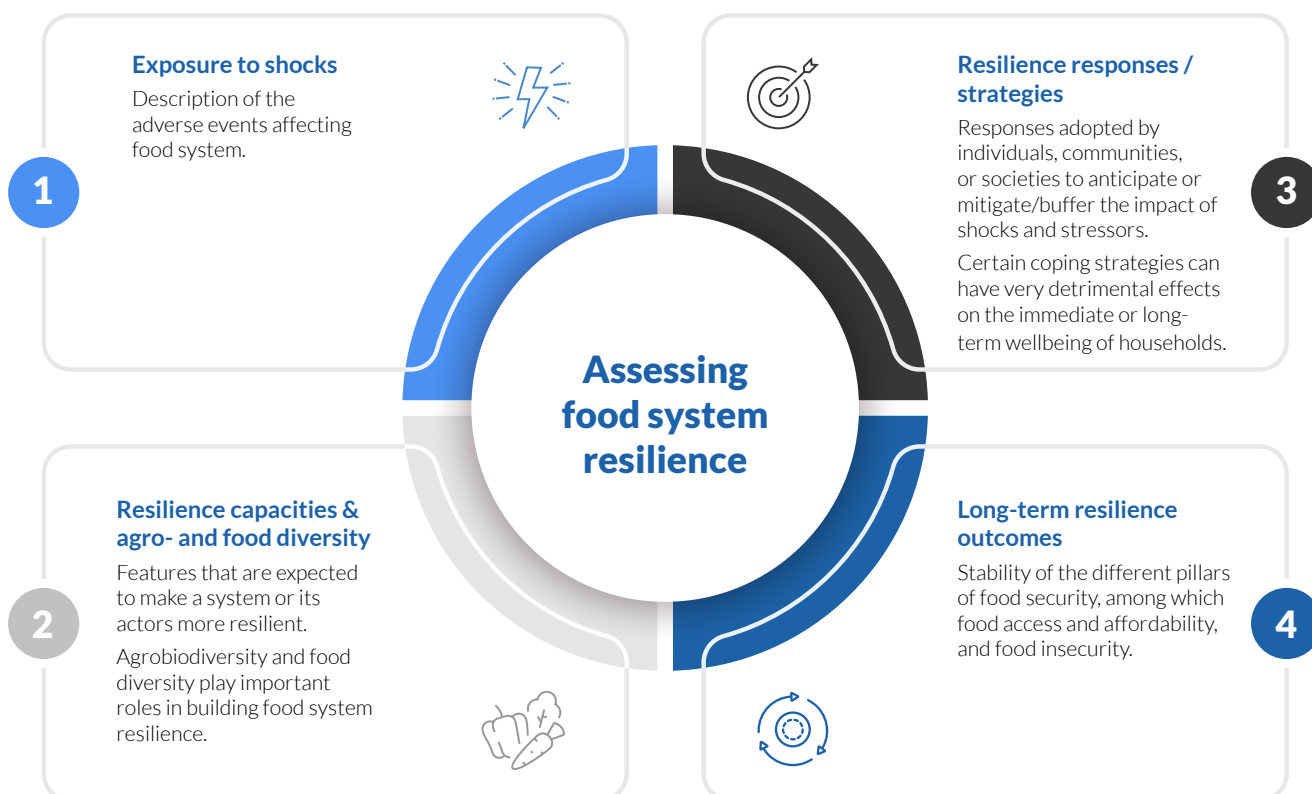

November, 2023

Background

The war in Ukraine has major implications for food security and diets across the world, given both countries' key roles in global food markets and Russia's prominence in global energy trade. The resulting global food and economic crisis risks heightening inequalities and vulnerabilities in a world still confronting the effects of the COVID-19 pandemic. In this context, food system resilience is crucial to maintain or adapt its functions in the face of shocks, and ultimately for system sustainability. Through a series of key indicators, this brief describes how the food system has been affected by this ongoing crisis and provides an overview of its resilience and potential opportunities for building resilience further.

Assessing food system resilience

Food system resilience is defined as "the ability of different individual and institutional food system actors to maintain, protect, or quickly recover the key functions of that system despite the impacts of disturbances"[1]. Drawing from the conceptual framework established by the Food Systems Countdown Initiative[2], food system resilience was measured through 4 main indicator domains. Findings presented in this section were derived from national level data and would therefore not enable the detection of likely food system subnational variabilities.

Exposure to shocks
Description of the adverse events affecting food system.

1

Resilience responses / strategies
Responses adopted by individuals, communities, or societies to anticipate or mitigate/buffer the impact of shocks and stressors.

Certain coping strategies can have very detrimental effects on the immediate or long-term wellbeing of households.

3

Assessing food system resilience

Resilience capacities & agro- and food diversity
Features that are expected to make a system or its actors more resilient.

Agrobiodiversity and food diversity play important roles in building food system resilience.

2

Long-term resilience outcomes
Stability of the different pillars of food security, among which food access and affordability, and food insecurity.

4

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[1] Fanzo J, Haddad L, Schneider KR, Béné C, Covic NM, Guarin A, et al. Viewpoint: Rigorous monitoring is necessary to guide food system transformation in the countdown to the 2030 global goals. Food Policy. 2021;104

[2] https://www.foodcountdown.org/about

HOW HAS SRI LANKA BEEN EXPOSED TO SHOCKS SINCE 2020?

In the last 3 years, Sri Lanka has faced shocks that have affected the food system and its resilience in various ways. Like the rest of the world, Sri Lanka was hit by the COVID-19 pandemic in March 2020. To minimize COVID-19 spread, the government first adopted a "zero-COVID" approach and rapidly implemented strict containment strategies such as school closure, restrictions of movements (lockdown, travel restrictions) and public gatherings among others, which can impact various domains of the food system (e.g., supply chain, consumer environment, consumer behaviors). After this initial phase, containment measures were adapted based on transmission levels. Following a similar timeline, the country also adopted supportive economic policies, such as income support for the population (e.g., expansion of existing social assistance schemes, temporary cash assistance to self-employed workers[3]) (Figure 1).

The Sri Lankan currency (Sri Lankan Rupee, LKR) exchange rate – relative to the US dollar (USD) – steadily but moderately depreciated during the pre-crisis period (from 113 in 2010 to 179 LKR per USD in 2019). This trend did not change the first two years of the current crisis (2020, 2021). In 2022 however, depreciation of LKR accentuated by 58% to reach 315 LKR per USD, the highest level observed within the reporting period (Figure 2). The weakening of LKR in 2022 was attributed to the depletion of reserves and unsustainable levels of debt. These issues originated from significant fiscal imbalances, which were further exacerbated by substantial tax cuts and the onset of the COVID-19 pandemic[4].

Besides shocks related to the COVID-19 pandemic and the war in Ukraine, Sri Lanka is also prone to numerous natural hazards, such as floods, landslides, cyclones, and droughts. The country experienced major floods in 2011 and 2014 as well as severe droughts that affected the country in 2012, 2014, 2016 and 2017 (Figure 3). Due to a combination of political, geographic, and social factors, Sri Lanka is recognized as vulnerable to climate change impacts and is ranked 104th out of 185 countries in the 2021 ND-GAIN Index[5]. As mentioned in a 2021 report, the frequency and/or intensity of extreme events are expected to rise with climate change, potentially exacerbating vulnerabilities and impacting on people food security, especially in rural households[6].

[3] UN social Protection Working Group (2020) T*ackling the COVID-19 economic crisis in Sri Lanka: Providing universal, lifecycle social protection transfers to protect lives and bolster economic recovery.* Working Paper

[3] International Monetary Fund. IMF Country Report No. 23/116. Sri Lanka. March 2023.

[3] The ND-GAIN Country Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. https://gain.nd.edu/

[3] World Food Programme. (2021). *Decentralized evaluation: Addressing Climate Change Impacts on Marginalized Agricultural Communities Living in the Mahaweli River Basin of Sri Lanka.* 2013-2020, Final Report.

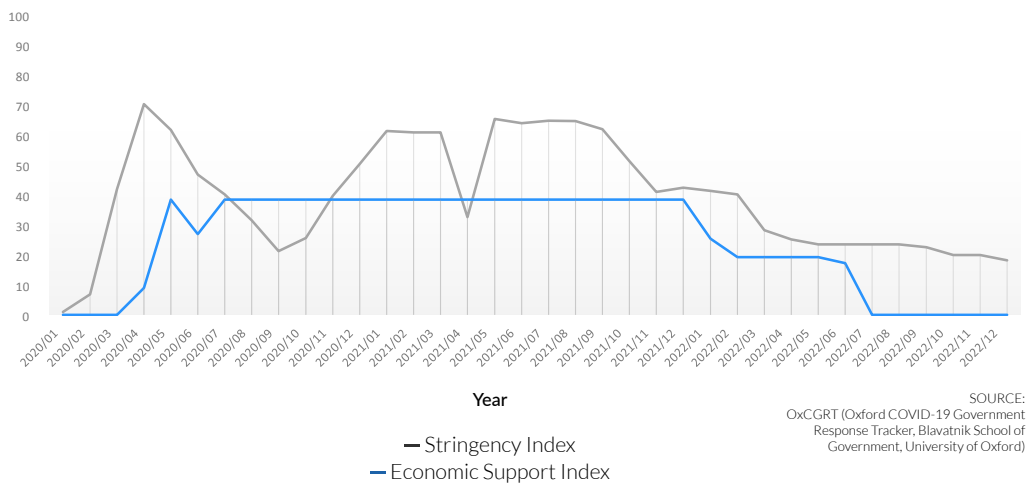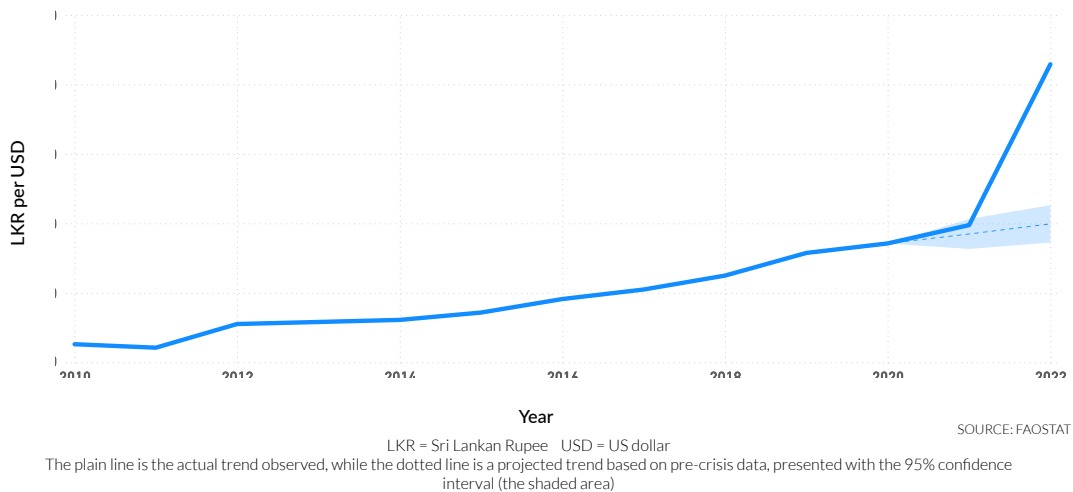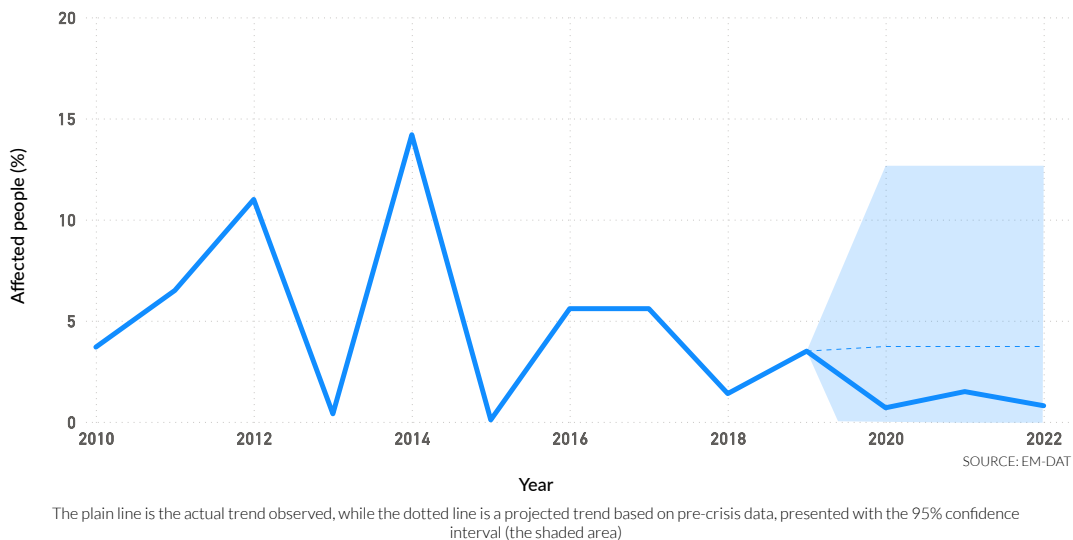**Figure 1: COVID-19 - government response 2020-2022**

— Stringency Index
— Economic Support Index

Figure 2: Exchange rate 2010-2022

SOURCE: FAOSTAT

LKR = Sri Lankan Rupee   USD = US dollar
The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 3: Ratio of affected people (from natural disasters) to the total population 2010-2022

SOURCE: EM-DAT

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

HOW HAVE RESILIENCE CAPACITIES AND AGRO- AND FOOD-DIVERSITY BEEN AFFECTED?

According to country-level statistics, food system resilience capacities seem to have stood up relatively well to the successive shocks (Table 1). However, it's important to note that the available data only extends until 2021 for most indicators, and therefore it fails to capture the significant disruptions in the food system experienced by the country between 2021 and 2022, attributed to factors such as fertilizer restrictions, escalating input prices, and a shortage of fuel.

With respect to domestic food production, after a marked decline in 2017 – which could be attributed to the 2016 severe drought and heavy rains in May 2017[7] - crop production returned to previous levels in 2018 and 2019. The current crisis seems not to have affected crop production, as an even steeper increase was observed in 2020 and 2021 (from 101 in 2019 to 114 in 2021; 2014-2016=base 100). Livestock production has been also following a steady upward trend since 2012, which remained unchanged until the latest available data point in 2021. (Figure 4). However, the available data until 2021 does not reflect the significant decline[8,9], in crop production resulting from the Sri Lankan government's imposition of an import ban on chemical fertilizers in April 2021. This decline is also not evident in the fertilizer consumption indicator, which continues to show an upward trend based on data available up to 2020. Additionally, the lack of disaggregated data by month hides any seasonal variability in crop production. For instance, the Department of Census and Statistics of Sri Lanka reported a 40% reduction in paddy production during Maha season in 2021/2022.

Concerning food imports, the overall volumes of both NCD[10] -protect and NCD-risk foods have maintained a moderate level, with 44.2 kilograms per capita for NCD-risk foods and 68.2 kilograms per capita for NCD-protect foods in 2021 (Figure 5). In the case of NCD-protect foods, there was a noticeable declining trend from 2014 to 2019, which persisted into the year 2020. However, there was a slight departure from this pattern in 2021, where a minor increase was recorded. It is worth highlighting that one of the most significant changes in food imports was observed in the category of whole grains, which experienced a substantial reduction, dropping from 47.5 kilograms to 14.3 kilograms per capita from 2017 to 2021 (Figure 6). This shift could be attributed to the significantly higher imports in 2016/2017, driven by a drastic reduction in crop production due to a drought. Sri Lanka has traditionally been reliant on food imports like legumes, wheat, fruits, and vegetables, all of which are considered NCD-protecting foods. Conversely, the data related to NCD-risk foods displayed a gradual increase in NCD-risk food imports per capita from 2013 to 2016. However, this upward trend was disrupted by a significant decline in 2017. Subsequently, the quantities of NCD-risk food imports per capita started to increase again, reaching their peak in 2020 at 55.5 Kg per capita. However, there was a minor decline noted in 2021.One potential factor contributing to this fluctuation is the country's efforts to stabilize its exchange rate, which involved imposing restrictions on the imports of various food items, including chocolates and sweets, starting from 2020. This policy change aligns with the observed decreasing trend in imports of NCD-risk foods in the data.

Mobile cellular subscriptions – a proxy of country's infrastructure level and therefore an important indicator for resilience – continued to rise during the crisis period, however at a slightly lower pace than pre-crisis. While the social capital index – which reflects the strength of personal and social relationships, institutional trust, social norms, and civic participation in a country – has been on an upward trend overall from 2010 to 2017, it slightly declined (by 4 points) the next two years. During the crisis period, a marginal fall has been observed in 2021 and 2022, followed by a minor rebound in 2023 (Figure 7). Surprisingly, the volatile political situation and mass protests that occurred in Sri Lanka in 2022 have not resulted in a decline in the social capital index. However, it is important to note that the yearly index does not allow us to observe potential monthly variations.

[7] Gunaratne, M.S., Radin Firdaus, R.B. & Rathnasooriya, S.I. Climate change and food security in Sri Lanka: towards food sovereignty. Humanit Soc Sci Commun 8, 229 (2021).
[8] HARTI Policy Brief: Import Ban on Chemical Fertilizers and Other Agrochemicals: Short-term Impacts on the Paddy Sector. December 2022
[9] HARTI Policy Brief: Import Ban on Chemical Fertilizers and Other Agrochemicals: Short-term Impacts on Selected OFCs and Potato Crop. December 2022
[10] NCD= non-communicable diseases

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Table 1: Evolution of indicators of 'resilience capacities and agro- and food-diversity' domain from pre-crisis to crisis period, Sri Lanka
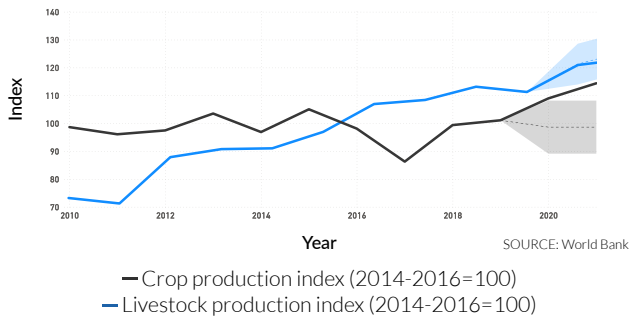
Resilience sub-domain	Indicator	Unit	Data period covered	Desirable direction	Actual direction during crisis*	Trend analysis
Food produced domestically	Crop production index (2014-2016=100)	Index	2010-2021	↑	↑	No substantial changes overall during the pre-crisis period (except a fall in 2017). Marked upward trend during crisis period.
	Livestock production index (2014-2016=100)	Index	2010-2021	↑	↑	Steady growth since 2012, no marked change in trend during crisis period.
	Fertilizer consumption	Kg /ha of arable land	2010-2020	→ or ↑	↑	Decline from 2014 to 2017, increase in 2018 and 2019. Steeper slope in 2020.
Imported food	Food import – NCD-protect	Kg /capita	2010-2021	↑	→	Overall decreasing trend from 2014 to 2019, which continued in 2020. Slight increase in 2021.
	Food import – unhealthy NCD-risk	Kg /capita	2010-2021	↓	→	Slight increasing trend from 2013 to 2016, marked decline in 2017, and then resumption of increasing trend up to 2020. Slight decrease in 2021.
Infrastructure	Mobile cellular subscription	Number / 100 people	2010-2022	↑	↗	Steady increasing trend pre-crisis (except 2019), continued during crisis period but slope less steep
Social capital	Social capital index	Index	2010-2023	↑	→	Moderate decline from 2017 to 2019. No substantial variations during crisis period.

* Average crisis period compared to pre-crisis average (2018-2019 depending on data availability)

Desirable direction: ⬆ denotes a higher value is more desirable, ⬇ denotes a lower value is more desirable. Actual direction : a blue arrow denotes no substantial changes and stable value, a green arrow (up/down) denotes a direction similar to the desirable one, a light green arrow (diagonal up/down) denotes a direction similar to the desirable one but less pronounced, a red arrow (up/down) denotes an opposite direction to the desirable one, an orange arrow (diagonal up/down) denotes an opposite direction to the desirable one but less pronounced

Kg= kilograms; ha= hectare

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Figure 4: Domestic production indices 2010-2021 (2014-2016=100)

SOURCE: World Bank

— Crop production index (2014-2016=100)
— Livestock production index (2014-2016=100)

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 5: Country-level food imports 2010-2021
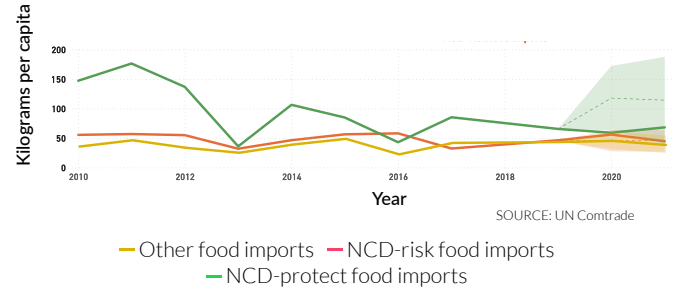
SOURCE: UN Comtrade

— Other food imports — NCD-risk food imports
— NCD-protect food imports

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 6: Country-level food imports 2017-2021, top 3 NCD-protect and NCD-risk food groups

● Legumes
● Other vegetables
● Whole grains
● Instant noodles
● Other sweets
● Packaged ultra-processed salty snacks

NCD: non-communicable diseases
This indicators shows the total volume of imports (kilograms or liters, depending on type of food) by year for the top 3 NCD-protect and NCD-risk food groups.
The top 3 food groups are defined as the food groups with the highest volumes imported for a given year.
The NCD-protect food groups are displayed with a range of green color and the NCD-risk food groups with a range of red colors.
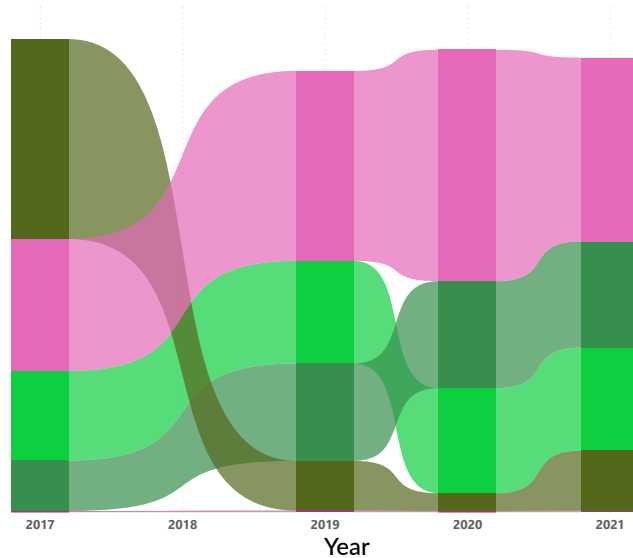
SOURCE: UN Comtrade

Figure 7: Social capital index 2010-2023
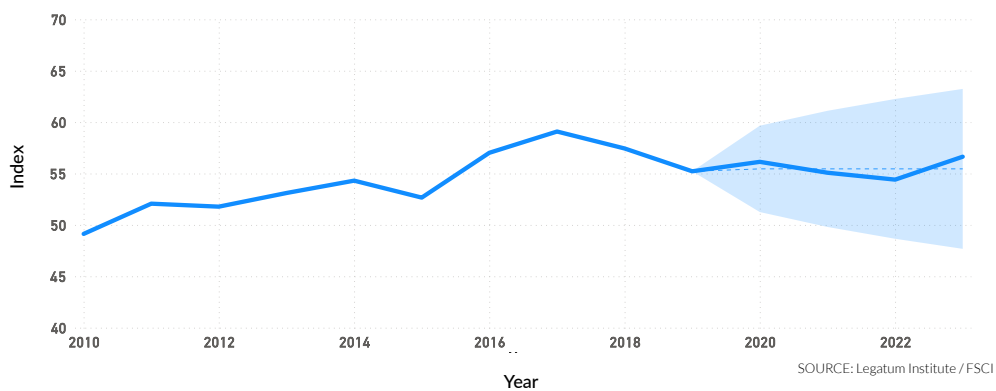
SOURCE: Legatum Institute / FSCI

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

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RESILIENCE RESPONSES / STRATEGIES AND LONGER-TERM RESILIENCE OUTCOMES

Based on the analysis of national level data the crisis period was characterized by a deterioration in various resilience outcomes indicators (Table 2).

Prior to the crisis, Sri Lanka was on an overall downward trend regarding food price inflation (from 9.4% in 2012 to 0.7% in 2019), with the exception of 2017 (11.3%). During the current crisis, however, inflation rose to 12.3% in 2020 and then stagnated at 11.1% in the following year before soaring dramatically in 2022 to reach its highest level over the reporting period (59.8% – Figure 8). One contributing factor may be the strong depreciation of the Sri Lankan currency observed during the same period (Figure 2). This volatility in food prices is also reflected in the food price anomalies (IFPA) observed for rice. While price growth for rice has been normal up to 2020 it sustained a moderate rise in 2021 (IFPA=0.49), and a high rise in 2022 (IFPA=0.85 – Figure 9). A FAO report mentioned the low market availability, combined with high production and transport costs as well as disruptions of marketing activities due to severe shortages of fuel as the main contributors to increased prices[11]. An additional reason for the increased prices is the ban on chemical fertilizer imports, which led to a substantial reduction in rice harvests and subsequently drove up food prices.

With respect to food supply variability, which is an indicator of food availability, the pre-crisis period has seen a steady deterioration between 2010 and 2013 with food supply variability going up (from 41 to 85 kcal/capita/day), followed by a progressive decline up to 2019 (17 kcal/capita/day). During the crisis period, food supply variability continued to fall in 2020 (5 kcal/capita/day) and marginally increased in the following year (Figure 10). This demonstrates to some extent the ability of the food system to maintain a low variability in the supply of food products in the face of shocks. Once more, it's essential to acknowledge that the limited availability of data until 2021, and without monthly disaggregation, may not fully capture the effect that import bans or restrictions imposed on several essential food items have had on food availability across the country in the last two years.

Overall, the weakened food system resilience, in terms of high food price inflation, may have affected the Sri Lankan population's purchasing power and their ability to access food. This is reflected in the trend of healthy diet affordability, which shifted from a downward trend pre-crisis to a rising one in 2020 and 2021 (Figure 11). Lack of data for 2022 does not enable us to assess further the effect of the on-going crisis as part of this analysis. However, country-level data underscores how the food and economic crisis has deteriorated food security outcomes among the Sri Lankan population, indicating that the percentage of the population unable to afford a healthy diet have increased over the past two years. According to a 2022 FAO/WFP Crop and Food Security Assessment Mission report[12], more than 61% of households regularly employed food-based coping strategies due to insufficient food or lack of money to purchase it. The same assessment conducted in 2023 showed a slight improvement, with 56% reporting regular use of medium or high food-based coping strategies. To cope with the lack of food or money to buy it, nearly 48% of households in 2022 resorted to at least one livelihood-based coping strategy, such as depleting savings, purchasing food on credit, borrowing money, or pawning jewels. In 2023, 62% of households adopted at least one livelihood-based coping strategy, representing a tangible deterioration in conditions compared to the previous year.

[11] FAO and WFP. 2022. Special Report – FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka. September 2022. Rome. https://doi.org/10.4060/cc1886en.

[12] FAO. 2023. Special Report – FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka. CFSAMs Special Reports. 25 May 2023. Rome. https://doi.org/10.4060/cc6202en

Table 2: Evolution of indicators of 'resilience responses / strategies' and 'longer-term resilience outcomes' domains from pre-crisis to crisis period, The Philippines

| Resilience sub-domain	Indicator	Unit	Data period covered	Desirable direction	Actual direction during crisis*	Trend analysis
Coping strategies	Livelihood coping strategy (LCS): None (N) Stress (S) Crisis (C) Emergency (E)	% population	2022-2023	↑ N ↓ S, C, E		*Insufficient data available (only 2022-23)*
	Reduced Coping Strategy Index (rCSI)	Index	2022-2023	↑ L ↓ M, H		*Insufficient data available (only 2022-23)*
Food price volatility	Food price annual inflation	%	2010-2022	↓	↑	Zero inflation in 2018-19. Marked rise in 2020, which remains in 2021, and dramatic increase in 2022.
	Food Price Anomalies (IFPA), wheat	Index	2015-2022	↓	↑	Normal price growth pre-crisis and in 2020. High price growth in 2021, and dramatic growth in 2022.
Food supply variability	Food supply variability	Kcal / capita / day	2010-2021	↓	↓	Steady decrease from 2016 up to 2020. Slight increase in 2021.
Food security	% population experiencing moderate or severe food insecurity	% population	2015-2021	↓	↗	Steady upward trend pre-crisis, which did not change substantially during crisis.
	% population who cannot afford a healthy diet	% population	2017-2021	↓	↑	Downward trend from 2017 to 2019, moderate increase in 2020-21.

* Average crisis period compared to pre-crisis average (2018-2019 depending on data availability)

Desirable direction: ⬜ denotes a higher value is more desirable, ⬜ denotes a lower value is more desirable.

Actual direction : a blue arrow denotes no substantial changes and stable value, a green arrow (up/down) denotes a direction similar to the desirable one, a light green arrow (diagonal up/down) denotes a direction similar to the desirable one but less pronounced, a red arrow (up/down) denotes an opposite direction to the desirable one, an orange arrow (diagonal up/down) denotes an opposite direction to the desirable one but less pronounced

IFPA = indicator of food price anomalies; Kcal= kilocalories

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Figure 8: National food price inflation 2010-2022
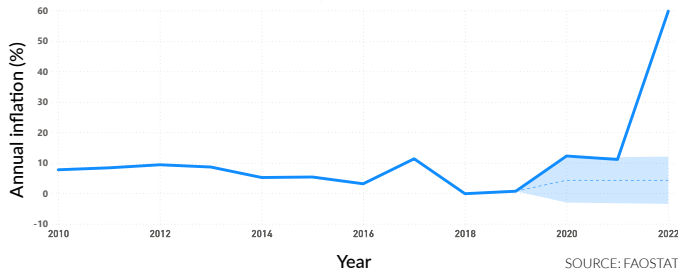
SOURCE: FAOSTAT

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 9: Food Price Anomalies (IFPA) 2015-2022 – Rice, country level
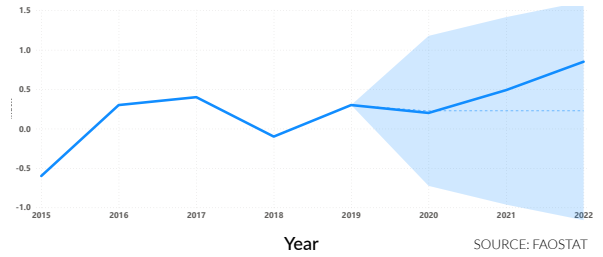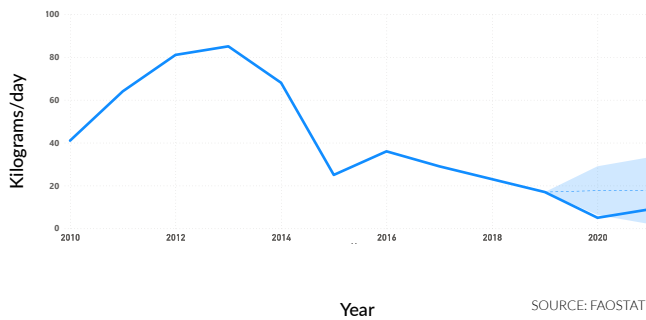

SOURCE: FAOSTAT

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 10: Per capita food supply variability 2010-2021, country level
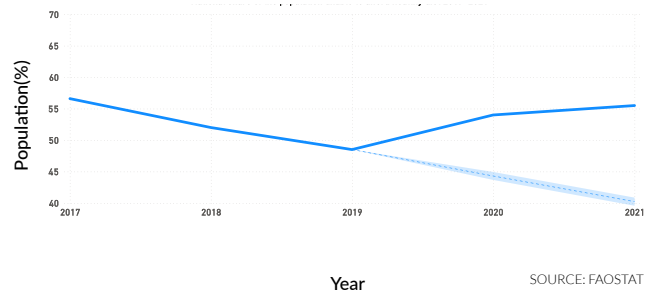

SOURCE: FAOSTAT

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

Figure 11: National share of the population unable to afford a healthy diet 2017-2021

SOURCE: FAOSTAT

The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)

CONTEXTUAL SPECIFICITIES AND VULNERABILITIES

POLITICAL AND ECONOMIC INSTABILITY

Since the beginning of 2021, Sri Lanka has experienced substantial political instability with widespread protests across the country. This instability is a result of a severe macroeconomic crisis that has caused acute shortages of and spikes in the prices of food and other essential products. The country's agricultural production has faced significant disruptions, predominantly attributed to reduced yields or losses following the Sri Lankan government's ban on chemical fertilizer and other agrochemical imports in April 2021. The aim was to promote organic agriculture for a more financially and environmentally sustainable agricultural system, but this policy, which led to nearly zero fertilizer consumption according to national statistics, has negatively impacted crop productivity.

SIGNIFICANT DECREASE IN RICE YIELD

Rice production, the main staple food in the country, saw over 50% yield loss for 62% of farmers[14]. Consequently, due to the acute scarcity in the country, imports for rice have been reintroduced after a decade. The fertilizer ban has also had negative repercussions on feed production, resulting in escalating feed prices and negatively impacting poultry and livestock production. Likewise, fruit and vegetable production is lower, also due at least in part to increased fuel prices raising the cost of transportation services to distribute the products.

These challenges, combined with unfavourable weather phenomena, high prices, and halted economic activities, have driven households towards higher levels of food and nutrition insecurity[15]. Food consumption has reached lower values, compared to those registered during the peak of the COVID-19 crisis. However, large population surveys conducted by WFP have reported lower levels of food insecurity in 2023 compared to 2022. Despite this improvement, households continue to rely on coping strategies to meet their food consumption needs, depleting their resources in the process. In the face of any future shocks, people may find it increasingly difficult to cope.

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[14] HARTI Policy Brief: Import Ban on Chemical Fertilizers and Other Agrochemicals: Short-term Impacts on the Paddy Sector. December 2022.

[15] WFP, JHU, Wayamba University Sri Lanka. Sri Lanka Panel Survey on Food Security. Round four: July 2022.

Impact of food system: further results

In line with food price inflation (Figure 10), food prices have risen in a steep curve since the start of the crisis. In 2023, the mean food prices at national level for rice and wheat flour had more than doubled compared to the baseline (average 2017-2018) (Figures 12). According to a recent report, the surge in prices of wheat flour, which is entirely imported, has been mainly due to tight market availability following reduced imports in 2021 and early 2022. Additionally, the sharp depreciation of the national currency and increasing price trends in the international markets have also been contributing factors[16].

The sharp inflation in food prices is reflected in the overall cost of locally available diet that meets nutrient requirements. The cost of this diet soared by more than 300% relative to pre-crisis, with some variability across provinces. The daily cost of diet that meets only caloric needs also increased, but to a lesser extent. This suggests that nutrient-dense foods rich in vitamins and minerals, such as animal sourced foods, fruits and vegetables, among others, saw greater price increases than other types of food (Figure 13).

The downward trend of the cost of living occurring pre-crisis has suffered a slowdown in 2020-21 before resuming in 2022 (Figure 15). Similarly, the upward trend of households' income slightly decelerated in 2020-21 but resumed in 2022. Food expenditure share, however, has not varied substantially since the start of the crisis. Despite a marginal increase in 2020, it remained below 30%, which is the lowest rate among the five countries assessed in the region (Figure 14). These national averages, however, certainly conceal disparities across the country and among specific vulnerable populations (Figure 16).

Nevertheless, despite the notable surge in food prices and the overall cost of maintaining a nutritious diet, there appeared to be no adverse impact on the sales of NCD-protect foods at the national level (Figure 17). In fact, the upward trend in these sales exceeded initial predictions. Conversely, sales of NCD-risk foods experienced a minor decline in 2020, followed by a gradual increase in 2021 and 2022. Notably, the sales volumes per capita of sugar-sweetened beverages (SSBs) exhibited a significant and sustained decrease from 2017 to 2022 (Figure 18).

Because of insufficient data at the national level, changes in households' food security status during the crisis period compared to pre-crisis could not be assessed. However, data for 2022 and 2023 on food consumption scores (FCS) show a steady declining trend in proportion of population with poor FCS (from 11% in June 2022 to 4% in January 2023 – Figure 19). The proportion of women in reproductive age achieving minimum diversity diet remained stable, but at a moderate level (Figure 20). Data related to livelihood coping strategies (LCS), however, show a steady decline in those not using any coping strategies while those using harmful strategies (stress, crisis, emergency) increased from 2022 to 2023. Towards the end of 2022 and early 2023, almost 80% of the population was categorized as either "stress" or "crisis" LCS (Figure 21).

A Dikoda survey in Sri Lanka focused on the challenges faced by urban food vendors during the crisis in Colombo. During the pandemic, Sri Lankan urban food vendors saw varying effects. Unlike some vendors in other countries who experienced severe disruptions, those in Sri Lanka saw increases in income despite supply chain disruptions and economic challenges. They adapted by diversifying products, introducing new items, sharing workforces, and employing innovative distribution methods to navigate the crisis effectively.

FOOD PRICES AND COST OF DIET

Figure 12: Changes in prices 2011-2023 (2017-2018 = 100) for 3 food commodities: oil (palm, soybean), eggs, rice (glutinous first/second quality and unmilled, ordinary first/second quality and unmilled)
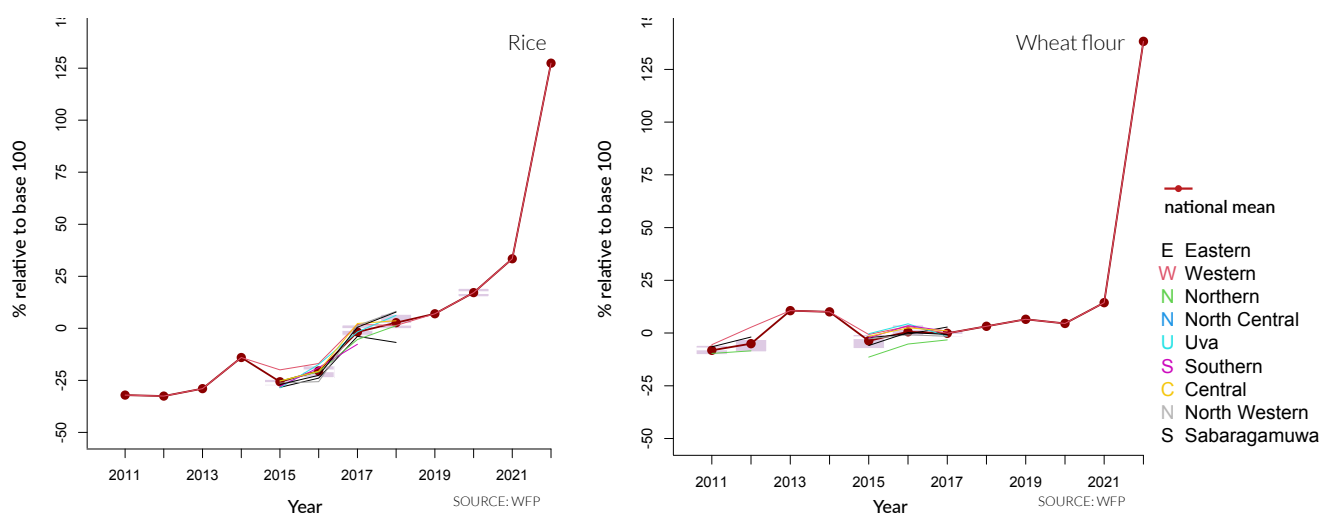
The two graphs show the variability as quartiles boxes of the percentage change of food prices for those items relative to the base period 2017-2018 (base 100), at national level and for each of the 9 provinces (depending on data availability). The relative changes are also mean-aggregated.

[16] FAO Global information and early warning system on food and agriculture (GIEWS). Country Brief June 2023

Figure 13: Change in daily cost of diet (energy only and nutritious) pre-crisis and crisis period, 5 countries

Energy only diet

Nutritious diet

SOURCE: WFP

SOURCE: WFP
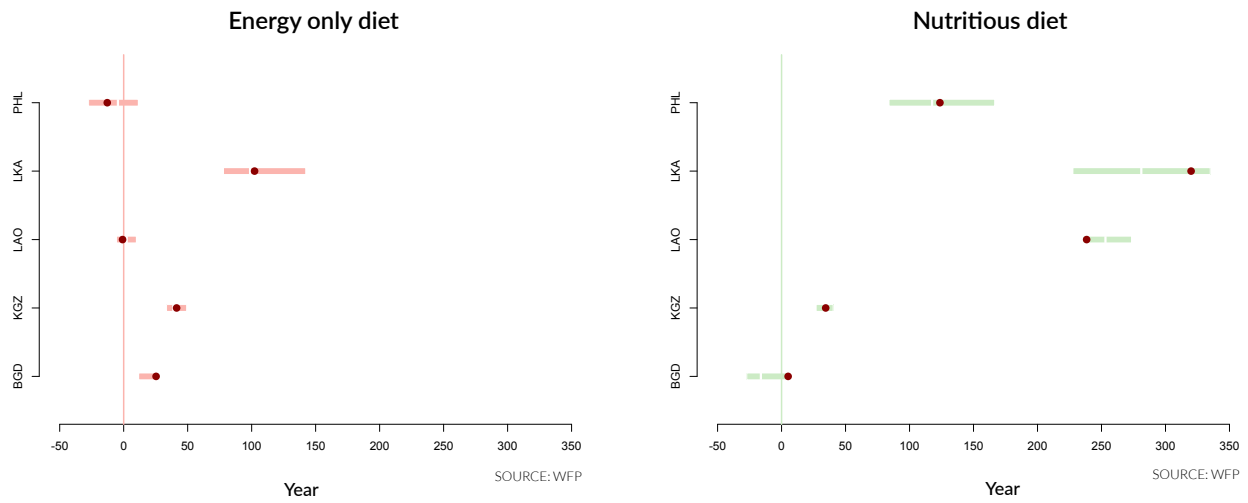
This figure shows the change in CoD crisis period relative to pre-crisis for 5 countries in the region at national level (red dot) as well as the variability across provinces (box plots showing the 25%, median and 75% illustrating the spread of the values).
Pre-crisis and crisis periods:
- Bangladesh: September 2016; August 2022
- Kyrgyz Republic, November 2017; October 2022
- Laos: March 2017; October 2022
- Sri Lanka: June 2016; June 2022
- Philippines (The): September 2015; October 2022"

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FOOD EXPENDITURE, INCOME, AND FOOD SALES

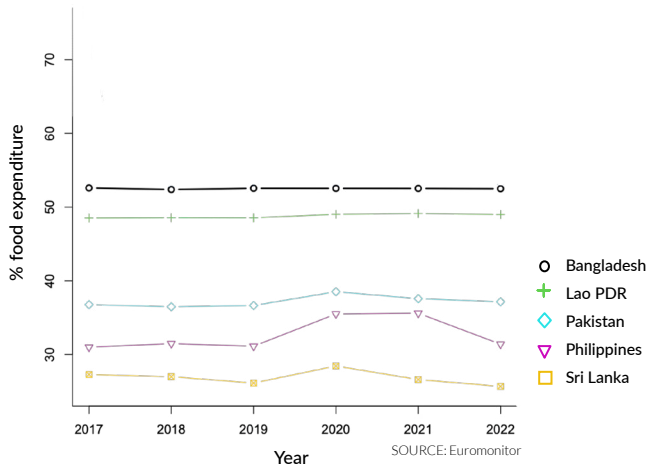**Figure 14: Household food expenditure share, 2017-2022, 5 countries**

SOURCE: Euromonitor

Figure 15: Cost of living (internationally comparable) 2017-2022, 5 countries
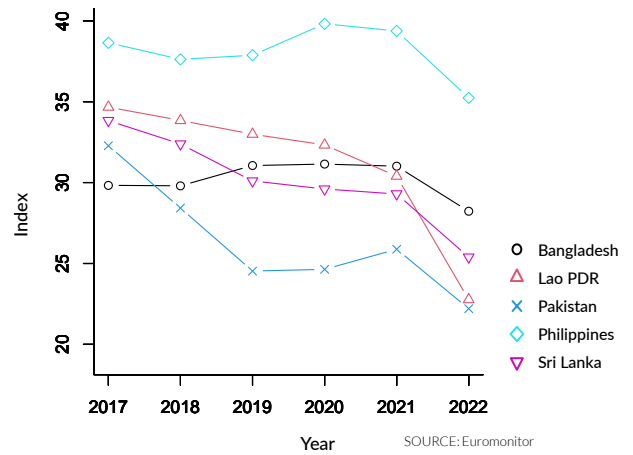

SOURCE: Euromonitor

Figure 16: Urban and rural disposable income 2015-2022, 6 countries

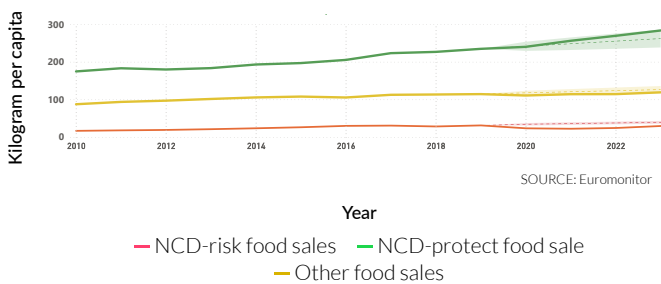SOURCE: Euromonitor

SOURCE: Euromonitor
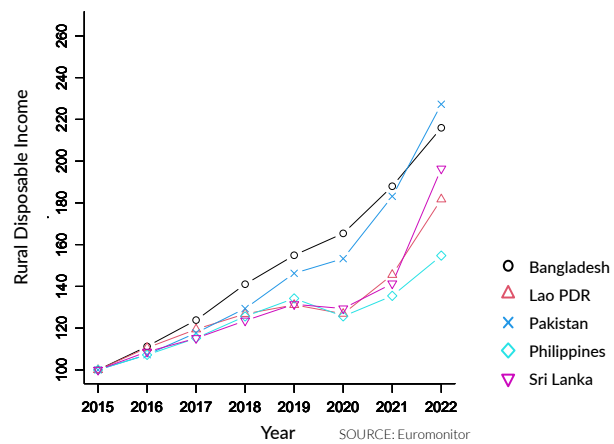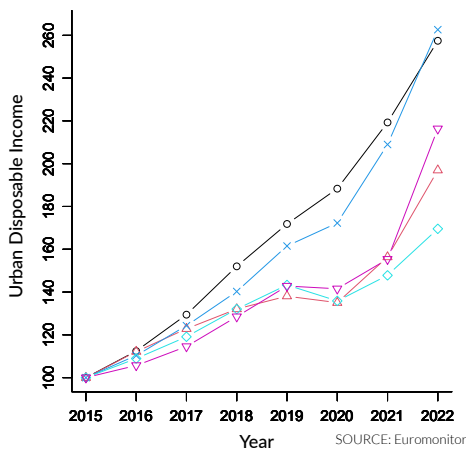
Figure 17: Food sales 2010-2023, country level

SOURCE: Euromonitor

"NCD: non-communicable diseases
The plain line is the actual trend observed, while the dotted line is a projected trend based on pre-crisis data, presented with the 95% confidence interval (the shaded area)"

Figure 18: Country-level food sales 2017-2022 (volume per capita), top 3 NCD-protect and NCD-risk food groups
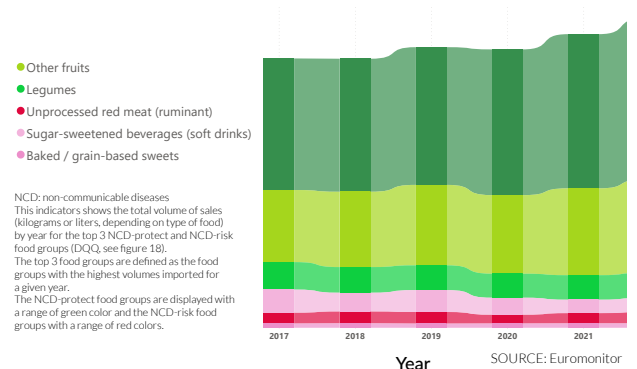
NCD: non-communicable diseases
This indicators shows the total volume of sales (kilograms or liters, depending on type of food) by year for the top 3 NCD-protect and NCD-risk food groups (DQQ, see figure 18).
The top 3 food groups are defined as the food groups with the highest volumes imported for a given year.
The NCD-protect food groups are displayed with a range of green color and the NCD-risk food groups with a range of red colors.

SOURCE: Euromonitor

FOOD SECURITY AND DIETS

Figure 19: Households' food consumption scores June 2022-Jan 2023, country level

△ Acceptable
+ Borderline
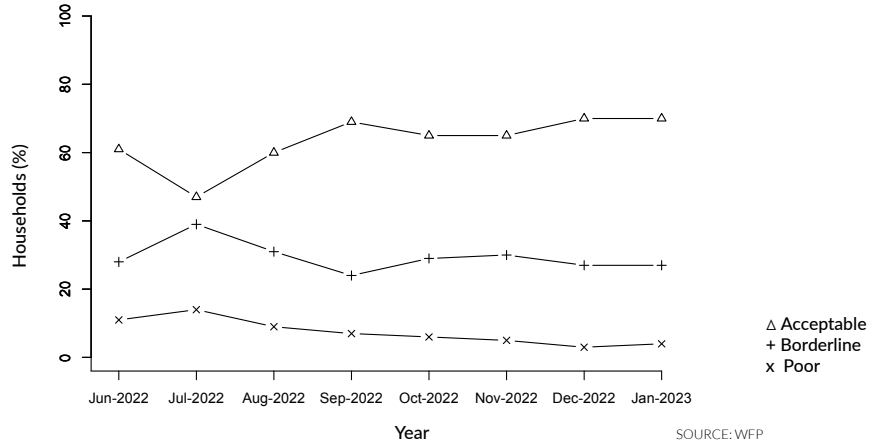x Poor

SOURCE: WFP

Figure 20: Minimum dietary diversity for women of reproductive age June 2022-Jan 2023, country level

SOURCE: WFP
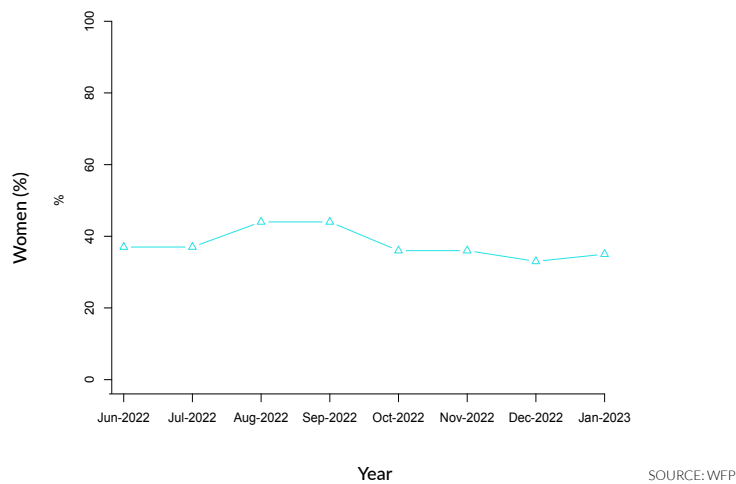
Figure 21: livelihood coping strategies June 2022-Jan 2023, country level

o None
△ Stress
+ Crisis
x Emergency

SOURCE: WFP
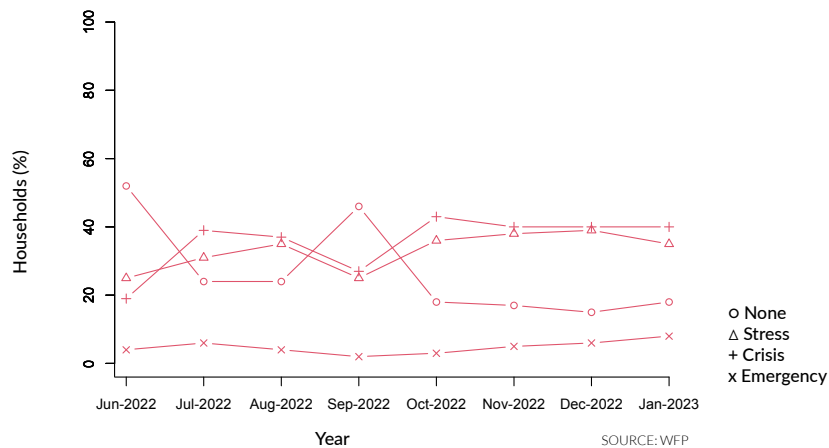
OPPORTUNITIES FOR BUILDING FOOD SYSTEM RESILIENCE

DIVERSIFY CROP PRODUCTION:

Sri Lanka should promote diversification in crop production to reduce its vulnerability to shocks, such as droughts and floods. The government should consider policies that encourage the cultivation of various nutrient-dense crops, including climate-resilient varieties, to enhance food system stability. Accompany promotion of diverse crop production and innovative agriculture activities with social and behaviour change (SBC) interventions.

DESIGN, MANAGE AND SCALE UP INTEGRATED INTERVENTIONS WITH A FOOD SYSTEM APPROACH:

to increase access, affordability and consumption of safe, adequate and nutritious foods.

IMPLEMENT STRATEGIC, EVIDENCE-BASED SBC ACTIVITIES:

to alter and improve individual and community-level dietary behaviours. This initiative aims to enhance food system resilience and improve nutrition by promoting the utilization of locally available and locally produced health foods.

SUPPORT CASH MANAGEMENT AT INDIVIDUAL AND HOUSEHOLD LEVEL:

to promote and improve health and nutrition.

INVEST IN LOCAL FOOD PRODUCTION INCLUDING LIVESTOCK PRODUCTION:

Support access to agricultural inputs, including seeds and agricultural technology for production, as well as to minimize post-harvest loss, through input vouchers or other mechanisms to buffer farmers against price fluctuations. Target women and other vulnerable groups, in particular, for vouchers, productive grants and access to no- and low-risk financial products and services to support investment in small-scale agriculture and food-related MSMEs.

INCREASE ACCESS TO CLIMATE INFORMATION:

 Promote and facilitate farmers' access to relevant scientific weather and climate information through accessible digital and non-digital platforms in light of predicted ongoing weather turbulences due to climate change.

STRENGTHEN FOOD PRICE MONITORING AND REGULATION:

Enhancing food price monitoring and regulation mechanisms can mitigate inflation. Continuous tracking of food prices, market functionality , stock availability and market food availability is essential, especially for essential food items. Authorities should consider policies that stabilize food prices and ensure affordability for consumers.

BOOST RESILIENCE AT THE COMMUNITY LEVEL:

Communities should be empowered to strengthen their food systems by promoting local and homestead food production. Encouraging community gardens and facilitating cooperation between communities can lead to better access to fresh, locally grown produce. Additionally, support local food networks to build stronger connections between producers and consumers. Facilitate knowledge sharing and collaboration among local farmers and communities to collectively address challenges and promote sustainable solutions.

ENHANCE SOCIAL CAPITAL AND COPING STRATEGIES:

To improve food system resilience, social capital should be nurtured. Building trust, social norms, and civic participation can aid in crisis response and recovery. Moreover, the development of coping strategies at the community level is essential to withstand shocks and minimize vulnerabilities.

EMPOWER URBAN FOOD VENDORS:

Sri Lanka's urban food vendors have displayed resilience and adaptability during the crisis. Their experiences can serve as valuable lessons for enhancing the food system's flexibility. Collaborative platforms and policies that support the diversification of products and innovative distribution methods can empower these vendors and strengthen the overall food system.

POLICY SUPPORT:

Advocate for policies that incentivize sustainable and resilient agricultural practices. Facilitate the implementation of nutrition policies, engage in multi-sector planning, and involve multiple stakeholders to address the underlying and basic causes of food and nutrition insecurity.

STRENGTHENING THE FOOD SECURITY MONITORING SYSTEM, FOOD PRODUCTION MONITORING SYSTEM, AND STOCK MONITORING SYSTEM:

in light of the macroeconomic volatility and elevated inflation levels, it is imperative to closely monitor both markets and the food security landscape. Establishing a routine monitoring system will furnish timely updates on the prevailing conditions, enabling the identification of high food insecurity clusters and early detection of signs of deterioration. Continuous monitoring of food production updates, stock availability, and distribution channels is essential to promptly address and rectify the short-term impact on food accessibility.

Notes on methodology

DATA SOURCES AND METHODOLOGY

For assessing the impact of food and economic crises on diets among vulnerable groups across urban and rural areas in selected countries, we employed a multi-faceted methodology. Primary Data Collection: We conducted food vendor surveys in various cities to understand how the COVID-19 pandemic and the war in Ukraine affected businesses in the food sector. Secondary Data Analysis: We analyzed data from diverse sources, including food trade data, the Euromonitor International market sales database, and Cost of Diet data from the Fill the Nutrient Gap (FNG) initiative by WFP RBB. This analysis helped us examine changes in food imports, assess sales of both healthy and unhealthy food items, and study the affordability of diets, particularly for vulnerable groups. Modeling: We utilized economic shocks models to explore how change in food imports and sales affect food security and diets. We used techniques like Principal Component Analysis, Canonical Correlation Analysis, t-SNE, and Multivariate Random Forest to understand how changes in the food environment, income, and inflation influence food security.

To evaluate food system resilience, we selected specific indicator domains, curating data from various sources to understand changes over time and trends. We assessed food system resilience through various indicators, covering economic stability, natural hazard impact, COVID-19 stringency, domestic food production, imported food percentages, infrastructure, social capital, coping strategies, food price volatility, food supply stability, and food security. These indicators provided a comprehensive perspective on resilience across economic, environmental, and social dimensions. We also conducted semi-structured interviews with experts from WFP country offices to gather qualitative insights and identify opportunities to enhance resilience. Ethical standards were upheld throughout the study, with participants providing consent, data privacy and confidentiality being respected. Our research adhered to the TRUST code, a global code of conduct for equitable research partnerships.

The research was conducted between January 2023 and November 2023.

LIMITATIONS

For some indicators, there was limited data available, which restrained the ability to conduct further analyses on specific food system areas or to assess the impact of the current crisis. For example, several indicators for food system resilience only had data available up to 2020 or 2021 (e.g., domestic production, fertilizer consumption, food import, food supply variability), therefore the effect of the war in Ukraine - which started in February 2022 – could not captured. Furthermore, analysis of the changes in households' food security was limited by insufficient data, as data was available only from June or July 2022 to January 2023.

With respect to most indicators, the analysis was conducted at the level of the country, potentially masking subnational variabilities (e.g., across different regions, or across urban/rural areas) and/or disparities among specific groups (e.g., most vulnerable groups). Further research would be warranted to shed light on these variations.

DEFINITIONS OF KEY TERMS

Crisis period: the on-going food and economic crisis results from a combination of two main shocks: the COVID-19 pandemic (from March 2020) and the Ukraine and Russia war (from February 2022).

Food system: "all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socio-economic and environmental outcomes" (HLPE, 2017).

INDICATOR DEFINITIONS

Indicator domain	Indicator	Definition	Data source
Exposure to shocks	Exchange rate	Annual exchange rates. Local currency units per US dollar.	FAOSTAT
	Ratio of affected people to the total population	Natural disasters include biological (animal accident, epidemic, insect infestation), climatological (drought, glacial lake outburst, wildfire), geophysical (earthquake, mass movement - dry, volcanic activity), hydrological (flood, landslide, wave action), and meteorological disasters (storm, extreme temperature, fog).\n\nTotal people affected include the total of injured (including hospitalization), affected (number of houses damaged multiplied by the family size), and homeless people (number of houses destroyed multiplied by the family size).\n\nNote: proportion of the total population may be an overestimation, as people may have been counted more than once for a given year, if they have been affected by different natural disasters throughout that year.	EM-DAT
	COVID-19 Stringency Index	Composite indicator calculated by using nine scaled indicators, including eight containment and closure policy indicators (school closing, workplace closing, cancel public events, restrictions on gatherings, close public transport, stay at home requirements, restrictions on internal movement, and international travel controls) and one indicators of public information campaigns, rescaled to a value from 0 to 100 (100 = strictest).	OxCGRT
	COVID-19 Economic Support Index	Composite measure based on four indicators: direct transfers to people not working due to the pandemic; debt relief for households; fiscal spending to stimulate the economy; and international support, rescaled to a value from 0 to 100 (100 = highest).	OxCGRT
Resilience capacities and agro-food diversity	Crop production index (2014-2016 = 100)	Agricultural production for each year relative to the base period 2014-2016. It includes all crops except fodder crops. Regional and income group aggregates for the FAO's production indexes are calculated from the underlying values in international dollars, normalized to the base period 2014-2016.	World Bank
	Fertilizer consumption	Quantity of plant nutrients used per unit of arable land. Fertilizer products cover nitrogenous, potash, and phosphate fertilizers (including ground rock phosphate). Traditional nutrients--animal and plant manures--are not included.	World Bank
	Livestock production index (2014-2016 = 100)	Includes meat and milk from all sources, dairy products such as cheese, and eggs, honey, raw silk, wool, and hides and skins. It shows the relative level of the aggregate volume of agricultural production for each year in comparison with the base period 2014-2016.	World Bank
	Food import NCD-protect, NCD-risk food groups	This indicator was created using the data available in the United Nation's Comtrade database. Annual food import data was downloaded with the Harmonized System (HS) Codes 6-digits that is a standardized numerical method of classifying traded products. These commodity groups were re-categorized into standard Diet Quality Questionnaire (DQQ) food groups. Classification as NCD-risk and NCD-protect food groups was done based on the Global Dietary Recommendations (GRD) guideline.\n\nNCD-Protect: foods protective against noncommunicable diseases (whole grains; legumes/pulses; vitamin A-rich orange vegetables; dark green leafy vegetables; other vegetables; vitamin A-rich fruits; citrus; other fruits; nuts and seeds). NCD-Risk: foods related to noncommunicable diseases (baked/grain-based sweets; other sweets; processed meat; unprocessed red meat - ruminant; unprocessed red -non ruminant; packaged ultra-processed salty snacks; instant noodles; sugar-sweetened beverages).\n\nNote: outliers for NCD-risk 2012 and NCD-protect 2016 were excluded from analysis.	UN Comtrade
	Mobile cellular subscription	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.	World Bank
	Social capital index	A composite index based on a subset of indicators from the Social Capital pillar of the Legatum Prosperity Index, which assesses social cohesion and engagement, community and family networks, and political participation and institutional trust. The index is scaled to a value that ranges from 0 (low) to 100 (high).	Legatum Institute/ FSCI
Resilience responses and strategies	Reduced Coping Strategy Index (rCSI)	Measure of the frequency and severity of household behaviors when faced with shortages of food or financial resources to buy food. It is calculated using five standard food consumption-based strategies and severity weighting, a higher score indicates more frequent and/or extreme negative coping strategies.	WFP[b]
	Livelihood coping strategy – Food security	Indicator used to understand households' medium and longer-term coping capacity in response to lack of food or lack of money to buy food and their ability to overcome challenges in the future. The indicator is derived from a series of questions regarding the households' experiences with livelihood stress and asset depletion to cope with food shortages.	WFP[b]

Indicator domain	Indicator	Definition	Data source
Longer-term resilience outcomes	Food price inflation[a]	Inflation is measured in terms of the annual growth rate and in index, 2015 base year.	FAOSTAT
	Food Price Anomalies (IFPA), by type of product (Rice)	Identifies market prices that are abnormally high. The IFPA relies on a weighted compound growth rate that accounts for both within year and across year price growth. The indicator directly evaluates growth in prices over a particular month over many years, taking into account seasonality in agricultural markets and inflation, allowing to answer the question of whether or not a change in price is abnormal for any particular period.	FAOSTAT
	Food Price Anomalies (IFPA), by type of product (Wheat)		
	Food supply variability[a]	This indicator uses the data on dietary energy supply from the Food Balance Sheet to measure annual fluctuations in the per capita food supply (kcal), represented as the standard deviation over the previous five years per capita food supply. Food supply variability results from a combination of instability and responses in production, trade, consumption, and storage, in addition to changes in government policies such as trade restrictions, taxes and subsidies, stockholding, and public distribution.	FAOSTAT
	% population experiencing moderate or severe food insecurity	The prevalence of moderate or severe food insecurity is an estimate of the percentage of people in the population who live in households classified as moderately or severely food insecure. The assessment is conducted using data collected with the Food Insecurity Experience Scale (FIES) or a compatible experience-based food security measurement questionnaire. A household is classified as moderately or severely food insecure when at least one adult in the household has reported to have been exposed, at times during the year, to low quality diets and might have been forced to also reduce the quantity of food they would normally eat because of a lack of money or other resources.	FAOSTAT
	% population who cannot afford a healthy diet[a]	Proportion of the population whose food budget is below the cost of a healthy diet. The food budget is defined as 52% of household income, based on the average share of income that households in low-income countries spend on food. Income data are provided by the World Bank's Poverty and Inequality Platform. A value of zero indicates a null or a small number rounded down at the current precision level.	FAOSTAT
Food prices and cost of diet	Changes in food prices	The changes in food prices were calculated for 2 food items (1. rice (red nadu, white, long grain, medium grain, red); 2. Wheat flour.	Economic: Prices-Dataviz WFP – VAM[b]
Food prices and cost of diet	Changes in daily cost of diet (energy only and nutritious)	The Cost of Diet (CoD) is a method to model the cost of a theoretical, simulated diet (food basket) which satisfies recommended energy requirements of a household of specific composition of interest (e.g. breastfed child, lactating mother, and other members) at the minimal possible cost, based on the availability, price, and nutrient content of local foods.	WFP[b]
Food expenditure, income and food sales	Per capita food expenditure	Consumer Expenditure on Food and Non-Alcoholic Beverages: Food products and non-alcoholic beverages purchased for consumption at home.	Euromonitor
Food expenditure, income and food sales	Cost of living	Cost of Living Index by Income (internationally comparable) is a price index that measures relative cost of living over time in a chosen income decile. Cost of Living Index is a weighted average of Index of Consumer Prices by category and consumer expenditure by income deciles, adjusted to Price Level Index.	Euromonitor
Food expenditure, income and food sales	Income	Disposable income is gross income less social security contributions and income taxes.	Euromonitor
Food expenditure, income and food sales	Food sale (volume per capita)	This indicator was created using the data in Euromonitor International database https://www.euromonitor.com/. Market research data on food sales was downloaded and food groups were categorized into standard Diet Quality Questionnaire (DQQ) food groups. Classification as NCD-risk and NCD-protect food groups was done based on the Global Dietary Recommendations (GRD) guideline. NCD-Protect: foods protective against noncommunicable diseases (whole grains; legumes/pulses; vitamin A-rich orange vegetables; dark green leafy vegetables; other vegetables; vitamin A-rich fruits; citrus; other fruits; nuts and seeds). NCD-Risk: foods related to noncommunicable diseases (baked/grain-based sweets; other sweets; processed meat; unprocessed red meat - ruminant; unprocessed red -non ruminant; packaged ultra-processed salty snacks; instant noodles; sugar-sweetened beverages).	Euromonitor
Food security and diets	Minimum dietary diversity for women of reproductive age	Percentage of women of reproductive age (15 – 49) who reached minimum diet diversity. Minimum diet diversity is defined as consumption of 5 or more food groups out of 10 in the last 24 hours.	WFP[b]
Food security and diets	Livelihood coping strategies -Food security	Indicator used to understand households' medium and longer-term coping capacity in response to lack of food or lack of money to buy food and their ability to overcome challenges in the future. The indicator is derived from a series of questions regarding the households' experiences with livelihood stress and asset depletion to cope with food shortages.	WFP[b]

[a] Estimated data

[b] Country level data

Prepared by Dikoda