Food and Agriculture Organization of the United Nations

WFP World Food Programme

ISSN 2707-2479

SPECIAL REPORT

FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION (CFSAM) TO THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

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Food and Agriculture Organization of the United Nations
World Food Programme
Rome, 2023

Required citation:
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

ISSN 2707-2479 [Print]
ISSN 2707-2487 [Online]

ISBN 978-92-5-137902-8

Cover photograph: ©FAO/Raphy Favre

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ABBREVIATIONS AND ACRONYMS

AAIB	Agriculture and Agrarian Insurance Board
ADB	Asian Development Bank
ASC	Agrarian Service Centre
BPH	brown planthopper
CAPI	computer-assisted personal interview
CARI	China Africa Research Initiative
CBS	Central Bank of Sri Lanka
CFSAM	Crop and Food Security Assessment Mission
CIAT	International Centre for Tropical Agriculture
COVID-19	coronavirus disease 2019
CSA	Climate Smart Agriculture
CGIAR	Consultative Group on International Agricultural Research
DCS	Department of Census and Statistics
DNP	Department of National Planning
DoM	Department of Meteorology
DS	Divisional Secretariat
DZ	dry zone
EFF	Extended Fund Facility
ENSO	El Niño Southern Oscillation
EEZ	Exclusive Economic Zone
F2F	face-to-face
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmers Field Schools
FO	Farmers Organization
GA	Government Agents
GDP	gross domestic product
GIAHS	Globally Important Agricultural Heritage System
GIEWS	Global Information and Early Warning System on Food and Agriculture
GN	Grama niladari
HARTI	Hector Kobbekaduwa Agrarian Research and Training Institute
IMF	International Monetary Fund

IRI	International Research Institute
IZ	intermediate zone
LKR	Sri Lanka rupee
MEPI	The U.S.-Middle East Partnership Initiative
MEPPI	Ministry of Economic Policies and Plan Implementation
MoA	Ministry of Agriculture
MoI	Ministry of Irrigation
MoF	Ministry of Fisheries
MoFESNP	Ministry of Finance, Economic Stabilization and National Policies
MOP	muriate of potash
MOS	measure of size
MoT	Ministry of Trade
NASA	National Aeronautics and Space Administration
NAQDA	National Aquaculture Development Authority
NDVI	Normalized Difference Vegetation Index
NFO	National Fertilizer Office
NLDB	National Livestock Development Board
OFCs	other field crops
PMB	Paddy Marketing Board
PPS	probability proportion to size
PSUs	Primary Sampling Units
RFE	rainfall estimates
TSP	triple superphosphate
UN DESA	United Nations Department of Economic and Social Affairs
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USD	United States dollar
VAM	Vulnerability Analysis and Mapping
WB	World Bank
WFP	World Food Programme
WZ	wet zone

HIGHLIGHTS

- The aggregate 2023 cereal production, including forecast for the secondary "Yala" crops to be harvested in August 2023, is forecast at 4.1 million tonnes, 14 percent below the last five-year average. Yields of the 2022/23 main "Maha" crops, harvested in March, were mainly affected by the inadequate availability of fertilizers, particularly phosphorous and potassium.
- Rice production is forecast at 3.8 million tonnes, 14 percent below the last five-year average. Production of maize, mostly used as feed, is projected at 272 100 tonnes, 13 percent below the average. Production of root crops is also forecast at below-average levels, mainly due to a sharp decline in the potato output.
- Due to high feed prices and hatchery closures in 2022 and 2023, chicken meat and egg production, vital for local protein intake, is forecast to drop substantially in 2023.
- Fish production is anticipated to decline in 2023 compared with 2022 reduced level, mostly due to high energy and fuel costs (offshore and costal fishery) and insufficient governmental budget allocation for restocking water bodies with fingerlings (inland fishery).
- With an estimated domestic utilization of 4.7 million tonnes of cereals and tubers (in cereal equivalent), the country's import requirements of cereals in 2023 are forecast at 1.8 million tonnes, well-above average but below the 2022 near-record level. No food deficit is foreseen by the mission, as a gradual increase of foreign exchange reserves, disbursement of donor funds and modest currency appreciation, since last March, have strengthened the financial capacity of the country to import food.
- Although inflation has declined since October 2022, mostly reflecting lower prices of food items, it remained at high levels and, in April 2023, it was estimated to be above 35 percent.
- About 3.9 million people (17 percent of the population) are estimated, at the time of the mission, to be moderately acute food insecure and 10 000 people to be severely acute food insecure. This represents an improvement compared to May 2022, when 6.2 million were estimated to be moderately acute food insecure and 66 000 people were severely acute food insecure.
- The highest level of acute food insecurity was in the Estate sector (tea production) and among households deriving their main incomes from social protection schemes such as Samurdhi and disability benefits, linked to unaffordability of food and healthy diets. Households relying on unskilled wage labour (agriculture and non-agriculture) and fishing communities also have high levels of food insecurity. In addition, female-headed households and households with low education attainment exhibit higher food insecurity rates compared to the rest of the population.
- The reduction in food insecurity reflects some improvement in food consumption and the relative decrease in the share of expenditures on

food in total expenditures,which is likely to be caused by a seasonal effect related to the harvest period, and its impact on market prices and on income of farmers and related livelihood groups.

- The percentage of households adopting livelihood-based coping strategies to access food have increased significantly, from 48 percent in May 2022 to 62 percent in March 2023, making households highly vulnerable to any future shocks. Food-based coping strategies were adopted by 56 percent of households, 5 percentage points less than in May 2022, but still 36 percent of households are reducing meal portion sizes and 19 percent are skipping meals.
- In the short-term, the mission recommends providing immediate targeted support to farmers, mostly by releasing fertilizers available in stock in order to strengthen the ongoing "Yala" production and make urgent policy decisions to timely import fertilizers for the 2023/24 "Maha" season.
- Continued food and/or cash assistance is recommended to improve affordability and access to food for the most vulnerable households, especially those relying on national social protection schemes or unskilled wages as well as households of the Estate sector. Increased livelihood support to food insecure households and integrated resilience activities are recommended in order to prevent households from compromising future productivity and coping capacity to shocks.

OVERVIEW

At the request of the government, a joint FAO/WFP Crop and Food Security Assessment Mission (CFSAM) visited Sri Lanka from 11 to 31 March 2023 to estimate the 2023 crop production, forecast the country's cereal import requirements for the 2023 marketing year, and assess household food security conditions. The request was prompted by expectations of a below-average agricultural output for the second consecutive year in 2023, owing to the effects of the severe macroeconomic crisis that limited imports of most agricultural inputs. The mission identified the support requirements to the sector until the next "Maha" season harvest in 2024 as well as the medium-term needs to strengthen agriculture recovery as the government indicated its intent to gradually remove all fertilizer subsidies. The mission also recommended actions of cash/food and livelihood assistance to mitigate the negative impact of the crisis on household food security. Medium to long-term resilience building activities for the most vulnerable are recommended to restore the deteriorated household capacity to cope with shocks and stresses.

To gather information on the conditions of the agriculture sector and household, and nutrition security, the mission held extensive meetings with staff of various government institutions, in particular the Ministry of Agriculture (MoA), the Ministry of Irrigation (MoI) and the "Mahaweli" Authority, the Ministry of Fisheries (MoF) and the National Aquaculture Development Authority (NAQDA), the Ministry of Finance, Economic Stabilization and National Policies (MoFESNP), the Ministry of Trade (MoT), the Department of National Planning (DNP), the Department of Census and Statistics (DCS), the Department of Meteorology, the Paddy Marketing Board (PMB), the National Fertilizer Office, the Agriculture and Agrarian Insurance Board (AAIB), the Central Bank of Sri Lanka (CBS) as well as traders, rice and wheat millers ,and agriculture input importers. In addition, the mission held consultations with staff of the World Bank (WB) and the Asian Development Bank (ADB).

Organized in two teams, the mission visited all 25 districts in the nine Provinces of the country.[1] Two experts from MoA joined the field teams along with two observers from USAID. At district level, the mission held meetings with the staff from the Agriculture Department, Fishery Department/NAQDA, irrigation and "Mahaweli" Department, Planning Department, Census and Statistic Department, Agrarian Service Centres (ASC), Veterinary Extension Services, as well as Government Agents (GAs) and Agriculture Instructors. Most of the district authorities filled the CFSAM crop, livestock and fishery questionnaire prior to the arrival of the mission (Annex III). The mission visited small

[1] The mission held meetings with local authorities and agriculture and food Industry directorates in 23 districts:
Team 1: Ampara, Badulla, Batticaloa, Galle, Gampaha, Hambantota, Kandy, Kegalle, Matara, Monaragala, Nuwara Eliya and Ratnapura.
Team 2: Anuradhapura, Jaffna, Kilinochchi, Kurunegala, Mannar, Matale, Mullaititvu, Polonnaruwa, Puttalam, Trincomalee and Vavuniya.

farmers, fishing communities and livestock owners. Extensive field observations and crop cuttings were conducted with MoA and DCS staff at subdistrict level. The mission also visited local wholesale and retail markets, and conducted interviews with rice millers and traders.

The mission assessed whether and how the household acute food security situation has changed in the ten months following the May 2022 CFSAM. To estimate the number, location and characteristics of the acutely food insecure households, a face-to-face (F2F) food security survey of 15 035 households was conducted between 20 February and 21 March 2023, generating representative findings for each of the 25 districts of the country as well as urban, rural and estate populations. The F2F household survey questionnaire also contained agriculture-related questions providing insights to the mission team regarding the conditions of crops, livestock and fishery, during the 2022/23 "Maha" season.

Since mid-2020, the country has been facing a severe economic crisis caused by high trade deficits, low foreign exchange reserves and reduced government earnings, following a tax cut in 2019, coupled with the negative effects of the COVID-19 pandemic, which virtually paralyzed the tourism sector, an important foreign exchange earner for the country. In April 2022, foreign exchange reserves reached a record low of USD 1 812 million, 80 percent below the pre-pandemic level, forcing the government to suspend payments on most of its external debt in April 2022 and declared the country's first sovereign default in May 2022. The low levels of exchange reserves, coupled with a sharp depreciation of the national currency throughout 2022, limited imports causing acute shortages and spikes in the prices of essential products, including fuel, medicine, food and inputs bringing the overall economic activities to a halt, with major disruptions to manufacturing, construction and agricultural sectors. As a result, the gross domestic product (GDP) contracted by a record 8.7 percent in 2022. The general and food inflation rates rose from October 2021 until September 2022, when both reached record levels at 69.8 percent and 94.9 percent, respectively, on a yearly basis. Since October 2022, the inflation is declining, mostly reflecting the decreasing prices of food items. However, the annual inflation rate remained at high levels and in April 2023 it was estimated to be above 35 percent.

National agricultural production has been affected by high agriculture input prices, leading to soaring production costs and unavailability of certain types of fertilizers during the 2022/23 agriculture seasons. With support from the WB, ADB, USAID, FAO and India bilateral assistance, chemical fertilizers were imported for the 2022/23 "Maha" and 2023 "Yala" seasons. Fertilizers were distributed to paddy farmers at different subsidy rates. This resulted in different levels of uptake from farmers who could not afford the high prices of fertilizers. Urea was made available at 50 percent subsidy (LKR 10 000/50 kg bag) and application by farmers achieved sufficient level (on average 120 kg/hectare planted). By contrast, as muriate of potash (MOP) was made available at a market price of LKR 19 500/50 kg bag, most farmers could not afford it and its uptake remained very low (on average 3 kg/hectare planted). Triple superphosphate (TSP) was not available for the 2022/23 "Maha" season. This scenario followed two cropping seasons (2021/22 "Maha" and 2022 "Yala") without provision of potassium and phosphorous fertilizers, and paddy soils have become depleted from their soluble fraction. For the 2022/23 "Maha" season, climate conditions have been generally favourable and there was no unusual occurrence of pests and diseases, and climate hazards (floods and dry spells) on staple crops.

Yields of the 2022/23 "Maha" season have been mainly affected by an inadequate supply of fertilizers due to their high prices and low availability, particularly phosphorous and potassium. Magnesium deficiencies were also observed in other field crops (OFCs). Looking ahead to the 2023 "Yala" season crops, to be harvested in August 2023, fertilizer availability in government warehouses is generally adequate, but slightly in short supply for urea. The production prospects for the 2023 "Yala" season crops may be, therefore, favourable if fertilizers are made available to farmers and there are no climate anomalies.

The aggregate 2023 cereal production, including the forecast for the 2023 "Yala" crops, is forecast by the mission at 4.1 million tonnes, 14 percent below

the last five-year average.[2] National paddy and maize production is forecast at 3.8 million tonnes (paddy equivalent) and 272 100 tonnes, respectively, both about 14 to 13 percent below the average. Production of pulses is projected at 46 300 tonnes, 35 percent above the average, reflecting strong domestic demand and remunerative prices that sustained the area planted. Production of root crops is expected to decline by 9 percent compared to the average, mainly due to reduced production of potatoes and manioc.

However, there are concerns about the availability of fertilizers for the 2023/24 "Maha" season, which begins in October 2023. If fertilizers in government's stocks are fully used to support the 2023 "Yala" crops and are not replenished on time, shortages may occur. As it takes approximately six months for fertilizers imported by the government agencies or the private sector to reach farmers' fields, urgent measures are needed to ensure their timely availability to support 2023/24 "Maha" production.

The mission observed livestock in poor body conditions in some districts in the north (Vavuniya, Mullaitivu and Kilinochchi) due to lack of pasture. However, this situation is expected to improve in 2023 as cattle are allowed to graze on paddy crop residues, after the harvest. A few thousand heads of cattle and some sheep and goats died during a cold snap that affected areas located north of Trincomalee District and on the East coast between 6 and 10 December 2022. Young livestock and weak animals were the most affected. Milk production is expected to decrease slightly for the second consecutive year in 2023, after steady increases registered between 2017 and 2021, mainly due to high cost of feed concentrates. However, considering the increased price of cow milk, production is anticipated to improve by the end of the year and in 2024. The mission anticipates that the population of cattle, buffaloes, sheep, goats and pigs may partially recover in 2023 from the 2022 reduced level, when availability of inputs, including veterinary drugs and feed, was severely reduced.

The mission anticipates that poultry population in 2023 will decline substantially compared to the already reduced level in 2022. The main factor for the decrease is the high cost of feed that accounts for about 65 to 75 percent of the production costs of layers and broilers. Approximately 75 percent of chicken feed is imported. Another factor is the challenges to import parents (for layers) and grandparents (for broilers) birds for hatcheries. As a result, six of the 12 hatcheries have ceased their operation in 2022 and were still closed when the mission visited the country. District authorities reported that a multitude of medium size poultry farms have also ceased their operation. Large commercial poultry farms have a better performance as they integrate vertically the production of feed and day-old chicks. Following the trend of the poultry population, production of eggs in 2023 is also expected to decrease significantly, compared with the 2022 well below-average level.

High energy/fuel prices to run fishing boats and to produce ice, together with increased costs of labour and equipment, such as packages, containers and fishing gears, severely curtailed the ability of fishing communities to achieve profitable catch quantities. In the costal fishery, many fishermen have opted to use old non-mechanized boats to reduce operation costs for fishing activities. Considering these factors, the mission anticipates that offshore and coastal fish production will remain below the five-year average in 2023. The inland and aquaculture fish output is expected to decline slightly year-on-year as budget allocations for the restocking of water bodies with fingerlings remain insufficient, but be above the five-year average after the steady increases since 2018.

For the 2022/23 "Maha" season, aggregate crop production costs have sharply increased compared to the previous year, underpinned by high prices of fuel, fertilizers and agrochemicals, seeds, labour and mechanized operations. Despite the surge in production costs, farmgate prices increased comparatively less, leaving hardly any profit margins

[2] For the purpose of this report, the 2023 agricultural production forecast includes the 2022/23 "Maha" agriculture season (crops planted in October/November and harvested in February/March) and 2023 "Yala" agriculture season (crops planted in April/May and harvested in August/September).

to farmers and many of them were unable to recover incurred costs. Moreover, the gap between farmgate and retail prices has been widening since June 2022, indicating that farmers' share of the consumers' value of their output is on a decline. Since the beginning of the economic crisis, paddy farmers are losing power as other economic actors downstream the value chain capturing a higher share of the added value. An analysis of production cost categories revealed that fertilizer cost is the only cost category which farmers have the possibility to compress by lowering the quantities applied. By contrast, mechanized land preparation and harvesting, as well as the application of herbicides for weed control can hardly be compressed as smallholder farmers do not have the capacity to manually perform these heavy tasks.

Although all paddy farmers have been affected by the economic crisis, the most severe impact has been for smallholder farmers cultivating between 0.25 and 2 hectares. They have consistently reported to the mission that the viability of their market-oriented paddy production is at risk and, with increased production costs, they would rather orient their production toward self-consumption.

Total cereal import requirements in 2023 are forecast at 1.8 million tonnes, including 1.16 million tonnes of wheat, 130 000 tonnes of maize, 465 000 tonnes of rice and 200 000 tonnes of potatoes (50 000 tonnes in cereal equivalent). Total pulses import requirements, mostly lentils, are forecast at 261 000 tonnes. The entire quantity of domestic consumption of wheat in the country is met through imports, as no wheat is produced locally. These volumes are substantially above the last five-year averages, but below the 2022 high level. No uncovered food deficit is foreseen by the Mission, as a gradual increase of foreign exchange reserves, disbursement of donor funds and modest currency appreciation, since last March, has strengthened the financial capacity of the country to import food.

In the short-term, the mission recommended releasing fertilizers that are available in public stocks in support of farmers in order to strengthen the ongoing "Yala" production and to make urgent provisions to ensure fertilizers availability for the 2023/24 "Maha" season. The Ministry of Finance clearly indicated to the mission its intention to move out of fertilizer subsidies. Past years' experiences show that sudden policy changes could results in further declines of paddy production and negative impacts on household food security. Therefore, if the government intends to cease the fertilizer subsidy system, the mission recommends to implement it over a transition period of at least three years (2023–2026). The mission also proposed measures to address long-term soil fertility/crop productivity as well as immediate and medium-term constraints in the livestock and fishery sectors.

Based on the F2F household survey, 3.9 million people (17 percent) were estimated to be moderately acute food insecure at the time of the mission, including about 10 000 people severely acute food insecure. This represents an 11 percentage point decrease from May 2022 (28 percent). This improvement in food security is linked with better food consumption and could reflect the seasonal effect of the harvest period and better affordability of specific food groups. However, despite the increase, food consumption continues to be well below the pre-crisis period. In addition, more households are adopting livelihood-based coping strategies and, therefore, compromising their future resilience and productivity. Pockets of acute food insecurity remain, particularly among the chronically vulnerable households, in particular in the Estate sector and those dependent on the informal sector for income.

As of May 2022, the highest levels of acute food insecurity are in the Estate sector (42 percent). Acute food insecurity was also high in Eastern (23 percent) and Northern (28 percent) provinces, specifically in the districts of Killinochchi, Nuwara Eliya, Mannar, Batticaloa, Vavuniya and Jaffna where food insecurity was above 25 percent.

Livelihood sources as well as gender and education of the household head are important determinants of food insecurity. Households relying on assistance, followed by those depending on unskilled/casual agriculture labour or those with production and sale of fish as the main source of income, showed the highest levels of food insecurity. Female-headed

households (23 percent) and those where the head of household had no education (34 percent) had higher food insecurity rates, resulting in fewer employment opportunities, lower wages and lower income.

The reduction in food insecurity observed in March 2023 is closely linked with the improvement in food consumption, which remains, however, well below pre-crisis levels. Households with insufficient diets reduced from 39 percent to 21 percent (4.7 million people) by March 2023, mainly due to an increased consumption of oil, protein, pulses and sugar, probably linked with better availability and affordability of fish, lentils and oil. Still, the wealthier the quintile the better food consumption, confirming the economic challenges to access an adequate diet.

More than half of households (56 percent) reported regularly using medium or high food-based coping strategies because they did not have enough food or money to buy food. This represents a limited improvement compared to the 61 percent found in May 2022. By March 2023, 37 percent of households were still limiting portion sizes and 19 percent reducing the number of daily meals. The proportion of households borrowing food or relying on friends and relatives to get food continues similarly to last year, at 20 percent.

More households are forced to adopt livelihood policies and more severe strategies to cope with the lack of food or money to buy it, compromising their future productivity and resilience to future shocks and stresses. Nearly two out of three households across the country (62 percent) applied at least one livelihood-based coping strategy compared to 48 percent in May 2022 and 26 percent employed emergency or crisis-level strategies, up from 23 percent last year.

Household expenditure on food remains similar to May 2022, which, considering the improved food consumption, indicates better affordability of specific food items at the time of the assessment that allows higher household purchasing power for food. On the other hand, households spend more money on most non-food categories, which have led to lower household food expenditure shares compared to May 2022. In March 2023, 42 percent of households reported using more than 65 percent of their total monthly expenses in food and were, therefore, exceedingly susceptible to shocks such as price fluctuations or loss of livelihoods/reduced income earning opportunities.

The low percentage of households with expenses in non-critical categories such as clothes, insurance, savings or household maintenance, among others, points out the economic difficulties faced by households to cover their needs, confirmed by the increased proportion of households employing coping strategies compared to May 2022, such as borrowing money from formal lenders, purchasing food on credit or spending savings. Out of the most common expenses, debt repayment, education, fuel and medical treatment constitute 68 percent of non-food monthly expenditures on most common categories, with debt repayments showing the highest share (26 percent).

Household income shows a certain level of recovery, with 62 percent of households that reported a reduction on their total monthly income compared to 78 percent in May 2022. Likewise, almost one out of three households (35 percent) reported their income had increased (up from 18 percent in May 2022). Households engaged in agricultural activities reported the biggest loss in income compared to the same period last year, likely in part related with higher expenses in land rent, workforce, fuel, agricultural inputs and debt repayment. Households relying on social protection, pensions or humanitarian assistance reported income stability or increase, highlighting the impact of increased efforts made by the government and non-governmental organizations to support the most vulnerable population.

The livelihood profile of the population has changed compared to May 2022. Proportion of households relying on better income sources such as salaried work, skilled labour or business have reduced, while those relying on unskilled labour, agriculture, pension or assistance have increased. This trend, that is more evident in urban areas and in the Estate sector, could be a seasonal effect of the harvest season and/or reflect the impact of the economic recession and general macroeconomic situation.

Gains in household food security could be related to the harvest period through access to income for farmers and related livelihoods as well as better food availability and affordability. The improvements in food security of farmers have not been similarly registered by other livelihood groups. Additionally, while income from harvest was starting to become available at the time of the survey, farmers were in general reporting a lower income in comparison to past agricultural seasons. The duration of that income could be, therefore, more limited in time.

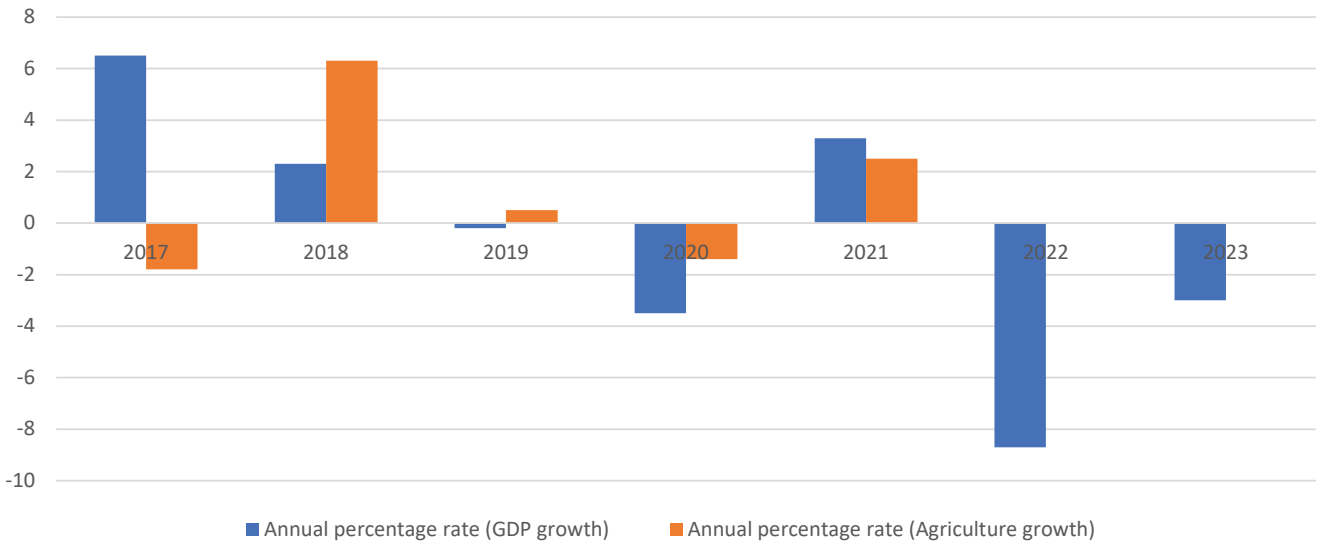
The mission recommends the continuation of assistance in the form of food and cash transfers to allow affordability and access to food of the most vulnerable group households relying on assistance and unskilled daily wages as well as to the Estate sector. Recommendations include livelihood support aimed at building resilience to various shocks for households engaged in irregular income sources, with special focus on fishery. Selection criteria should also prioritize female-headed households and households with low education attainment. Medium to long-term resilience building activities for the most vulnerable are as well recommended by the mission to restore the deteriorated household capacity to cope with shocks and stresses. Given the volatility of the macroeconomic situation, the high levels of inflation and the impact of seasonal fluctuations, a close monitoring of markets and food security situation is recommended.

SOCIOECONOMIC CONTEXT

Macroeconomic situation

The national economic growth, measured by real GDP, has steadily declined since 2017 until it contracted by 3.6 percent in 2020, driven by the high trade deficit, low foreign exchange reserves and a sharp reduction of government revenues, following tax cuts in 2019 (Figure 1 and Table 1). The negative effects of the COVID-19 pandemic and its containment measures that resulted in widespread incomes losses, a strong decrease in remittance inflows and virtually paralyzed the tourism sector, one of thountry's main foreign exchange earners, exacerbated the economic difficulties. The GDP rebounded by 3.3 percent in 2021 supported by a recovery in the agriculture sector, manufacturing and construction. However, the ripple effects of the war in Ukraine on commodity prices, given the country's reliance on energy and fuel imports, depleted the already critically low foreign exchange reserves volume that in April 2022 was at a near-record low of USD 1 812 million, 80 percent below the pre-pandemic level. Consequently, the government suspended payments on most of its external debt

Figure 1: Sri Lanka – GDP and agriculture growth, 2017–2023



Sources: Authors' own elaboration based on the data from the International Monetary Fund (IMF). 2023. *World Economic Outlook - Real GDP growth*. April 2023. https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/LKA?zoom=LKA&highlight=LKA; and the value for 2022 agriculture, from the Ministry of Finance, Economic Stabilization and National Policies. 2022. *Economic Statistics of Sri Lanka*. Department of Census and Statistics Sri Lanka http://www.statistics.gov.lk/Publication/Economic-Statistics-2022, 2023.

Table 1: Sri Lanka – Key economic indicators, 2018–2023

Domestic Economy	2018	2019	2020	2021	2022	2023[1/]
Real GDP growth (percentage)	2.3	-0.2	-3.5	3.3	-9.0	-3.0
Consumer price index (end of period, percentage)	2.8	4.8	4.2	12.1	57.2	4.9
Exports of goods (USD million)	11 890	11 940	10 047	12 499	13 448	13 315
Imports of goods (USD million)	-22 233	-19 937	-16 055	-20 637	-18 462	-19 062
Trade surplus/deficit (USD million)	-10 343	-7 997	-6 008	-8 139	-5 014	-5 747
Average international reserves (USD million)	7 738	8 597	6 073	3 314	1 924	3 528
Average exchange rate LKR/USD	182.75	181.63	186.41	200.43	363.11	350.00

[1/] Forecast by EIU. Real DGP Growth (percentage) is IMF forecast.

Source: EIU. 2023. *Country Report Sri Lanka*. Economist Intelligence Unit (EIU). Cited July 2022. https://country.eiu.com/sri-lanka.

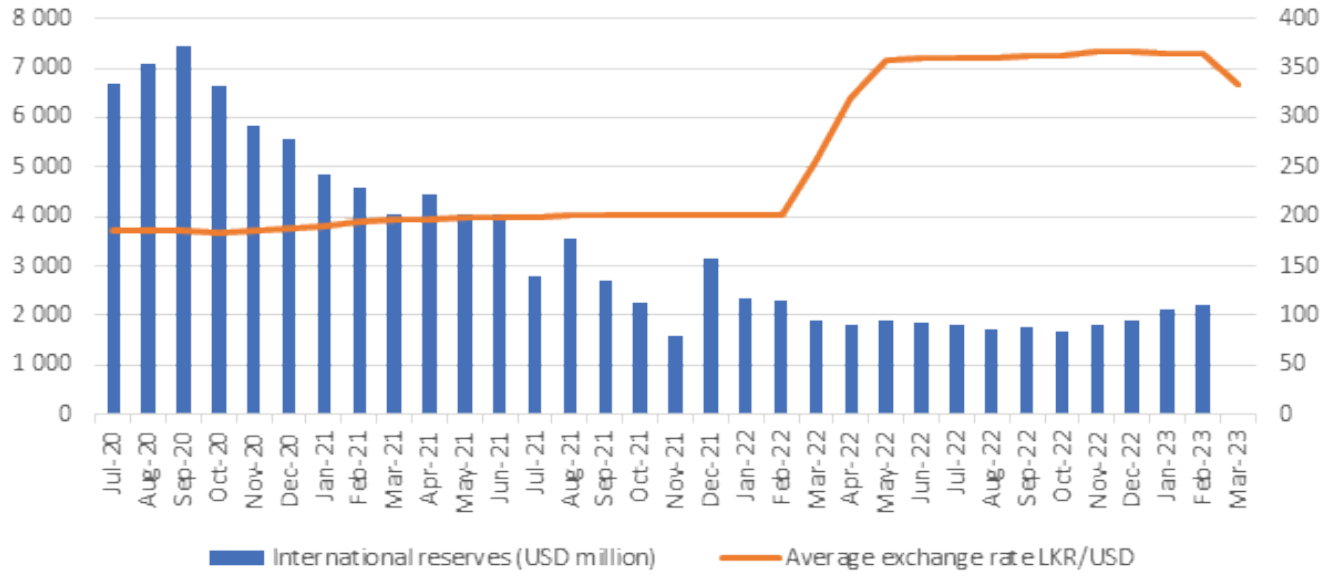
obligations in April 2022 and declared the country's first sovereign default in May 2022. The low levels of exchange reserves, coupled with a sharp depreciation of the national currency throughout 2022, limited imports causing acute shortages and spikes in the prices of essential products, including fuel, medicines, food and inputs, bringing the overall economic activities to a halt, with major disruptions to manufacturing, construction and agriculture sectors. As a result, the GDP declined by a record 8.7 percent in 2022.

In 2023, the GDP is projected to contract by 3 percent, as the negative effect of foreign exchange shortage, high inflation and the aggressive tightening of the monetary policy will weigh on economic activity. According to the International Monetary Fund (IMF), the economy is expected to start recovering in 2024, with a modest GDP growth rate of 1.5 percent supported by a gradual recovery in the tourism, manufacturing and agricultural sectors, and the disbursement of donor funds. On 20 March 2023, the IMF approved an Extended Fund Facility (EFF) programme totalling USD 2.9 billion, with an immediate disbursement of USD 333 million, after securing financing assurances from the country's main creditors to provide a debt relief consistent with IMF's debt sustainability framework (WB, 2023). The EFF arrangement is also expected to catalyse new external financing, including from the Asian Development Bank and the World Bank.

The exchange rate was generally stable at LKR 200/USD 1 between August 2021 and February 2022. On 7 March 2022, in order to prevent reserve losses, the Central Bank devaluated the Sri Lanka rupee that, in only three months, March to May 2022, lost more than 40 percent of its value against the US dollar, reaching an all-time low of LKR 360/USD 1 (Figure 2). Subsequently, the Sri Lanka rupee has remained stable at record low levels until early 2023. In March 2023, the Sri Lanka rupee slightly appreciated against the US dollar to LKR 333/USD 1, following the IMF-EFF approval, the injection of funds worth USD 400 million by the International Finance Corporation and the increased foreign inflows to the country's equity and bond markets.

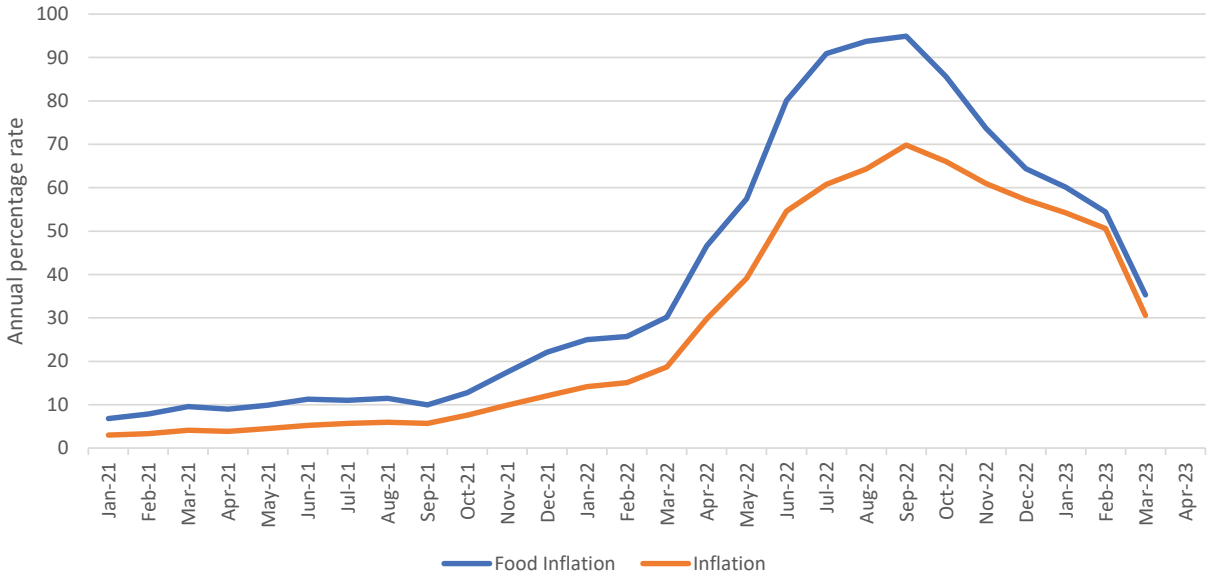
After being stable at low levels throughout most of 2021, general and food inflation rates surged from October 2021 until September 2022, when both reached record levels at 69.8 percent and 94.9 percent, respectively, on a yearly basis (Figure 3). The high level of inflation is attributed to the impact of elevated global commodity prices, a strong currency depreciation and domestic food supply shortages. The general and food inflation rates have gradually declined since October 2022 and, in April 2023, they were estimated at 35.3 percent and 30.6 percent, respectively. The decline in the cost of food items has been the main factor to reduce inflation. According to the Central Bank of Sri Lanka, the inflationary pressure for the remainder of 2023 is expected to weaken as a result subdued demand conditions owing to tight monetary and

Figure 2: Sri Lanka – International reserves and exchange rates, 2020–2023



Source: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *Monthly Economic Indicators - March 2023*. Statistics Department Central Bank of Sri Lanka. https://www.cbsl.gov.lk/en/statistics/economic-indicators/monthly-indicators. 2023.

Figure 3: Sri Lanka – Inflation trends, 2021–2023



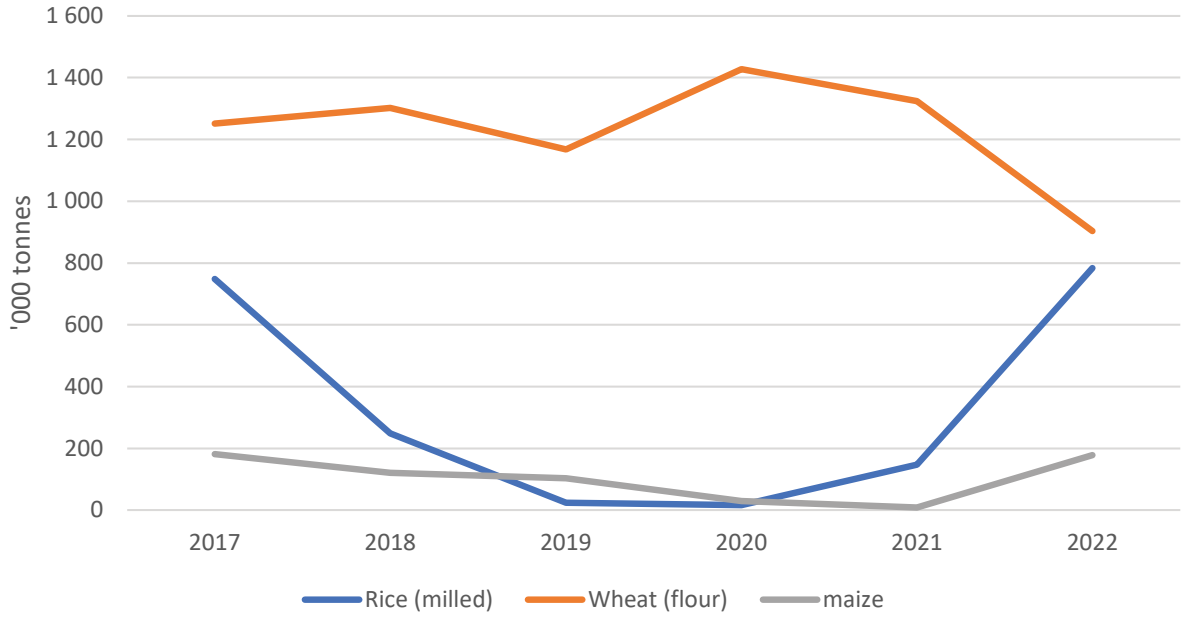
Source: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *Monthly Economic Indicators - March 2023*. Statistics Department Central Bank of Sri Lanka. https://www.cbsl.gov.lk/en/statistics/economic-indicators/monthly-indicators. 2023.

fiscal policy measures, softening of food and energy prices, amid the recent exchange rate appreciation and anticipated improvements in domestic supply conditions. The positive impact of the government's decision to cut substantially the prices of petrol 92, petrol 95, diesel and super diesel from 29 March 2023, will also contribute to the downward inflationary pressure.

Food imports

Wheat and wheat flour account for the largest share of national cereal imports. Large quantities of rice and maize are imported only when local production is not sufficient to cover the domestic needs. As illustrated in Figure 4, import volumes of rice in 2022 surged to record high levels

Figure 4: Sri Lanka – Cereal imports (rice in milled equivalent), 2018–2022



Sources: Authors' own elaboration based on the data from the Trade Data Monitor, 2023.

of 783 000 tonnes (milled equivalent), mainly sourced from India, to compensate for the sharply reduced domestic production. A similar amount was imported in 2017 as a consequence of the drought-reduced 2016/17 "Maha" output. Between 2018 and 2020, imports of rice amounted to only about 16 000 to 25 000 tonnes, reflecting a recovery of paddy production and the implementation of high import duties. Maize imports have steadily decreased between 2017 and 2021, due to the rising domestic production, which nearly covered the entire domestic needs in 2020 and 2021. In 2022, imports of maize were estimated at a high level of 180 000 tonnes, in response to the sharp decline in domestic production. Wheat is not produced in the country and the entire domestic requirements are covered by imports that ranged from 1.2 to 1.4 million tonnes between 2017 and 2021, mostly sourced from Canada, the Russian Federation, Australia, Pakistan and India. In 2022, due to the sharp depreciation of the national currency and increasing trends in the international markets, only 904 000 tonnes of wheat grain and wheat flour (in wheat equivalent) were imported, 30 percent below the 2021 average level. Nearly the entire amount was imported from India, facilitated by the USD 4 billion Indian credit line.

Administration

The administrative organization of the country is divided into three political and administrative levels: national, provincial and local authority level. For administrative purposes the country is administratively divided into nine provinces. The provinces are further divided into 25 districts which are subdivided into 315 Divisional Secretariats (DS) divisions and 14 009 *Grama Niladari* (GN) divisions, the smallest administrative unit of the central government. Each GN division administered by a single government official (the GN officer), is and groups about 250 households.

Population

The country's population in 2023 is estimated at 21.89 million, with an annual growth rate of approximately 0.4 percent during the last five years (United Nations Department of Economic and Social Affairs [UN DESA], 2022). About 80 percent of the population lives in rural areas, with a relatively high population density of 334 people per km^2. In 2022, over 311 000 people left the country, a record and more than double the migrated population in 2021 (Central Bank, 2022d), driven by the severe economic crisis.

AGRICULTURE

General

Over the last decades, the contribution to GDP by the agricultural sector, including forestry, livestock and fishery, has been on a steady decline. In 1974, the sector accounted for 33.5 percent and reached only 7.3 percent in 2021 (Central Bank, 2022a). Approximately 27 percent of the formally employed population is engaged in agriculture, which corresponds to more than 2 million people (Central Bank, 2022b). In addition, informal employment is significant in the sector, particularly in smallholder farming. Agriculture also provides the resource base for a number of agro-based industries and agro-services and stimulates the economic growth through vertical and horizontal integration with other sectors in the economy (MEPI, 2021). The production value of the food industry accounted for approximately 35 percent of the total manufacturing industry output in 2021 (Central Bank, 2022a).

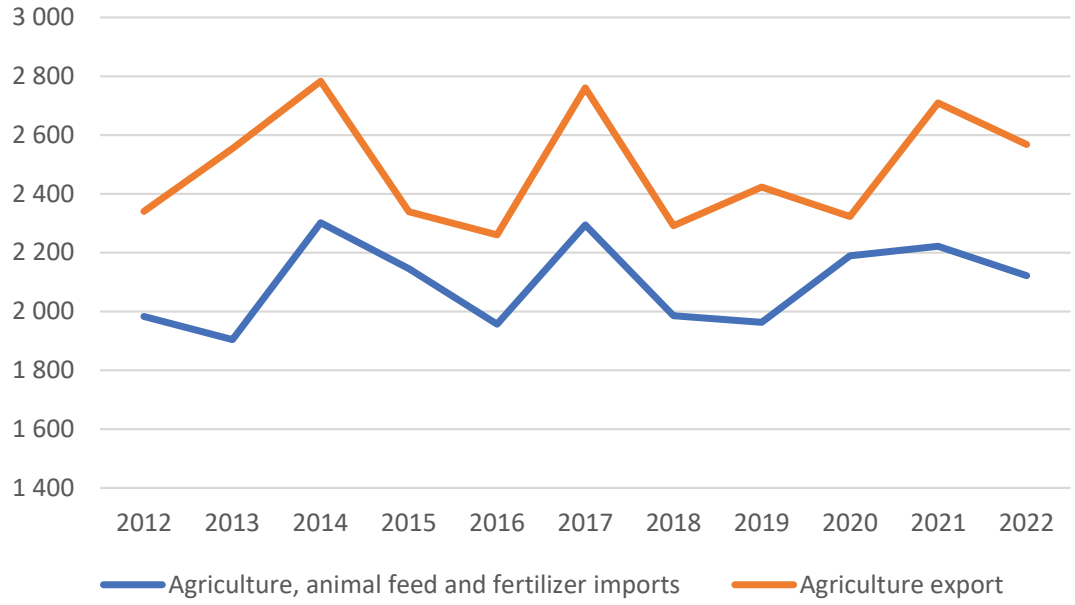
The agriculture production structure remains concentrated in the low value food crops. Paddy is the most important crop and occupies 34 percent of crop land (MEPI, 2021) while contributing to 12 percent of agriculture GDP (Central Bank, 2022a). Rice is also the main staple food and paddy production provides food security for the nation and generates employment along the value-chain. Agriculture accounts for about 22 percent of the country's total exports earning (Central Bank, 2022c). Tea is the main agricultural export commodity, accounting for 48 percent of the total agriculture exports, followed by coconut products, rubber, spices such as cinnamon and pepper, cocoa, coffee, vegetables, fruits and nuts. Imports include wheat grain and wheat flour, rice, dairy products, sugar, pulses (green gram, black gram and lentils), chilli, potatoes and onions. Heavy reliance on unprocessed/primary agriculture

and lack of compliance with international quality standards negatively affect exports and opportunities for adding value to the agricultural exports. The agricultural sector has a positive balance of trade, ranging between USD 130 and USD 490 million (Figure 5). Part of the revenue earned through agriculture taxation and tariffs is used for subsidizing fertilizers, which features prominently in the agriculture budget. Agriculture earning from exports have fluctuated over the past decade and declined in 2022. Rice exports are minor in quantity and are highly variable from one year to another, due to significant variations in domestic production.

Climatic zones and cropping seasons

The country is characterized by a mountainous zone located in the south-central region and a surrounding coastal plain (Map 1). Three-quarters of the total land consist of a broad first peneplain, with an average elevation of 75 m above the sea level. A second peneplain is situated at an elevation of 500 m and, towards the south, the terrain rises steeply, forming a mountain massif that reaches an elevation of 2 500 m (FAO, 2011).

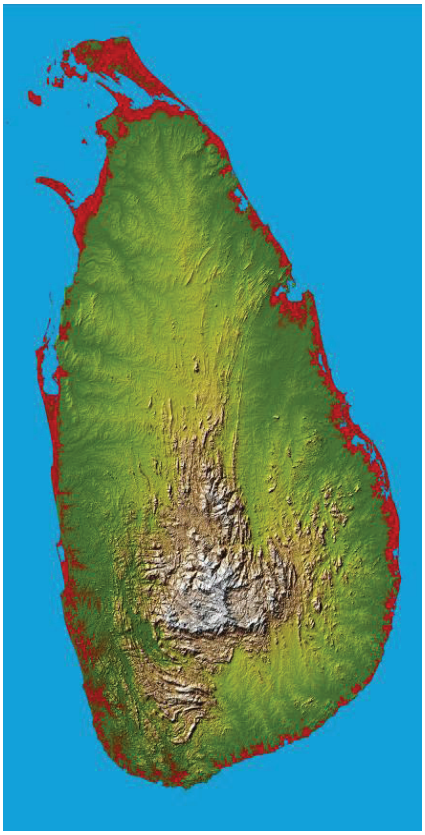
Figure 5: Sri Lanka – Agriculture trade performance (USD million), 2012–2022



Note: Agriculture imports includes food and drinks, wheat and maize, and fertilizer categories.

Sources: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *External Trade and Finance*. Sri Lanka Customs. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/ess_2022_chapter_4_e.pdf; and *Press Release: External Sector Performance – December 2022*. Economic Research Department. 31 January 2023. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20230131_external_sector_performance_2022_december_e.pdf

Map 1: Sri Lanka – Topography



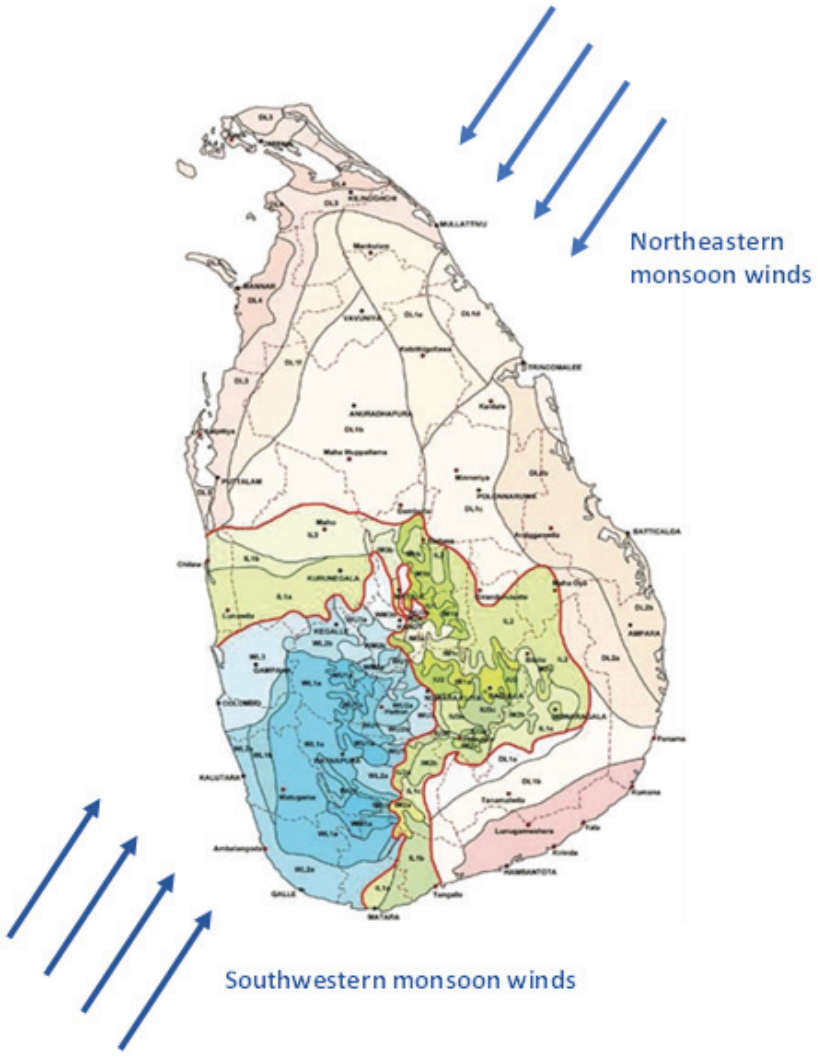
Source: NASA. 2005. *Photojournal: PIA06670: Sri Lanka, Colored Height.* Jet Propulsioin Laboratory - California Institute of Technology. Cited March 2023. https://photojournal.jpl.nasa.gov/catalog/PIA06670.

This topographical feature creates unique rainfall patterns and it is the major determinant of water resources in the southcentral region due to its location across the passage of monsoon winds. Moisture-laden monsoon winds are intercepted by the hills in the central region leading to a unique rainfall pattern, with notable spatial variation. The mean annual rainfall varies from under 900 mm in the driest parts (southeastern and northwestern) to over 5 000 mm in the wettest parts (western slopes of the central highlands). All major perennial rivers originate in the highlands spreading in a cartwheel fashion from the center towards the coast. The river basins that originate in the wetter highland areas are perennial, while the majority of those in the dry zone (DZ) are seasonal (MoE, 2021a). Yet, most rivers have their source in the mountainous area and their lower reaches are prone to seasonal flooding.

The country has a complex climatology with over 45 agro-climatic zones. Based on the total annual rainfall amounts, the country is broadly divided into three climatic zones (Map 2):

- Wet zone (WZ) Rainfall > 2 500 mm with a strong contribution from the southwest monsoon (23.2 percent of the land area);
- Intermediate zone (IZ) Rainfall between 1 500 – 2 500 mm primarily from the northeast monsoon (13.2 percent of the land area);
- DZ Rainfall < 1 500 mm (63.5 percent of the total land area).

Map 2: Sri Lanka – Climatic zones



Source: NSDI. 2022. *Thematic Maps.* National Spatial Data Infrastructure Sri Lanka. Cited March 2023. https://nsdi.gov.lk/thematic-maps, 2023.

There are two cultivation seasons in the country: the main "Maha" season and the secondary "Yala" season. Table 2 indicates the five-year average of the proportion of planted area and production by crop for each of the two cropping seasons.

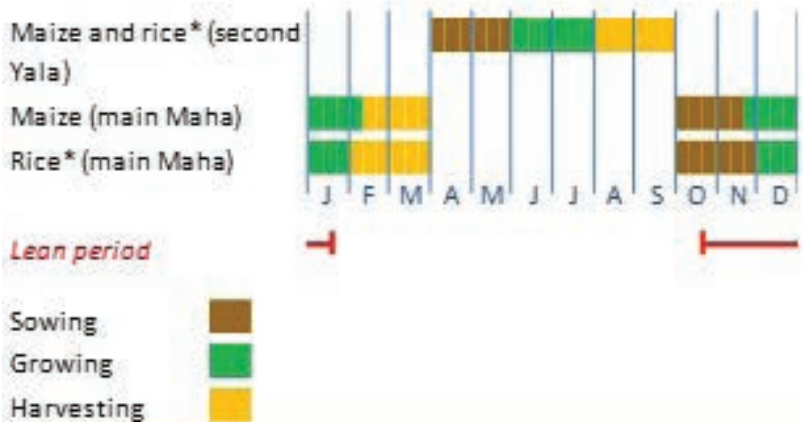
The main ''Maha "paddy cropping season stretches from October to March and, normally, it accounts for 55 to 65 percent of the total annual paddy production and its output depends on the amounts of the inter-monsoon rains and the September–March northeast monsoon (Figure 6). The secondary "Yala" season stretches from April to September and relies on the minor May–August southwest monsoon and irrigation.

Table 2: Sri Lanka – Proportion of harvested area and production of paddy and OFCs for the two main cropping seasons, 2018–2022 average (percent)

Field Crops	Harvested area		Production	
	"Maha"	"Yala"	"Maha"	"Yala"
Paddy	62.8	37.2	61.6	38.4
Maize	89.7	10.3	89.7	10.3
Finger millet	79.5	20.5	75.3	24.7
Total cereals	**64.8**	**35.2**	**63.4**	**36.6**
Green gram	46.6	53.4	46.2	53.8
Black gram	81.7	18.3	76.4	23.6
Cowpeas	56.8	43.2	55.4	44.6
Total pulses	**61.3**	**38.7**	**58.3**	**41.7**
Manioc	56.2	43.8	55.2	44.8
Sweet potatoes	54.3	45.7	54.2	45.8
Potatoes	49.7	50.3	55.1	50.9
Total root crops	**55.0**	**45.0**	**55.1**	**46.0**

Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, 2023.

Figure 6: Sri Lanka – Rice and maize crop calendar



* Major foodrop.

Sources: Authors' own elaboration, FAO/Global Information and Early Warning System on Food and Agriculture (GIEWS), 2022.

The country's cultivable land is 2.9 million hectares or 44 percent of the total land area. The remaining area includes land that is unsuitable agriculture, inland water bodies, forest and wildlife reservations. Around 80 percent of the total cultivable land, about 2.3 million hectares, is used for agricultural crops (DCS, 2018). Monsoon rainfall patterns shape the agricultural seasons and irrigation patterns. Two thirds of the agricultural area are located in the DZ, which covers the northern, eastern and southeastern parts of the country, where the bulk of the country's irrigation infrastructure is located (WB, 2016).

The expansion of crop cultivation into the DZs of the north, east and southeast parts of the country was enabled through the construction of elaborate water management systems, dating back to the period between 500 BC and 300 AD. These systems are based on water capture in small reservoirs commonly known as ''tanks'' connected through canals into cascades. The agrarian system, called the *ellanga gammana* or Cascaded Tank-Village system in the DZ, was designated as a Globally Important Agricultural Heritage System (GIAHS) by FAO (FAO, 2018a). In 2022 and 2023, the government allocation to irrigation infrastructures maintenance is insufficient to guarantee an adequate maintenance. Farmers Organisations (FOs) collects contributions from farmers and maintain their own operation and maintenance funds for irrigation. As a result, while many of the tanks and canals are still functioning, some are damaged, and the overall performance is low (WB, 2019).

Agriculture holdings

An estimated 4.35 million agriculture holdings were registered by the 2013/14 economic census, of which 2.13 million households cultivate between 0.1 and 2 hectares of land (2 million being marginal holding operating less than 0.1 hectares). An estimated 0.2 percent of all holdings are estate holdings, accounting to 18 percent of the agriculture land (DCS, 2018). About 94 percent of households are engaged in crop production and approximately 12 percent in livestock production activities (DCS, 2019). The agricultural sector is characterized by a non-plantation and a plantation agriculture. Of the country's approximately 2.3 million hectares used for agriculture crops, 80 percent is sown with non-plantation food crops, including rice, maize, pulses, fruits, vegetables and other crops that are primarily grown on smallholder farms. Plantation crops, such as coconut, rubber and tea, are cultivated on all categories of land holdings, including large estates. Usually, non-plantation crops are cultivated under irrigated conditions, while plantation and crops for export are grown in the rain-fed areas (WB, 2016).

Paddy and fertilizers

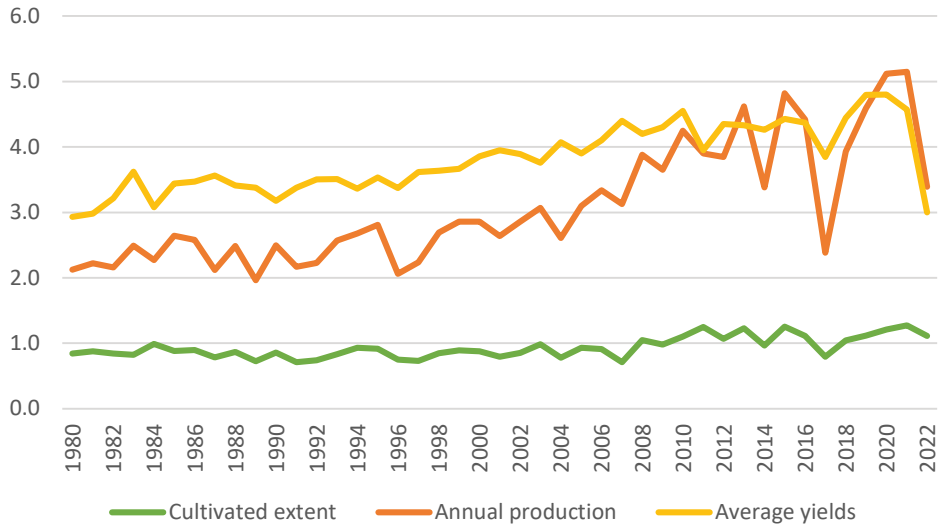
Paddy is mostly grown by smallholder farmers under a wide range of conditions, such as elevation, soil and hydrological regime. Slightly over 65 of the harvested paddy is irrigated while almost 35 percent is rainfed. The most popular rice type, accounting for 60 percent of total paddy production, is the long grain rice called "nadu", followed by the short grain rice called "samba", which accounts for about 20 percent of the production. Although white pericarp varieties are still most popular, red pericarp and traditional rice varieties are becoming increasingly favoured (USDA, 2020). Long grain red, long grain white and short grain white production is cultivated for sale, while short grain red production is used for household consumption (DCS, 2019). Aiming to achieve self-sufficiency in rice, the national legislation prohibits the cultivation of other crops on most paddy lands and alternative crops are allowed only on exceptional cases, depending on the availability of irrigation water, which is provided free of charge through an extensive network of tanks and irrigation canals.

Paddy land preparation and harvesting operations are mostly mechanized. Land preparation is typically accomplished using disk ploughs and harrowers attached to tractors with 40–50 horsepower, while harvesting operations are carried out with small size combine harvesters. Bagging is done in the field in batches once the combine harvester's container is filled. Weed control is usually performed through weedicides application using knapsack sprayers. Paddy must be harvested within a short time span, particularly the "Maha" season crops, as rainfall occurrence is frequent. If farmers fail to harvest the grains soon after they reach maturity, the risks of crop losses are significant.

As shown in Figure 7, paddy production has increased steadily from 2.9 million tonnes in 2003 to 5.2 million tonnes in 2021. The increase in production is attributed to the reopening of previously inaccessible lands for cultivation after the end of the conflict, coupled with the introduction of high-yielding varieties, the expansion of irrigation capacity. The implementation of new policies such as the expansion of fertilizer subsidies for all fertilizer types (N,P and K) for paddy and restrictions to plant other crops on land designated to grow paddy also supported production.

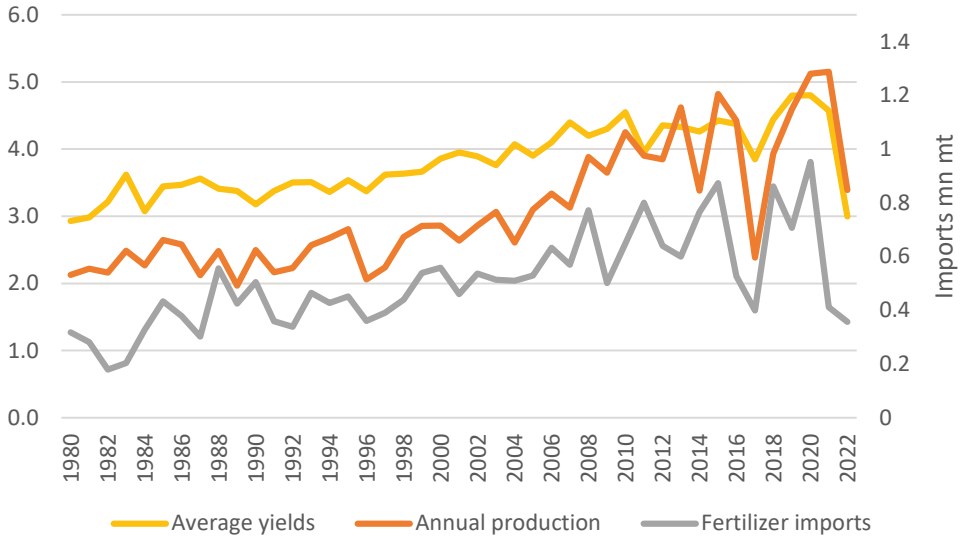
However, paddy production has exhibited wider annual fluctuations from 2009 onwards and also total fertilizer imports have become increasingly erratic since 2009. By looking at annual fertilizer imports data and paddy yield between 1980 and

Figure 7: Sri Lanka – Paddy area harvested, yields and production, 1980–2022



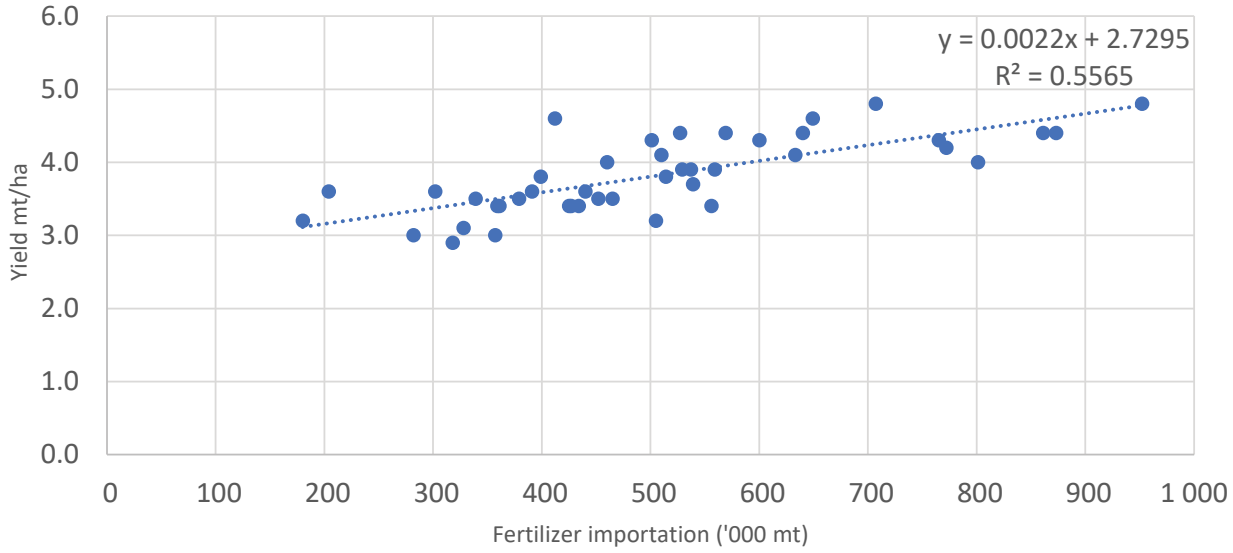
Sources: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *External Trade and Finance*. Sri Lanka Customs. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/ess_2022_chapter_4_e.pdf; and *Press Release: External Sector Performance – December 2022*. Economic Research Department. 31 January 2023. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20230131_external_sector_performance_2022_december_e.pdf

Figure 8a: Sri Lanka – Paddy yields and production and fertilizer imports, 1980–2022



Sources: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *External Trade and Finance*. Sri Lanka Customs. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/ess_2022_chapter_4_e.pdf; and *Press Release: External Sector Performance – December 2022*. Economic Research Department. 31 January 2023. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20230131_external_sector_performance_2022_december_e.pdf

Figure 8b: Sri Lanka – Regression analysis on paddy production and fertilizer imports, 1980–2022



Note: Agriculture imports includes food and drinks, wheat and maize, and fertilizer categories.

Sources: Authors' own elaboration based on the data from the Central Bank of Sri Lanka. 2023. *External Trade and Finance*. Sri Lanka Customs. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/ess_2022_chapter_4_e.pdf; and *Press Release: External Sector Performance – December 2022.* Economic Research Department. 31 January 2023. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20230131_external_sector_performance_2022_december_e.pdf

2022 (Figure 8a, 8b) there is a strong positive correction (correlation coefficient of 0.75) between paddy production and application of fertilizer. Furthermore, a comprehensive study has found that application of fertilizer doubles the paddy output growth (Weerahewa & all, 2021). This suggests that, assuming all other factors remain unchanged, the application of fertilizer plays a crucial role in determining paddy productivity.

The government has provided fertilizers at subsidized rate since 1962 at the onset of the Green Revolution. During 1990 to 1994, there were no fertilizer subsidies and from 1997 to 2005 subsidies were provided only for urea (Weerahewa & all, 2010). As the fertilizer use efficiency depends on the extent to which applications are balanced by the nutrients NPK, from 2005 onward the country followed a price equalization policy across nutrients (Weerahewa & all, 2021). Currently, two state-owned companies import fertilizers for the paddy sector.[3] The distribution of subsidized fertilizers for paddy farmers is entirely performed by the Agrarian Service Centers (ASCs) of the Agrarian Services Department. At the start of each cropping seasons, the ASCs call for applications from eligible farmers, who are required to provide information on the type of crops they plan to cultivate, the amount of land devoted to each crop and the amount and type of fertilizer required.

All required quantity of chemical fertilizers is imported.[4] In 2020, total fertilizer imports amounted to USD 259 million (Central Bank, 2022c). Facing severe foreign exchange shortage needed to import essential goods, the government prohibited importation of chemical fertilizers and other agro-chemicals on May 6, 2022. Through this policy, the government hoped to list Sri Lanka as the first country in the world to make agriculture exclusively organic (Weerahewa & all, 2010). The ban was relaxed in August 2021 and lifted in September 2021, following months of increasing protests by farmers, too late for the 2021/22 "Maha" season. As a result, according to DCS data, the 2022 aggregate paddy production dropped by 34 percent compared with

[3] The Ceylon Fertilizer, Ltd. and the Colombo Commercial Fertilizers, Ltd. are the two state-owned organizations engaged in tendering for fertilizer import and wholesale distribution of quality chemical fertilizers to farmers in Sri Lanka.

[4] Sri Lanka has its own phosphate deposits in Eppawela in North Central Province, the government has a small plant that can only process rock phosphate into low-soluble phosphate fertilizer, which is a low grade fertilizer.

the five-year average, while the average paddy yield dropped close to the level of the early 1980s.

Other field crops

The OFCs include cereals (maize and finger millet), pulses (green gram, cow pea, black gram, soya beans and ground nuts), root crops (potatoes, sweet potato and cassava) and a wide diversity of vegetables (onions, pumpkin and chilies) produced during the "Maha" and "Yala" seasons. OFCs are predominantly cultivated by small scale farmers, but home gardens are also an important source of supply of OFCs and are irrigated using wells and water pumps. OFCs are not exported, but cater for local markets. Potatoes, chilies and onions are imported to bridge a supply shortfall in the domestic market.

Livestock

The livestock sector comprises dairy, poultry, swine, goat and sheep sub sectors and, in 2021, it contributed to about 11 percent to the agriculture GDP (Central Bank, 2022a) and employed approximately 600 000 people (MEPI, 2021). Domestic milk production covers approximately one third of the country's annual milk requirement and between 80 000 and 100 000 tonnes of milk are imported annually (Central Bank, 2022c). Government-owned enterprises, the National Livestock Development Board (NLDB) and the state-owned dairy producer Milco play vital roles in the livestock sector. The NLDB owns 31 farms and it is engaged in developing and distributing breeding material and livestock product marketing. Milco covers about 50 percent of the local market supplies of milk-products as leader company in the domestic dairy industry through milk collecting, processing and marketing (MEPI, 2021).

The livestock and poultry production systems are characterized by three groups of farm animals, namely (i) exotic, (ii) mixed and (iii) indigenous breeds. The exotic breeds are predominant in large scale commercial farms which are characterized by intensive management systems, while mixed breeds are in semi-intensive smallholder farms. The indigenous breeds occupy a significant position in the extensive production systems practiced by smallholder farmers. Village chicken, village pigs, local types of ruminants, including Lankan cattle, white cattle, Lankan buffaloes, Lankan goats and Jaffna local sheep are key players in all these systems (FAO, 2019).

The poultry industry is entirely operated by the private sector and it covers the entire domestic requirement of chicken and egg as well as it provides some surplus to be exported.

Fisheries

The marine fisheries resource base is comprised of a territorial sea of 21 500 sq km, an Exclusive Economic Zone (EEZ) of 517 000 sq km and lagoons and estuaries of 1 580 sq km. The country also has inland water bodies of 5 200 sq km and a considerable portion of these are man-made reservoirs which can be utilized for fisheries. Around 2.8 million people are depend on the fishery sector and engage in marketing of fishery products and other related activities (MEPI, 2021). The sector currently contributes to about 12 percent of the agriculture GDP (Central Bank, 2022a).

At present, the country has 22 operating fishery harbours and majority of them are in the southern quadrant of the country. There are 58 anchorages and 890 landing sites throughout the coastal belt. Though the total number of operating fishing vessels are 53 988 of all sizes, the number of multi-day boats available are only 4 447 and of which only 1 625 are operating at high sea with vessel monitoring facility (MEPI, 2021). The Ministry of Fisheries provides early warning for tuna fish concentration to high sea vessels.

Gender

Gender disparities in the agricultural sector are significant, with women facing limited access to and control over resources such as land, water and inputs as well as access to markets and skills training. At the national level, only 19 percent of smallholder agricultural holdings are headed by women, while a mere 8 percent of the Estate sector is headed by women (DCS, 2018). Despite the non-discriminatory nature of the constitution regarding land ownership, gender biases in the Land Development Ordinance and other customary laws perpetuate inequalities in land ownership, with women owning only 16 percent of all privately-owned land in the country (MoE, 2021b). Women have minimal involvement in paddy

production and marketing, with men controlling the sale of paddy and large-scale processing. Women mainly engage in semi-skilled work such as grading and husking of paddy. Men typically own and/or operate hired machinery for land preparation and harvesting, and the farmers who sell paddy at the end of the production chain, buyers, and millers are all men. Women may undertake some rice processing at the local level, but some tasks, such as watching fields and handling water rotations at night, canal cleaning and fencing, and working on the threshing floor, are considered taboo for women (FAO, 2018).

Women play a more substantial role in the production of fruits and vegetables, which are grown in home gardens and provide food for domestic consumption and sale, including a variety of spices. They also have greater involvement in poultry production, which can be managed within the household premises and in conjunction with women's traditional responsibilities at home. Several women engage in backyard semi-intensive production of birds based on buy-back agreements with poultry companies (FAO, 2018).

Traditionally, men undertake extensive raising of cattle and women have a minor role in this activity. In traditional extensive grazing systems, men typically accompany the cattle herd when moving them to different grazing lands, whereas women are responsible for animal care and milking. (FAO, 2018). As a result, women play a more significant role in backyard semi-intensive livestock husbandry, particularly for milk production.

Fishing is a male-dominated sector, and women rarely venture out to fish except for short distances in small boats with seines on the Western coast and inland fishing reservoirs. This situation can be attributed to several factors, including the lack of technologically advanced vessels that can be handled by both men and women, insufficient skills in swimming and deep-sea diving, a lack of protection from gender-based violence at sea, the lack of acceptance of women going out to sea, and insufficient childcare (FAO, 2018). However, women are involved in fish sorting and processing at landing sites.

Climate risks

Rainfall has multiple origins, including monsoonal, convectional and depressional rain that accounts for a major share of the annual rainfall. Climatologists divide the climatic year into four seasons (Table 3). The occurrence of tropical cyclones brings overcast

Table 3: Sri Lanka – Climatic seasons and main risks

Climatic seasons	Period	Description	Main climate risks	Cropping season
Convectional cyclonic period	Late September to late November	This season begins with the weakening of the southwest monsoon. This period includes depressions and cyclones in the Bay of Bengal and result in the highest rainfall amount received on the highland during the year.	Floods and strong winds	"Maha"
Northeast monsoon	December to February	Although weak compared to the southwest monsoon, this season brings agriculturally important rainfall to the northern and eastern parts of the island.	Drought/dry spells	
Convectional convergence period	March to April	This season produces the second rainfall peak in the northern parts of the island when it comes under the influence of the inter-tropical convergence zone.	Harvest losses - rainfall when paddy is at maturity	
Southwest monsoon	May to late September	This season brings the largest amount of rainfall to the southwest lowlands and windward slopes of the central hills. In the north, north-central and southeast regions, dry desiccating monsoon winds blow after the rain.	Floods, drought	"Yala"

Sources: Authors' own elaboration based on the data provided by the Department of Meteorology, 2023 http://www.meteo.gov.lk/index.php?option=com_content&view=article&id=94&Itemid=310&lang=en#4-northeast-monsoon-season-december-february.

skies and rains to the southwest, northeast and eastern parts of the country.

The El Niño event typically leads to wetter conditions during May, October–December and to drier conditions during January–March and July–August. The country is prone to natural disasters caused by floods, cyclones, landslides, droughts and coastal erosion. The DSC 2016/17 agriculture survey indicates that drought/irregular rain is the major challenge reported by farmers (52 percent respondents), particularly in the northern half of the country, followed by crop damages due to birds/animals (20 percent respondents). Pests, diseases and inadequate irrigation, though identified by a smaller proportion of respondents (4–5 percent of respondents), remain significant concerns for the agricultural sector.

Droughts

Dry spells and droughts are the main climate hazards that affects food production. Meteorological records point to 283 dry spells since 1974 (MoE, 2021a), especially affecting the dry climatic zone (Map 2). Every year, two natural factors increase the exposure to drought and dry spells (MoE, 2020):

- The Indian subcontinent landmass inhibits the accumulation of moisture into airstream passing over it. Airstreams travelling southwards from the northern hemisphere, especially during the north-east monsoon in January–February, may have a larger proportion of their trajectories over India. If this effect predominates, it leads to dry conditions throughout the whole country during the northeast monsoon from December to February.
- The central hills create an orographic effect that causes a reduction of rainfall amounts along the leeward slopes and beyond. This effect causes frequent dry spells in the eastern and northern regions of the country during the period of the southwest monsoon from May to September.

Floods and landslides

There are about 103 distinct major river basins in the country. They have radial drainage patterns diverging from the Central Highlands in all directions. In the highlands, river courses are frequently broken by discontinuities in the terrain, where they encounter escarpments creating numerous waterfalls and rapids with eroded passages. These areas are prone to landslides. Once they reach the plain, the rivers slow down and the waters meander across plains and deltas, prone to seasonal flooding (MHAIRD, 2019). Human interventions have altered the flow of some rivers in order to create hydroelectric, irrigation and multi-purpose artificial tanks and reservoirs. Around 20 percent of the country's surface area is estimated to be exposed to landslide.

Cyclone/strong wind

Risks for storm surges and high winds/cyclones are higher during the convectional cyclonic period (from late September to late November), causing damage to reefs and increasing coastal erosion and salinity of inland soil and freshwater sources.

AGRICULTURE PRODUCTION IN 2023

Rainfall conditions

The rainfall analysis is based on data provided by FAO and WFP on rainfall estimates (RFEs), (Figure 9), Normalized Difference Vegetation Index (NDVI), (Map 3) anomalies and monthly drought monitoring bulletins from the Department of Meteorology as well as district authorities and farmers' observations compiled by the mission teams. The 2022/23 "Maha" season (October–March) was characterized by cumulative rainfall similar to or higher than the long-term average in southern parts of the country and only slightly below average in northern and eastern parts. The spatial and temporal distribution of rains was generally good, with no prolonged dry spells during the planting period and the critical crop development stages. However, temporal distribution of rainfall was a bit erratic in some provinces, including Eastern (mostly Batticaloa District), Uva (mostly Badulla and Monaragala districts), Northern (mostly Jaffna and Killinochchi districts), characterized by slightly below-average precipitation amounts from mid-November to early January, estimated at about 10 percent below the long-term average. The impact on crops was minimal as most farmers were able to access irrigation water supplies and water availability was generally adequate (Figure 9). Well above-average rainfall amounts during the second and third dekads of January 2023 benefitted crop development at the critical flowering stage throughout most of the country. Precipitations were slightly below average in February-March, particularly in the DZ, allowing timely harvesting of the crops.

A severe cyclonic storm,"Mandous", struck the country on 8 and 9 December 2022, causing heavy rainfall, strong gusty winds and unusually cold weather conditions, particularly over northern and eastern parts of the country (maps 4 and 5). Minimum air temperature suddenly dropped by 5–6 degrees Celsius in northern and eastern

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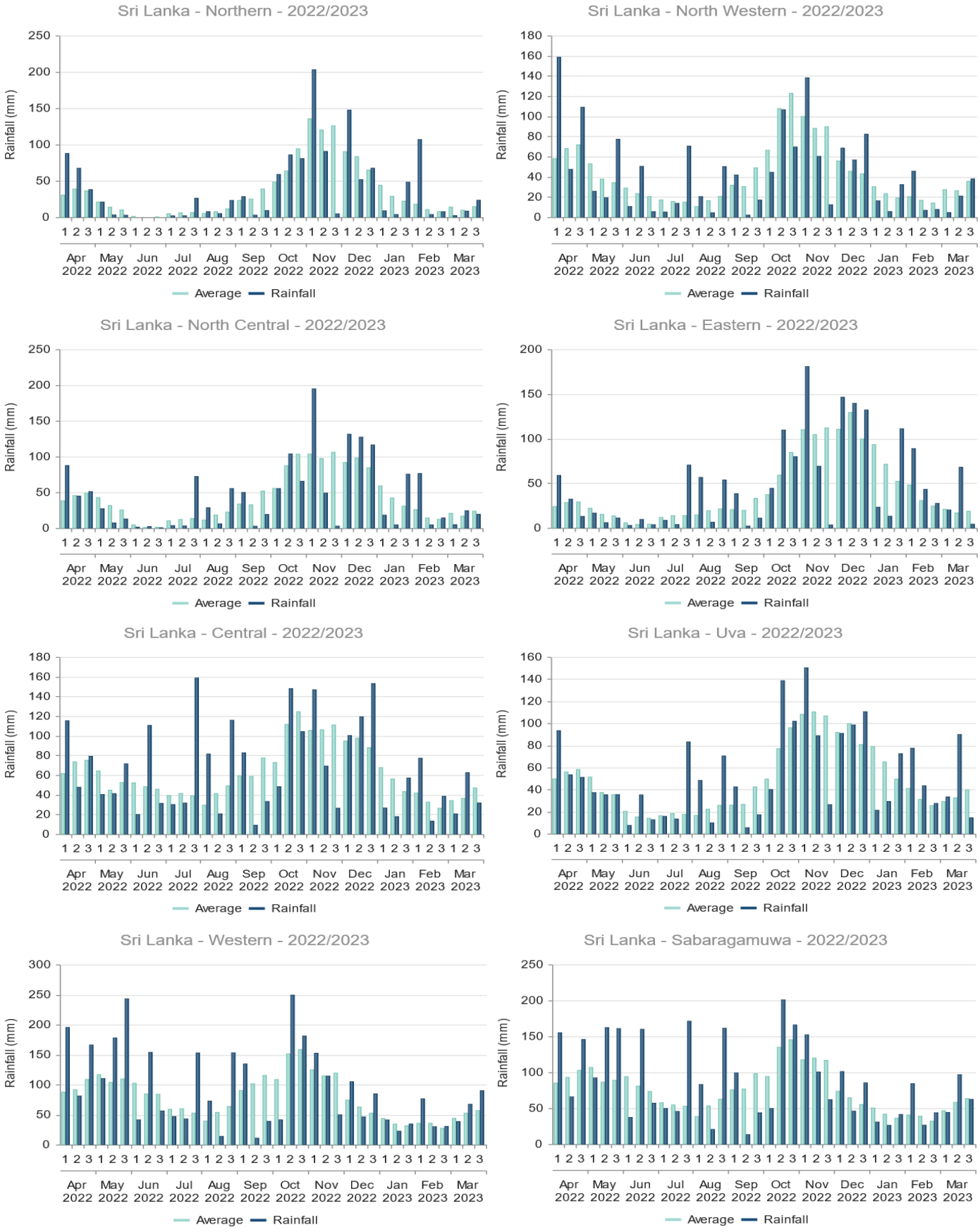
provinces on 8 December and, combined with strong winds, triggered some livestock deaths (Department of Meteorology, 2023). However, the impact on crops was limited.

Regional forecasts from the International Research Institute (IRI) for Climate Change and Society indicate high probabilities of 40 percent below-average precipitations over most of the country, in May and June 2023 (IRI, 2023). As for temperature, the seasonal forecasts for the same period indicate an increased probability of above-average temperatures over northern parts of the country.

Pests, diseases and weeds

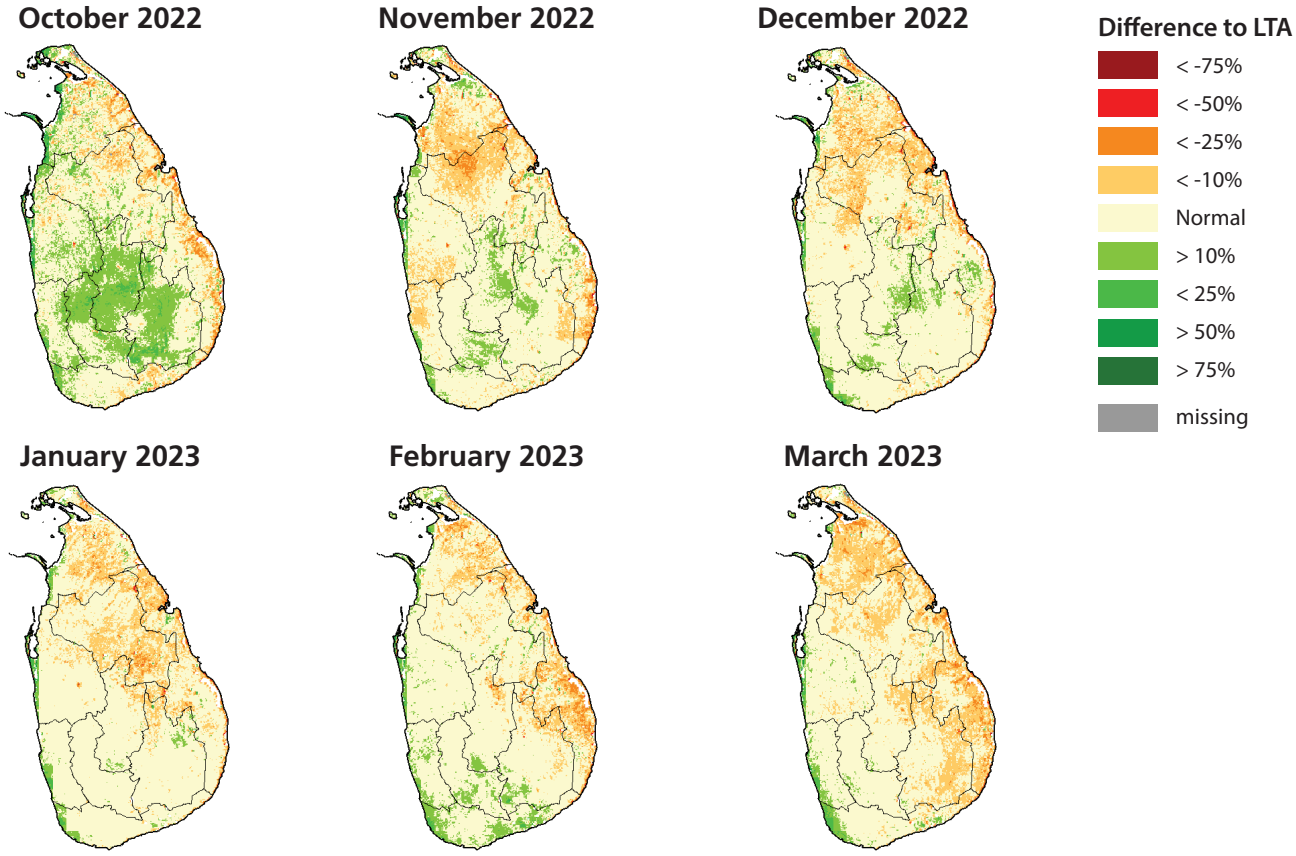
No major pests, diseases and weeds outbreaks have affected the 2022/23 "Maha" crops. Although the F2F household survey indicated that access to pesticides was a challenge due to their elevated prices reported by about 30 percent of the farmers, there was a year-on-year improvement in market availabilities of pesticides, which helped in more effective pest and disease control operations. As a result, no major outbreaks of pests and diseases were reported beside the possible amplification of paddy yellowing from nematodes. Brown planthopper (BPH) was reported across the country,

Figure 9: Sri Lanka – Rainfall estimates, April 2022–March 2023



Source: Vulnerability Analysis and Mapping (VAM) of WFP - Seasonal Explorer https://dataviz.vam.wfp.org/, 2022.

Map 3: Sri Lanka – Normalized Difference Vegetation Index (NDVI), October 2022–March 2023

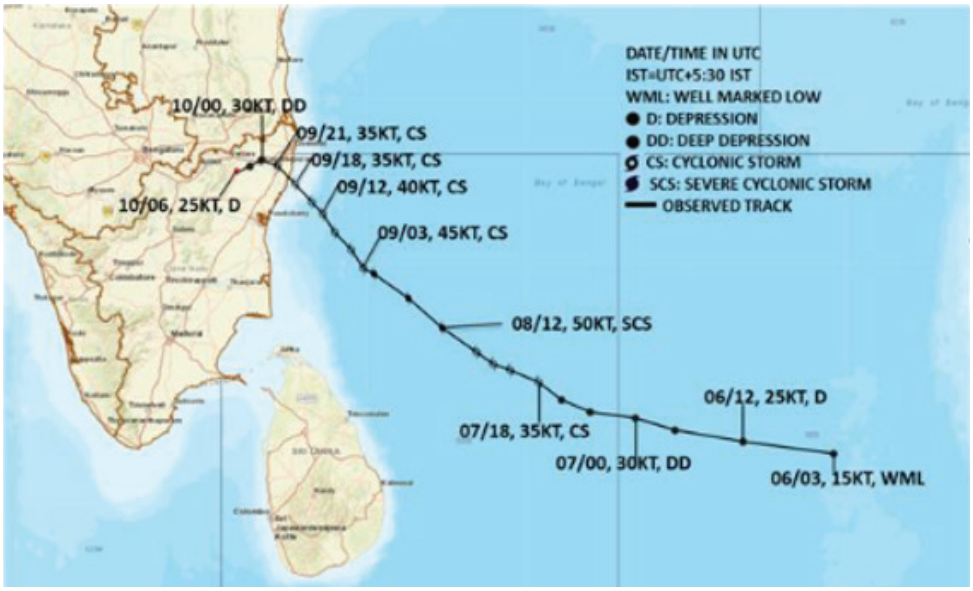


Note: The Index calculation is based on METOP-AVHRR data.

The Normalized Difference Vegetation Index (NDVI) measures the "greenness" of ground cover and is used as a proxy to indicate the density and health of vegetation. NDVI values range from +1 to -1, with high positive values corresponding to dense and healthy vegetation, and low and/or negative NDVI values indicating poor vegetation conditions or sparse vegetative cover. The NDVI anomaly indicates the variation of the current dekad to the long-term average, where a positive value, for example 20 percent, would signify enhanced vegetation conditions compared to the average, while a negative value, for instance -40 percent, would indicate comparatively poor vegetation conditions.

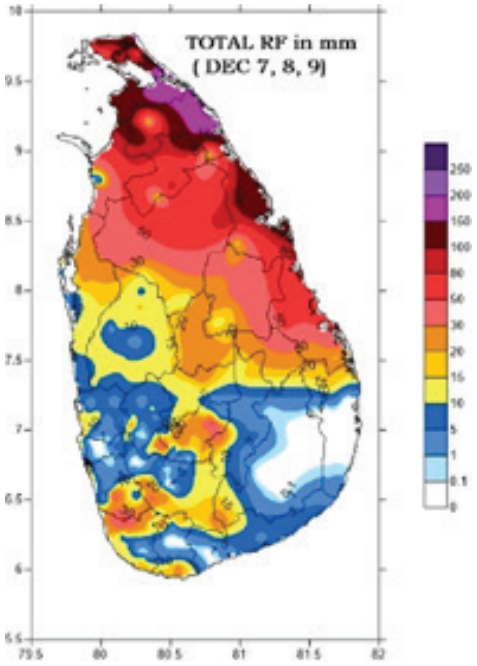
Source: FAO/GIEWS Earth Observation https://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=LKA, 2023.

Map 4: Sri Lanka – Observed severe cyclonic storm "Mandous" path



Source: The imagine was provided by the Department of Meteorology to the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of the Sri Lanka, 2023.

Map 5: Sri Lanka – Total rainfall, 7–9 December 2022



Source: The imagine was provided by the Department of Meteorology to the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of the Sri Lanka, 2023.

but it caused severe damage only in Kurunegala District. Losses of crops, mostly rice and fresh maize, fruits and root vegetables, by elephants and wild animals, including local birds, monkeys and wilds pigs, were reported within the normal range, causing mild damages in most areas.

Since 1958, the government has invested in a crop insurance scheme. Currently, two main agriculture risk transfer instruments are operated by the Agriculture Agrarian Insurance Board (AAIB):

- A fully subsidized crop insurance scheme provided automatically to all farmers registered to the ASC fertilizer subsidy.
- A voluntary insurance scheme.

Under the fully subsidised scheme, six basic crops, namely paddy, maize, soybeans, big onions, potatoes and chilies are insured against floods, droughts, dry spells, excess water, pests and diseases, and wild elephant attacks (SLYCAN Trust, 2022). For the 2023 "Maha" crops, the insurance covers up to LKR 40 000 per acre for damages and the amount has not been adjusted for inflation. Funds to cover for crop losses are budgeted from the national treasury.

Unfortunately, farmers who incurred crop losses in 2021 linked to the negative impacts of the fertilizer ban have not been compensated and it is unclear whether the scheme will be maintained for the 2022/23 "Yala" and subsequent cropping seasons. However, the uncertainty over the operability of the AAIB risk transfer mechanisms has not affected farmers' decision to plant paddy and OFCs for the 2022/23 "Maha", considering other prevailing constraints such as high prices and unavailability of fertilizers.

Seeds

Improved paddy seeds are produced in sufficient quantities, with 29 government seed farms producing basic and foundation seeds, while government-registered growers produce certified and quality seeds. Farmers are typically renewing their paddy seeds every four to five years. Since the "Maha" 2021/22, farmers reported to have not replaced their old seeds due to increased production costs. As a result, seed quality was not good, leading to a decrease in productivity.

Maize hybrid seeds are entirely imported. In 2021, 1 450 tonnes of maize seeds were imported. Due to

foreign currency shortages, only about 550 tonnes were imported in 2022 (Central Bank). OFCs' seeds are produced locally. Shortage of potato tuber seeds from local production and reduced imports affected the production in 2023.

Chemical and organic fertilizers

With support by the WB, ADB, USAID-FAO and India bilateral assistance, chemical fertilizers were imported for the 2022/23 "Maha" and 2023 "Yala" seasons, and improved domestic availability compared with the severely reduced level in 2021/22. Recommendations by MoA about application of chemical fertilizers are specific to climatic zones (Table 4). All fertilizers were distributed to farmers through the ASCs, but with different levels of subsidies (Table 5). This resulted in different levels of application by paddy farmers. TSP was not available for the 2022/23 "Maha". The Table 6 summarizes the amount of fertilizers distributed by cropping season from 2020/21 "Maha" onward and it illustrates the following issues about the 2022/23 "Maha" season:

- It followed two seasons with no or very limited fertilizers availability.
- It benefited from a higher urea availability (on average 120 kg/hectare planted) which remained below MoA recommendations for the Dry and IZs, but higher for the WZ.
- TSP was not available, while MOP availability was anecdotical (on average 3 kg/hectare planted) despite being available in ASC warehouses.

The reason for low MOP application is due to its very high price, which farmers could not afford (Table 5). The distribution of fertilizers by district is presented in Annex 1 and follows two cropping seasons without provision of potassium and phosphorous fertilizers. During the 2022/23 "Maha" season, paddy soils were depleted from the soluble fraction of these nutrients. As a result, yellowing of paddy crops was reported in all districts with various degrees of intensity. This was confirmed by the interviewed farmers for the F2F household survey as almost 50 percent of respondents indicated challenges to access fertilizers (in terms of availability and affordability) and 65 percent of them were paddy producers.

Table 4: Sri Lanka – Fertilizer application recommendations in paddy (kg/hectare)

Zone	Nutrient quantities	Urea	TSP	MOP
Dry and Intermediate zone – irrigated	N: 73.5; P: 17.5; K: 24.5	157.5	38.5	42.0
Dry and Intermediate zone – rainfed	N: 56; P: 10.5; K: 241	122.5	24.5	35.0
Wet zone – irrigated	N: 45.5; P: 10.5; K: 21	98.0	24.5	35.0
Wet zone – rainfed	N: 31.5; P: 17.5; K: 45.5	70.0	38.5	77.0

Sources: Authors' own elaboration based on the data provided by the Ministry of Agriculture, 2022.

Table 5: Sri Lanka – Fertilizer subsidy level for the 2022/23 "Maha" and 2023 "Yala" seasons

Fertilizer	2022/23 "Maha"	2023 "Yala" (plan)
Urea	Subsidized at 50 percent (LKR 10 000/50 kg bag); Free of charge (USAID-FAO)	Subsidized (LKR 10 000/50 kg bag)
MOP	Sold at market price (LKR 19 500/50 kg bag)	Sold at market price (LKR 17 500/50 kg bag)
TSP	Not available	Free of charge (USAID-FAO)

Sources: Authors' own elaboration based on the data provided by the Ministry of Agriculture, 2022.

Table 5 also indicates that availability of MOP and TSP in government warehouses is adequate for the forthcoming "Yala" season, but quantities of urea are insufficient to meet the recommended application rates.

However, there are concerns about the availability of fertilizers for the 2023/24 "Maha" season, which begins in October 2023. If fertilizers in government's stocks are fully used to support the 2023 "Yala" crops and not replenished on time, shortages may occur. As it takes approximately six months for fertilizers imported by the government agencies or the private sector to reach farmers' fields from overseas purchase, urgent measures are need to be taken to ensure their timely availability to support 2023/24 "Maha" production.

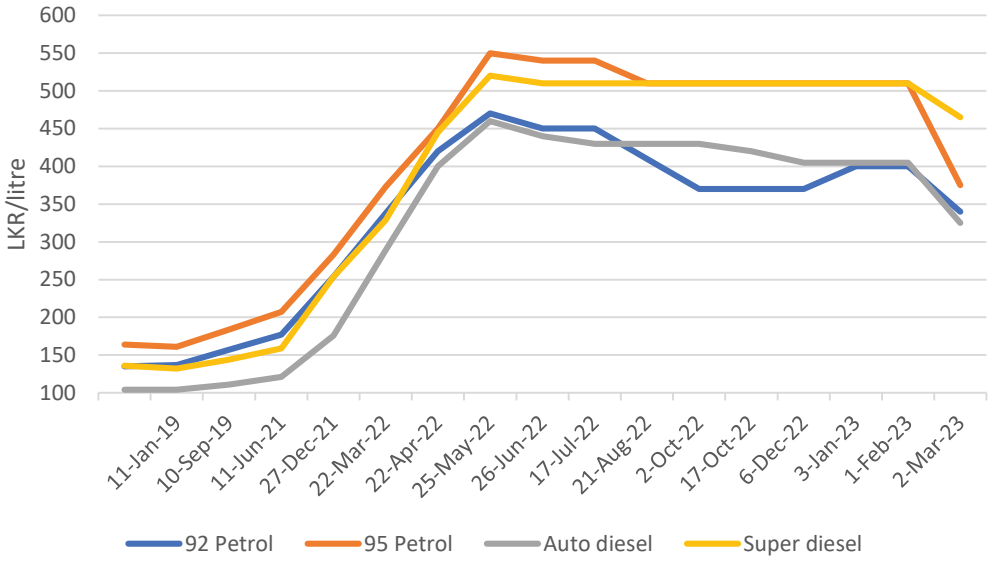
Since the 2021/22 "Maha" season, the government has been promoting the use of organic fertilizers. The production of organic substrates utilizing domestically available raw materials is subsidized (Green Agriculture Operation Centre, 2022). Overall, about 72 percent of the organic fertilizer capacity is produced by medium and large-scale producers (> 1 000 tonnes capacity). The average quantity of organic fertilizers distributed for the 2022/23 "Maha" season was 57 kg/hectare (Table 5), which is not adequate considering the low nutrient contents of organic fertilizers. Concerns about the quality of organic fertilizers were regularly shared with the mission by farmers and district agencies alike (high sand, clay and low organic matter content). However, the mission observed that some farmers have integrated livestock into their crop production system to produce high quality compost on their own.

Fuel, planting and harvesting operations and most affected producers by the crisis

In the first half of 2022, domestic fuel prices soared following trends of international crude oil quotations. The country relies on imported refined petroleum products for transport, household and commercial uses, as well as agricultural activities. Domestic prices of super diesel, an important input in local agriculture and fisheries, surged to record levels in June 2022, registering a 3.6-fold increase compared to the same month a year before (Figure 10). The elevated prices persisted throughout 2022 and early 2023, causing a substantial increase in the cost for land preparation and harvesting for the main 2022/23 "Maha" crops as well as of all mechanized fishery activities. In March 2023, domestic prices of super diesel declined marginally, but remained at near-record levels.

Prices of electricity skyrocketed following two official upward revisions in August 2022 and February 2023. The price of electricity increased by approximately 140 percent during the 2022/23 "Maha" season compared with last year.

Figure 10: Sri Lanka – Domestic fuel prices, 2019–2023

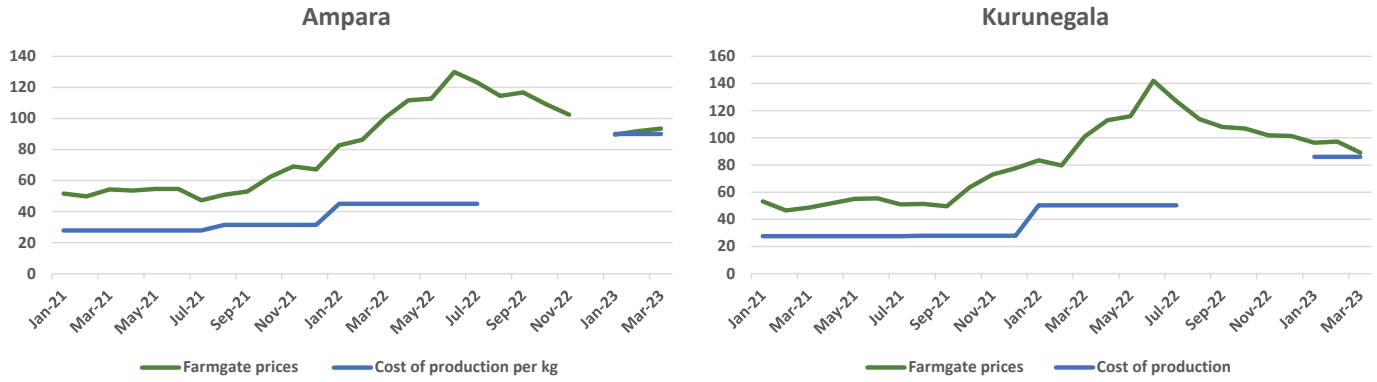


Sources: Authors' own elaboration based on the data from the Ceylon Petroleum Corporation https://ceypetco.gov.lk/historical-prices/ 2023.

Overall, aggregate crop production costs in the 2022/23 "Maha" season sharply increased compared to the previous year due to higher prices of fuel, fertilizers, agrochemicals, seeds, labour and mechanized operations. According to HARTI, the cost of producing one kg of paddy increased by 80 percent to LKR 90/kg in the 2022/23 "Maha" season, up from LKR 50/kg in same season in the previous year. It followed the doubling of costs that occurred between 2021 to 2022 (Figure 11). However, farmgate prices of crops did not rise proportionally, resulting in a small gap between production costs and farmgate prices, implying low farmer profitability. The gap between the cost of production and farmgate prices of 1 kg of rice from January to March 2023 was only LKR 10-15/kg, significantly lower than the LKR 35-40/kg during the same period the previous year. Farmers interviewed by the mission revealed that they sold their paddy at prices between LKR 65 and LKR 80/kg, which were well below the production costs and were, therefore, unable to recover incurred costs.

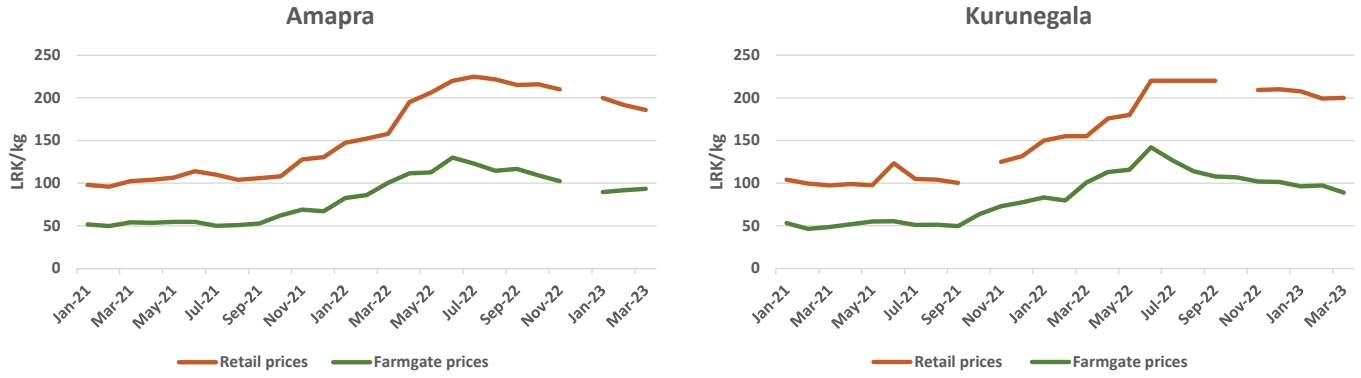
Looking at the comparison between farmgate and retail prices (Figure 12), the changes in retail prices are well transmitted to farmgate prices. However, the gap between farmgate and retail prices has been widening since June 2022, indicating that farmers' share of the consumers' value of their output is on decline. Therefore, paddy farmers seem to be losing power in the value chain, while other economic actors downstream have captured a higher share of the value added since the beginning of the crisis.

Figure 11: Sri Lanka – Production costs and farmgate prices, Nadu rice, 2021–2023 (LKR/kg)



Sources: Authors' own elaboration based on the data from the Ministry of Agriculture, HARTI. http://harti.gov.lk/index.php/en/, 2023.

Figure 12: Sri Lanka – Comparison between farmgate and retail paddy prices, and share of farmgate prices to retail prices, Nadu rice in Ampara and Karunegala markets, 2018–2023



Sources: Authors' own elaboration based on the data from the Ministry of Agriculture, HARTI. http://harti.gov.lk/index.php/en/, 2023.

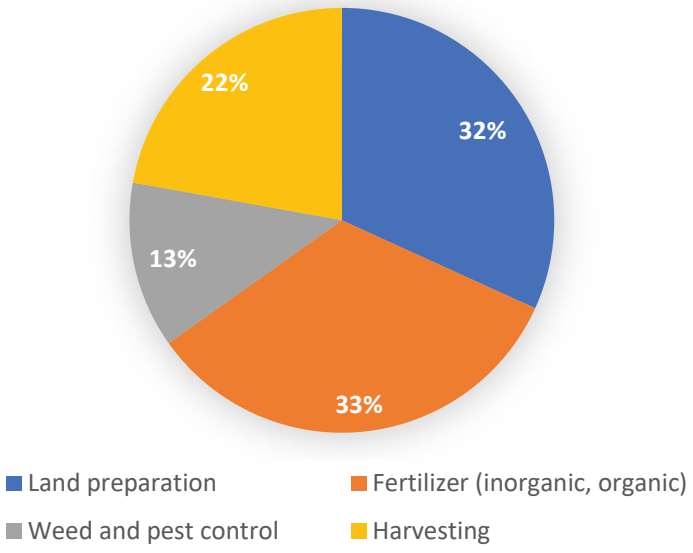
Figure 13 indicates the distribution of paddy cultivation costs, excluding labour, for smallholder farmers. Around 30 percent of the expenditure goes to land preparation, fertilizer costs and weed control/harvesting operations. The majority of these costs, approximately 65 percent, are incompressible due to the mechanization of land preparation and harvesting, and the impracticality of using buffaloes for land preparation and manual weeding due to limited manpower and animal resources. However, due to high operational costs, many farmers are resorting to manual harvesting, leading to increased crop losses.

Fertilizer costs, making up about 30 percent of the total, present the only feasible avenue for cost reduction by reducing the amount used. The Ministry of Agriculture's recommended cost for fertilizers (urea and MOP) for the 2022/23 "Maha" season is approximately LKR 80 000 to LKR 90 000/hectare. In practice, the mission found that farmers typically apply much less and spend 30 to 50 percent of the total production cost amount on fertilizers.[5]

The current crisis impacts all paddy farmers, but large farmers with 10 to 25 hectares of land, owning tractors and combined harvesters, are able to mitigate some of the impacts by integrating mechanization and reducing operational costs. These farmers are often categorized as the Estate sector (DCS, 2018).[6] Smallholders with less than 0.25 hectares, mostly producing for their own consumption, also fare better as their opportunity cost balances between retail prices and production costs.

However, farmers with more than 0.25 and up to 2 hectares are the hardest hit. These resource-poor smallholders constitute over 50 percent of the paddy farmers and nearly two-thirds of the country's total paddy land. Their production costs often exceed their returns, making their market-oriented production unsustainable. As a result, they are considering self-consumption or leasing their land to the Estate sector, with leasing costs in the DZ being around LKR 35 000/hectare or 300 kg of paddy.

Figure 13: Sri Lanka – Cost shares of paddy cultivation operation categories to the total cost of cultivation, irrigated paddy, excluding labour



Sources: Authors' own elaboration based on the data from the Socio Economic and Planning Centre, Department of Agriculture. *Cost of Cultivation of Agricultural Crops – 2021/22 "Maha" Volume 80*. December 2022. https://doa.gov.lk/sepc-publications/, 2023.

[5] As reported by farmers and found in DCS crop cutting forms.

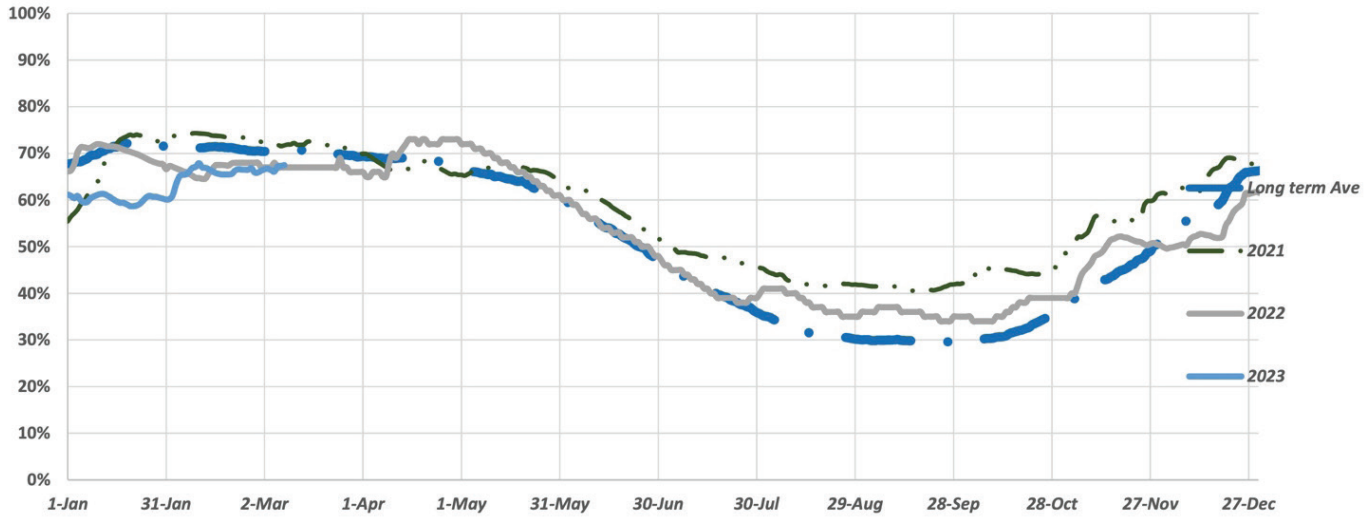
[6] The Estate sector includes agriculture holding above 8 hectares (19 perches).

Table 6: Sri Lanka – Distribution of paddy holdings and extent by size class in small holding sector, 2014

Size class of the paddy holding	Number of holdings	Percent	Extent of paddy (acres)	Percent
0.1 to 0.4 hectares	394 258	44.6	208 618	14.1
0.4 to 2 hectares	448 849	50.7	929 592	63.0
2 to 4 hectares	33 532	3.8	213 797	14.5
More than 4 hectares	7 970	0.9	124 774	8.4
Total	**884 609**	**100.0**	**1 476 781**	**100.0**

Sources: Authors' own elaboration based on the data provided by the Department of Statistics, 2018.

Figure 14: Sri Lanka – Overall percentage of tanks water storage as of end-December 2022



Sources: Authors' own elaboration based on the data from the Ministry of Irrigation, 2023.

Area planted and harvested

The area planted and harvested is estimated by the Department of Census and Statistics (DCS). All 14 009 *Grama Niladhari* (GN) divisions' officers are tasked to compile the area planted and harvested data by farmers and farmers' organizations with the support of agriculture instructors. The list of farmers as well as all their paddy plots are updated in all GN divisions twice per cultivation season, to ascertain the extent of planted and harvested area. This registry is kept at GN's level and summarized at DS division level. The area planted and harvested reports are then submitted to DS statisticians in order to be digitalized. Correction factors are applied to account for paddy field ridges and the width of irrigation weir which varies based on irrigation mode and agroecological zone (gross area versus net area).

The mission used official DCS data for paddy net harvested area and MoA data for OFCs for the "Maha" 2022/23 season. The mission made projections for the 2023 "Yala" crops, considering regional climate forecasts (IRI, 2023) and water availability in irrigation tanks until March 2023. The overall availability of tanks water storage for irrigation is slightly below 2022 and the long-term average level (Figure 14), particularly in the northern parts of the country.

Table 8 compares the 2023 harvested area forecast with 2022 and the five-year average for paddy and OFCs. The total paddy harvested area, including

Table 7: Sri Lanka – Fertilizer distribution to paddy farmers through the subsidy scheme (2022/21 to 2022/23 "Maha") and fertilizer availability in government stocks (2023 "Yala")

	Type of fertilizer	2020/21 "Maha"	2021 "Yala"	2021/22 "Maha"	2022 "Yala"	2022/23 "Maha"	2023 "Yala"
Gross area planted (hectares)		720 740	445 100	775 900	481 700	796 200	429 000
Fertiliizers distributed (tonnes)	Urea	125 816	83 574	0	27 675	95 358	61 880
	MOP	38 406	28 513	0	0	2 286	39 400
	TSP	16 599	13 518	0	0	0	36 900
	Total chemical fertilizer	**180 821**	**125 605**	**0**	**27 675**	**97 644**	**138 180**
	Solid organic fertilizer	0	0	18 600	0	82 300	-
Average kg/hectare planted	Urea	175	188	0	57	120	78
	MOP	53	64	0	0	3	49
	TSP	23	30	0	0	0	46
	Total chemical fertilizer	**251**	**282**	**0**	**57**	**123**	**174**
	Solid organic fertilizer	0	0	23	0	103	-
Paddy average yield (tonnes/hectare)		4.3	4.3	2.85	3.2	-	-

Note: Urea: 32,300 tonnes in stock Colombo and 4 580 tonnes in ASCs while 25 000 tonnes is being produced by the Ministry of Agriculture.
MOP: 34,400 tonnes in stock Colombo and 5 000 tonnes in ASCs.
TSP: 900 tonnes in stock in Colombo and 36 000 tonnes being distributed by ASCs (by the end of March 2023).
Figures may not add up due to rounding.

Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

Table 8: Sri Lanka – Paddy and OFCs net harvested area and changes compared to the past five-year average, 2018–2022 ('000 hectares)

Field crops	2022/23 forecast			2021/22			2018–2022 average			Percent change 2022/23 over	
	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	2021/22	2018–2022 average
Paddy	696.5	420.5	1 117.0	685.2	429.1	1 114.2	646.8	383	1 029.9	0.2	8.5
Maize	78.3	6.0	84.3	78	6.2	84.2	72.4	8.3	80.7	0.1	4.4
Finger millet	4.8	1.8	6.6	7.2	1.8	9.0	4.9	1.3	6.1	-26.4	8.2
Total cereals	**779.6**	**428.3**	**1 207.9**	**770.4**	**437**	**1 207.4**	**724.1**	**392.6**	**1 116.7**	**0.0**	**8.2**
Green gram	6.5	5.9	12.4	5.8	6.1	11.9	5.2	5.9	11.1	4.0	11.7
Black gram	14.8	2.5	17.3	8.4	2.3	10.7	8.4	1.9	10.3	62.3	68.5
Cowpeas	8.2	6.9	15.1	7.4	6.9	14.3	6.0	4.6	10.6	5.4	42.6
Total pulses	**29.5**	**15.3**	**44.8**	**21.6**	**15.3**	**36.9**	**19.6**	**12.4**	**32**	**21.4**	**40.2**
Manioc	10.9	9.5	20.4	11.7	9.4	21.1	11.9	9.3	21.1	-3.3	-3.5
Sweet potatoes	2.1	2.1	4.2	2.1	2.0	4.1	2.1	1.8	3.9	2.2	7.5
Potatoes	1.5	1.6	3.1	1.6	1.8	3.5	2.2	2.2	4.4	-10.5	-30.5
Total root crops	**14.5**	**13.2**	**27.7**	**15.4**	**13.2**	**28.7**	**16.2**	**13.3**	**29.5**	**-3.4**	**-6.1**

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

Table 9: Sri Lanka – Paddy and OFCs yields and changes compared to the past five-year average, 2018–2022 (tonnes/hectares)

Field Crops	2022/23 forecast			2021/22			2018–22 average			Percent Change 2022/23 over	
	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	2021/22	2018–2022 average
Paddy	3.1	3.9	3.4	2.8	3.4	3	4.2	4.5	4.3	11.7	-21
Maize	3.2	3.6	3.2	3	3.6	3.1	3.9	3.9	3.9	4.9	-16.5
Finger millet	1.2	1.5	1.3	1.1	1.6	1.2	1.2	1.5	1.3	5.9	1.3
Total Cereals	**3.1**	**3.9**	**3.4**	**2.8**	**3.4**	**3**	**4.2**	**4.4**	**4.3**	**11.4**	**-20.7**
Green gram	1	1.1	1.1	1	1.1	1.1	1.1	1.1	1.1	0.4	-5.7
Black gram	0.9	1.3	1	0.9	1.2	0.9	0.9	1.3	1	3.1	-2.7
Cowpeas	1.1	1.1	1.1	1.1	1	1	1.1	1.2	1.1	6.2	-1.5
Total Pulses	**1**	**1.1**	**1**	**1**	**1.1**	**1**	**1**	**1.2**	**1.1**	**2.3**	**-4**
Manioc	14.6	14.7	14.6	14.6	14.6	14.6	14.3	14.9	14.6	0.3	0.5
Sweet potatoes	10.8	11	10.9	10.8	11.1	11	10.8	10.9	10.8	-0.6	0.5
Potatoes	17	11.1	13.9	29	10.9	19.5	18.8	17.1	16.9	-28.6	-17.6
Total root crops	**14.3**	**13.7**	**14**	**15.6**	**13.6**	**14.7**	**14.5**	**14.7**	**14.4**	**-4.6**	**-3**

Note: Figures may not add up due to rounding.

Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

the 2022/23 main "Maha" crops and the 2023 secondary "Yala" crops on the ground during the visit of the mission in the country, is forecast at 1.12 million hectares, an 8 percent increase compared to the last five-year average. The area harvested with pulses, which accounts for only 44 800 hectares, has substantially increased by 40 percent compared to the five-year average, due to remunerative margins. Potatoes harvested area is forecast to be 30 percent below the average of the last five years, mainly due to shortages of planting material.

Crop yields

The paddy yield is estimated by the Department of Census and Statistics (DCS) through crop cutting surveys conducted twice a year, one during the "Maha" season in February–March and one during the "Yala" season in July–August. For OFCs, the Ministry of Agriculture is estimating yield and production through an expert consultation, generally done by agriculture instructors. A total of 4 000 paddy plots are sampled for each crop cutting survey.[7] Precise procedures are defined to conduct crop cutting samples in areas of 5.03 square metres from selected paddy fields (DCS, 2022). The harvested paddy is threshed manually and aluminium cans are used to measure the quantity of paddy grains. The mission participated in some crop cutting exercises during the field work and their results were used as an entry point for discussion with farmers. In general, the DCS statistical system for paddy yield and production estimate is very robust.

[7] The registry of paddy plots (see 'area planted' section above) at *grama niladhari* and DS division levels are segmented into three parts for major, minor and rainfed irrigation modes and agro-ecological zones. A two-stage sampling method is applied where; a) in the first stage *grama niladhari* registry are selected and b) in the second stage 4000 paddy fields are selected under the system of proportional allocations. As the farmers and paddy plot registry for each *grama niladhari* division is available in districts offices and the two-stages sampling is performed by the staff of DCS district office.

Table 10: Sri Lanka – Paddy and OFCs production and changes compared to the past five-year average, 2018–2022 ('000 tonnes)

Field Crops	2023 forecast			2022			2018-22 average			Percent change 2022/23 over	
	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	"Maha"	"Yala"	Total	2021/22	2018–2022 average
Paddy	2 159.2	1 641.2	3 800.4	1 931.2	1 461.7	3 392.9	2 731.8	1 705.3	4 437.1	12.0	-14.4
Rice (milled eq.)[1]	1 295.5	984.7	2 280.2	877	1158.7	2 035.7	1 117.8	1 796.2	2 914.1	12.0	-21.8
Maize	250.5	21.6	272.1	236.9	22.1	259.0	280.0	32.1	312.1	5.0	-12.8
Finger millet	5.8	2.7	8.5	8.1	2.8	10.9	5.8	1.9	7.7	-22.0	9.6
Total Cereals	**1 551.8**	**1 009.0**	**2 560.8**	**1 122.0**	**1 183.6**	**2 305.7**	**1 403.7**	**1 830.2**	**3 233.9**	**11.1**	**-20.8**
Green gram	6.6	6.5	13.1	5.8	6.8	12.5	5.7	6.7	12.4	4.4	5.3
Black gram	13.4	3.3	16.6	7.3	2.6	9.9	7.7	2.4	10.1	67.4	64.0
Cowpeas	9.0	7.6	16.6	7.9	7.0	14.8	6.6	5.3	11.8	12.0	40.4
Total Pulses	**29.0**	**17.3**	**46.3**	**20.9**	**16.4**	**37.3**	**20.1**	**14.3**	**34.4**	**24.2**	**34.7**
Manioc	159.1	139.7	298.8	169.8	138.2	308.0	170.3	138	308.3	-3.0	-3.1
Sweet potatoes	22.7	23.1	45.8	22.9	22.2	45.0	23.0	19.4	42.4	1.6	8.0
Potatoes	25.4	17.8	43.1	47.6	19.8	67.5	41.5	38.3	75.3	-36.1	-42.7
Total root crops	**207.2**	**180.5**	**387.7**	**240.3**	**180.2**	**420.5**	**234.7**	**195.8**	**426.0**	**-7.8**	**-9.0**

Note: Figures may not add up due to rounding.

[1] Milling rate is 66.7 percent for the period 2018 to 2021 and 60 percent for 2022 and 2023 to account for higher losses due to poor grain filling.

Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023. The milling rate data from DCS. 2021. *Economic Statistics of Sri Lanka 2021*. Department of Census and Statistics (DCS). Battaramulla. December 2021. Online Edition. Available here: http://www.statistics.gov.lk/Publication/Economic-Statistics-2021.

Local volumetric units (called "seer") are used to measure the quantify of paddy harvested. The official conversion factor used is 1 seer for 0.65 kg.[8] However, measurements conducted in the field by the mission suggest a lower conversion factor of 1 seer equivalent to 0.55 /0.56 kg. The difference is likely due to the higher proportion of partially filled paddy grain as a result of poor plant nutrition since the change of fertilizer policies in 2021. Local millers have also reported that, since the implementation of the fertilizer ban in 2021, the proportion of empty grains have increased substantially, affecting the paddy-rice conversion factor. The use of the official conversion factor used in crop cutting exercises may lead to an overestimation of paddy yields by about 10 to 15 percent.

The main factor that affected yields during the 2022/23 "Maha" season is the low rate of application of fertilizers due to their high prices and low availability, particularly phosphorous and potassium (Table 7). The national average yield for 2022/23 "Maha" paddy is estimated at 3.1 tonnes/hectare, a 12 percent increase compared with 2021/22 significantly reduced level reflecting improved availability of fertilizers but 21 percent below the previous five-year average (Table 9). Similarly, the national average yield for 2022/23 "Maha" maize has increased year-on-year but remains 17 percent below the average. As for pulses, the national average yield for the 2022/23 "Maha" season has partially recovered compared with the 2021 level but is estimated slightly below average for cowpeas and black gram and 6 percent lower for green gram. As for roots, national average yields for manioc and sweet potatoes are set close to average level, but 18 percent below average for potatoes, due to low quality of seeds and reduced

[8] 32 seer per bushel (20.8 kg).

application of pesticides. Magnesium deficiencies were also observed in OFCs.

Looking ahead to the 2023 "Yala" season crops, to be harvested in August 2023, the fertilizer availability in government warehouses is generally adequate, but slightly in short supply for urea. The production prospects for the 2023 "Yala" season crops may be, therefore, favourable if fertilizers in the government stocks are made available to farmers and there are no climate anomalies. Most of the farmers interviewed during the mission reported that the urea prices of about LKR 10 000/50 kg bag was an affordable price. In case of inaccessibility of one of the three straight fertilizers (Urea, MOP, TSP), the 2023 "Yala" paddy production could be up to 15 to 20 percent below the mission's "Yala" forecast. However, this is the worst possible scenario and not considered for the 2023 production forecast.

Production estimates for main crops

Aggregate 2023 cereal production, including the forecast for the 2023 "Yala" crops, is forecast at 4.1 million tonnes, 14 percent below the last five-year average (Table 9). National paddy production is forecast by the mission at 3.8 million tonnes (paddy equivalent), 14 percent lower than the average, while maize production is forecast at 272 100 tonnes, 13 percent below the average. Pulses production is projected at 46 300 tonnes, 35 percent above the average, reflecting strong domestic demand and remunerative prices that sustained the area planted. Root crop production is expected to decline by 9 percent compared to the average, mainly due to reduced production of potatoes and manioc.

Livestock and pasture

The cattle production system is almost exclusively focused on dairy production. Indigenous cattle are reared extensively in certain northern provinces for meat and manure collection, while crossbreeds are raised intensively and extensively for milk production across the DZ. The shortage of animal feed is the main constraint for the growth of the semi-intensive livestock industry. Semi-intensive production typically includes 5 to 20 milking cows kept in farmers' backyards. The extensive and semi-intensive livestock management fully or partially depends on the access to grazing grounds along roads, foot paths and settlements. Shortages of feed for cattle is particularly severe before the paddy harvest. Livestock owners are cultivating small plots of fodder crops in their backyards, mainly Napier grass varieties. Legume fodders are not commonly cultivated. Communal pasture rarely exists in the main livestock producing areas in the north. Yet, pasture grounds inaccessible to farmers are available in areas under the Forestry Department management. The F2F household survey indicates that access feed was a major challenge for cattle and poultry producers (cited by 25 and 30 percent of respondents, respectively). Cattle owners also reported difficulties in accessing veterinary services (28 percent respondents), followed by pasture (24 percent respondents) and drugs (17 percent respondents).

In the last five years (2017–2021), the livestock population has increased by an average rate of 5 percent per year, with a particular strong increase registered for poultry population, reflecting the increasing domestic demand (Table 11). The mission observed livestock in poor body condition in some districts in the north (Vavuniya, Mullaitivu, Kilinochchi) due to reduced pasture availability. However, this situation is expected to improve in 2023 as cattle are allowed to graze on paddy crop residues, after the harvest. A few thousand cattle and some sheep and goats died during a cold snap that affected some areas located north of Trincomalee District and on the East coast on 6–10 December 2022.[9] Young livestock and weak animals were the most affected.

The mission anticipates that the population of cattle, buffaloes, sheep, goats and pigs may partially recover in 2023 from the 2022 reduced level, when availability of inputs, including veterinary drugs and feed, was severely reduced.

[9] The Meteorology Department (2023) reported 1 660 cattle deaths during this extreme weather event. However, without providing precise figures, district authorities reported a higher number of cattle deaths, while some sheep and goats causalities were also reported.

Table 11: Sri Lanka - Number of livestock, 2018–2022 ('000 heads)

	2018	2019	2020	2021	2022
Cattle	1 111	1 086	1 104	1 131	1 128
Buffalo	309	298	323	333	325
Sheep and goats	326	325	346	374	378
Pigs	98	91	93	99	100
Chicken	20 531	20 411	24 278	24 311	22 767

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

Table 12: Sri Lanka - Cow milk and egg production, 2018–2022

	2018	2019	2020	2021	2022
Cow milk (litre million)	392	374	414	425	419
Eggs ('000)	1 972 212	2 084 211	1 869 694	1 953 711	1 855 406

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

The mission anticipates that poultry population in 2023 will decline substantially compared to the already reduced level in 2022. The main factor for the decrease is the limited availability and high costs of feed that accounts for about 65 to 75 percent of the total production costs of layers and broilers. Additionally, approximately 75 percent of chicken feed is imported, and low currency reserves limited imports. Another negative factor is the challenges to import parents (for layers) and grandparents (for broilers) birds for hatcheries. As a result, six out of the 12 hatcheries have ceased their operation in 2022 and were still closed when the mission visited the country. District authorities reported that a multitude of medium size poultry farms have also ceased their operation. Large commercial poultry farms are doing better in the current environment as they integrated vertically the production of feed and day-old chicks.

Cow milk and egg production

Milk production is expected to decrease slightly for the second consecutive year in 2023, after steady increases registered between 2017 and 2021, mainly due to high costs of feed concentrates (Table 12). However, considering the increased price for cow milk, production is anticipated to increase by the end of the year and in 2024. Following the trend of the poultry population, egg production in 2023 is also expected to decrease significantly, compared with 2022's well below-average level. While production costs have soared since 2022, the egg price-capping put in place in January 2023 has contributed to disincentivize production.

Fish production

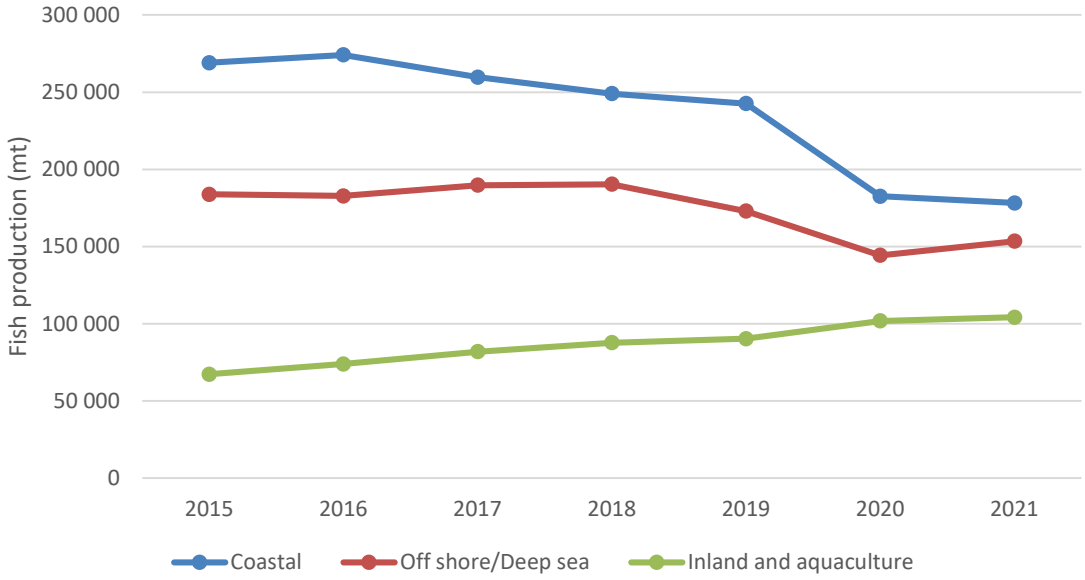
Off-shore and coastal fish production has been on a declining trend since 2016 (Figure 15). Coastal fish production has declined by 44 percent over the past decade, while off-shore declined by 26 percent. On the other hand, inland fish production has increased by 77 percent over the past decade, benefiting from government subsidies for restocking water bodies and investments in aquaculture in response to the increasing demand for inland fish and prawns.

The fishery sector is highly dependent on energy to run fishing boats and produce ice. Energy cost inflation had a severe negative impact on fish production in 2023. High fuel and ice costs, together with increased costs of labour and equipment, such as packages, containers and fishing gears, severely curtailed the ability of fishing communities to achieve profitable catch quantities.

With a typical operation cost running between LKR 2.5 to LKR 3 million (USD 7 800 to USD 9 400), insufficient catch amounts resulted in bankruptcy of some off-shore operators who have been forced to sell their fishing boats. In other cases, owners of two or three fishing boats have opted to jointly operate only one fishing boat and share costs and risks. In costal fishery, many fishermen have opted to use old non-mechanized boats to reduce costs of fishing activities. This situation resulted in a reduction of fish for domestic consumption compared with 2022. In northern parts of the country, incursions of foreign trawlers were reported by district authorities and fishermen as the main constraint for the sector in 2023. Depletion of feedstocks, fish breeding ground and damages to cages and fishing structures were attributed to trawlers' activities. Beyond a more generalized challenge to catch fish (33 percent of the fishermen interviewed during the F2F households survey reported that fish is more difficult to find, compared to previous years), the increase in fuel costs is the most frequent difficulty (cited by 30 percent), and the most frequent marketing challenge (cited by 20 percent).[10]

Considering these factors, the mission anticipates that off-shore and coastal fish production will remain below the five-year average in 2023 (Table 13). Inland and aquaculture fish output is expected to decline slightly year-on-year as budget allocations for the restocking of water bodies with fingerlings remain insufficient, but be above the five-year average after the steady increases since 2018.

Figure 15: Sri Lanka – Fish production trends, 2018–2021 ('000 tonnes)



Sources: Authors' own elaboration based on the data from the Socio Economic and Planning Centre, Department of Agriculture. *Cost of Cultivation of Agricultural Crops – 2021/22 "Maha" Volume 80*. December 2022. https://doa.gov.lk/sepc-publications/, 2023.

Table 13: Sri Lanka - Fish production 2018–2022 ('000 tonnes)

	2018	2019	2020	2021	2022
Off shore	190.4	172.9	144.4	153.4	131.2
Coastal	249.0	242.6	182.6	178.3	149.4
Inland and aquaculture	87.7	90.3	101.8	104.2	118.4
Total	**512.8**	**535.1**	**520.2**	**530.9**	**531.3**

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

[10] The constrained access to fishing grounds, cited by 12 percent could also be linked to this adaptation to non-mechanized boats.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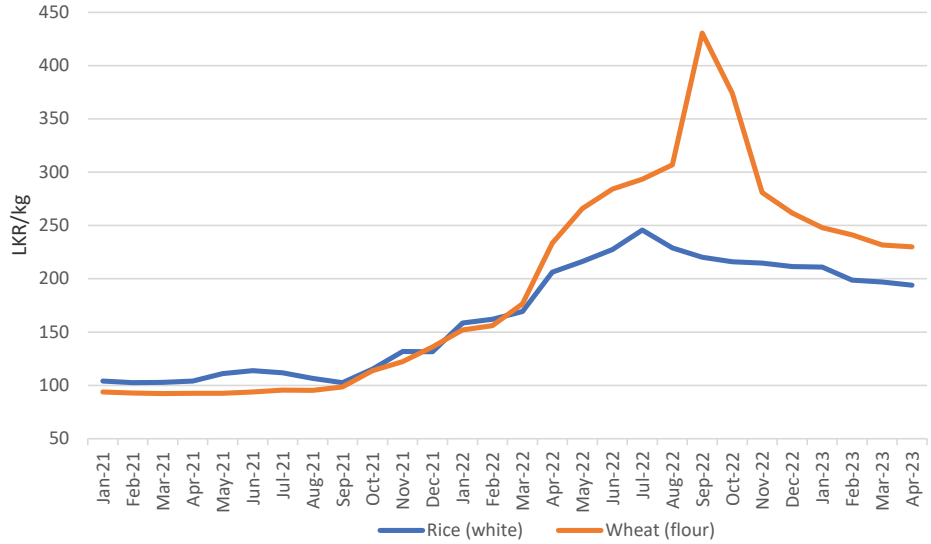
FOOD SUPPLY AND DEMAND SITUATION

Market analysis

Between September 2021 and July 2022, domestic prices of the commonly consumed white rice variety showed a steady rising trend, surging by 140 percent, underpinned by tight market availability caused by the sharp reduction in the 2022 "Maha" output (Figure 16). High production and transport costs as well as disruptions to marketing activities due to severe fuel shortages associated with macroeconomic difficulties, also contributed to increase prices. Since June 2021, the government has implemented measures to bolster the availability of essential foods like rice and sugar, and control their prices. These measures include, regulating stockholding, implementing an emergency regulation to control domestic supply, selling at subsidized prices, and reducing import charges. On 10 June 2022, the government set a maximum retail price of LKR 210/kg (USD 0.6/kg) for locally produced raw rice (white or red). However, the impact of this policy on prices was limited due to tight market availabilities and prices of rice continued to rise in June and July 2022, reaching new record highs at LKR 245.7/kg (USD 0.8(kg), well above the maximum prices set by the government. Subsequently, rice prices started to decline in August 2022 with the commercialization of the newly harvested 2022/23 crops and the arrival in the country of significant volumes of imported rice. As of April 2023, rice prices were 15 percent above the previous year's elevated levels and almost 90 percent above the pre-crisis level (September 2021).

Figure 16: Sri Lanka – Rice (white) and wheat flour retail prices in Colombo, 2021-2023 (LKR/kg)



Sources: Authors' own elaboration based on the data from the Department of Census and Statistics. http://www.statistics.gov.lk/, 2023.

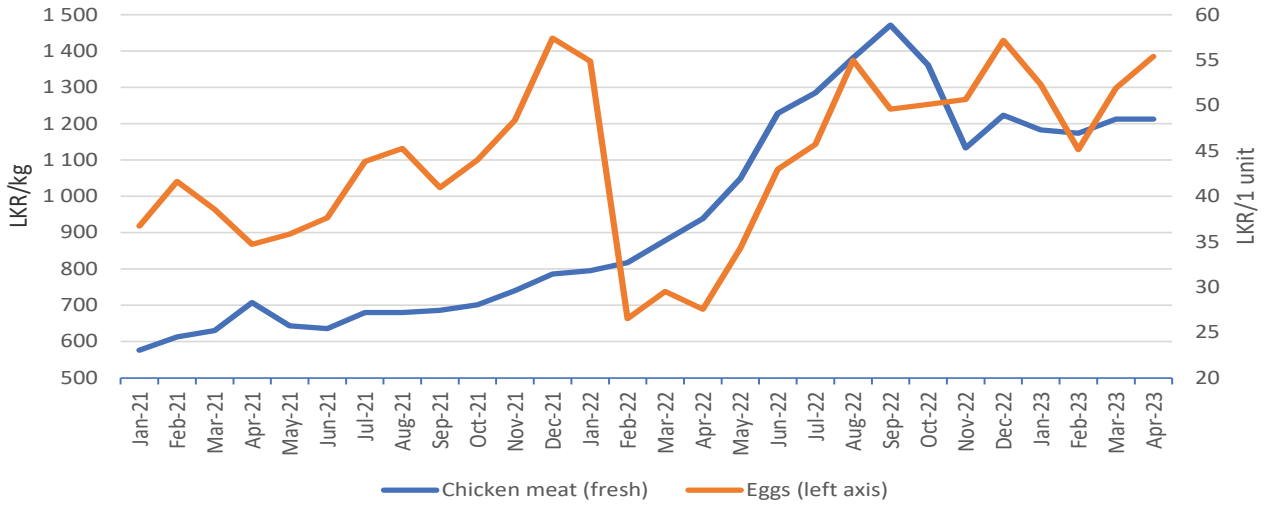
Prices of wheat flour, totally imported, increased more than threefold between September 2021 and August 2022, from LKR 95.5/kg to LKR 293.3/kg, underpinned by tight market availabilities following reduced imports associated with sharp depreciation of the national currency and increasing trends in the international markets. Prices also escalated due to concerns of likely low imported wheat supplies, after the implementation of floating export taxes in June 2021, the introduction of export quotas in February 2022 by the Russian Federation, an important wheat supplier, and an announcement of wheat export restrictions (that did not materialized as the Government of India allowed exports to neighbouring and vulnerable countries to meet their food security needs) by Indian authorities on 13 May 2022. Domestic wheat flour prices have declined since October 2022, reflecting increased imported quantities and low international wheat flour quotations. However, as of April 2023, prices were still close to the high levels a year earlier and more than 130 percent above the pre-crisis level.

Retail prices of chicken meat also followed an increasing trend between November 2021 and September 2022, with significant spikes during the second and third quarters of 2022. The high level of prices reflected the sharp decline in domestic poultry production caused by shortages and high prices of inputs such as feed, energy and veterinary medicines. Recurrent power cuts during the second half of 2022 also negatively affected domestic production. Overall, in April 2023, chicken meat prices were about 60 percent above the level of the previous year, reflecting tight domestic availabilities and rising production costs, following significant upward revisions in the electricity price.

Following a decrease in the domestic prices of eggs between March and May 2022, domestic prices of eggs have steadily increased and, in April 2023, they were at near-record levels and 100 percent higher year-on-year, reduction in chicken populations, leading to decreased domestic egg supply. In January, with the aim to improve market availabilities and control increasing domestic prices, the government set a maximum retail price of LKR 44 and LKR 46 for white and brown eggs, respectively, and in March 2023 about 2 million eggs were imported from India. Unfortunately, both measures had a limited impact on prices that continued to rise.

Prices of a wide range of imported basic food items, including sugar, powdered milk, dhal (lentils), onions, dry chilli powder, were at high levels in April 2023 after the steady increases registered throughout 2022, driven by below-average imports due to the sharp depreciation of the national currency and high transport costs.

Figure 17: Sri Lanka – Chicken meat (fresh) and eggs retail prices in Colombo, 2021–2023 (LKR/kg)



Sources: Authors' own elaboration based on the data from the Department of Census and Statistics. http://www.statistics.gov.lk/, 2023.

Food supply/demand balance sheet

The national food supply/demand balance sheet for the 2023 marketing year (January/December) is summarized in Table 14 and it considers rice (in milled terms), maize, wheat, cassava and potatoes (both in cereal equivalent) and pulses. The balance is based on the mission's production estimates, including a forecast for the "Yala" season crops to be harvested in August 2023, and the latest information on consumption, feed use, trade and stocks availability. The following assumptions were used:

Total food production: The 2023 rice production is forecast at 2.28 million tonnes. The mission decided to use a milling rate of 60 percent instead of the official rate of 66.7 percent to take into consideration the poor grain filling due to reduced application of fertilizers. Production of maize and finger millet is forecast at 272100 tonnes and 8 500 tonnes, respectively. In addition, a harvest of 96 000 tonnes of cassava, 13 000 tonnes of sweet potatoes and 11 000 tonnes of potatoes (all in cereal equivalent) are forecast, adding up to a total production of 2.68 million tonnes of cereal and tubers. Production of pulses is forecast at 46 300 tonnes.

Food use: Cereals and tubers consumption is estimated at about 4 million tonnes in 2023, using the projected 2023 mid-year population estimate by UN DESA of 21.9 million and an annual per capita average consumption of about 182 kg of cereals and tubers. It includes 123 kg of rice (milled basis), 52 kg of wheat, 3 kg of maize and 0.4 kg of finger millet, consistent with the apparent per capita national consumption of the previous five years based on data from the cereal balance sheets maintained by FAO/GIEWS and 1.5 kg of cassava, 1.8 kg of potatoes and 0.6 kg of sweet potatoes as estimated by the DCS for the year 2021 (DCS, 2019b) Consumption of pulses is estimated at 285 000 tonnes, using the official per capita consumption of 12 kg of pulses. The consumption of rice and wheat supply approximately 1 500 calories/day/person, and the remaining calories are provided by vegetable oils, pulses, sugar and animal products.

Seed use: Seed requirements for 2024 plantings are estimated at 85 000 tonnes, assuming a similar area planted in 2024 as in 2023 and using an average seed rate of 103 kg/hectare for paddy, 15 kg/hectare for maize, 7 kg/hectare for sorghum, 750 kg/hectare for potatoes (in cereal equivalent) and 300 kg/hectare for pulses.

Feed use: Maize feed requirements were estimated at 360 000 tonnes in 2021 by the DCS and 59 000 tonnes for cassava. The bulk of which is used for the poultry sector. For 2023, the mission estimates that feed requirements will decline to 320 000 tonnes of maize, due to the significant decline in chicken population.

Stock variations: The mission estimates a 200 000 tonnes drawdown of national rice stocks in 2023 to compensate for a reduced 2023 paddy output. No changes are envisaged for wheat and maize stocks in 2023.

Post-harvest losses: Losses from harvesting to processing and during storage are estimated at 266 000 tonnes, with rates of 8 percent for rice, 5 percent for maize and sorghum, 2 percent for imported wheat (storage losses), 16 percent for cassava and 15 percent for potatoes, in line with DCS data and field observations.

The total cereal import requirements in 2023 are forecast at 1.8 million tonnes, including 1.16 million tonnes of wheat, 130 000 tonnes of maize, 465 000 tonnes of rice, 200 000 tonnes of potatoes (50 000 tonnes in cereal equivalent). Total pulses import requirements, mostly lentils, are forecast at 261 000 tonnes. The entire quantity of domestic consumption of wheat in the country is met through imports, as no wheat is produced locally. These volumes are substantially above the last five-year average, but below the 2022 high level. Given the gradual increases in foreign exchange reserves, disbursement of donor funds and the modest appreciation of the national currency, the mission anticipates that both the public and private sectors possess the necessary financial capacity to import food. Consequently, there is no anticipated uncovered food deficit for the 2023 marketing year.

Table 14: Sri Lanka – Food supply/demand balance sheet, 2023 ('000 tonnes)

	Rice (milled)[1/]	Maize	Finger millet	Wheat	Cassava[2/]	Potatoes[3/]	Sweet potatoes[4/]	Total cereals	Pulses
Total utilization	**2 480**	**272**	**9**	**0**	**96**	**11**	**13**	**2 880**	**46**
Stock drawdown	200	0	0	0	0	0	0	200	0
Production	2 280	272	9	0	96	11	13	2 680	46
Total utilization	**2 945**	**402**	**9**	**1 163**	**96**	**60**	**13**	**4 688**	**307**
Food use	2 671	66	9	1 138	32	39	12	3 967	285
Feed use	0	320	0	0	59	0	0	379	0
Seed requirements	72	2	0	0	0	2	0	76	13
Post-harvest losses	202	14	0	25	5	19	1	266	9
Stock build-up	0	0	0	0	0	0	0	0	0
Anticipated commercial imports	**465**	**130**	**0**	**1 163**	**0**	**49**	**0**	**1 807**	**261**
Uncovered deficit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

[1/] Paddy to rice milling rate of 60 percent.
[2/] Cassava cereal equivalent of 32 percent. Production based on the area harvestable within the 12 months of the marketing year.
[3/] Potatoes in cereal equivalent at 25 percent conversion rate.
[4/] Sweet potatoes in cereal equivalent at 28 percent conversion rate.

Sources: Authors' own elaboration based on the data provided by the Department of Census and Statistics, Ministry of Agriculture and collected during the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka (forecast), 2023.

HOUSEHOLD FOOD AND NUTRITION SECURITY SITUATION

Background information and food security

In March 2023, the mission also sought to assess whether and how the household food security situation had changed in the ten months since the May 2022 CFSAM. The overall acute food insecurity situation at the beginning of 2023 has improved materially which, in part, could be the result of a seasonal effect of the harvest period and better affordability of specific nutrient-rich food groups. Still, food consumption continues well below the pre-crisis period (MRI, 2022), and more households are compromising their future resilience and productivity by adopting livelihood-based coping strategies. Pockets of acute food insecurity remain, particularly among the chronically vulnerable populations (those living in the Estate sector and those dependent on the informal sector for income).

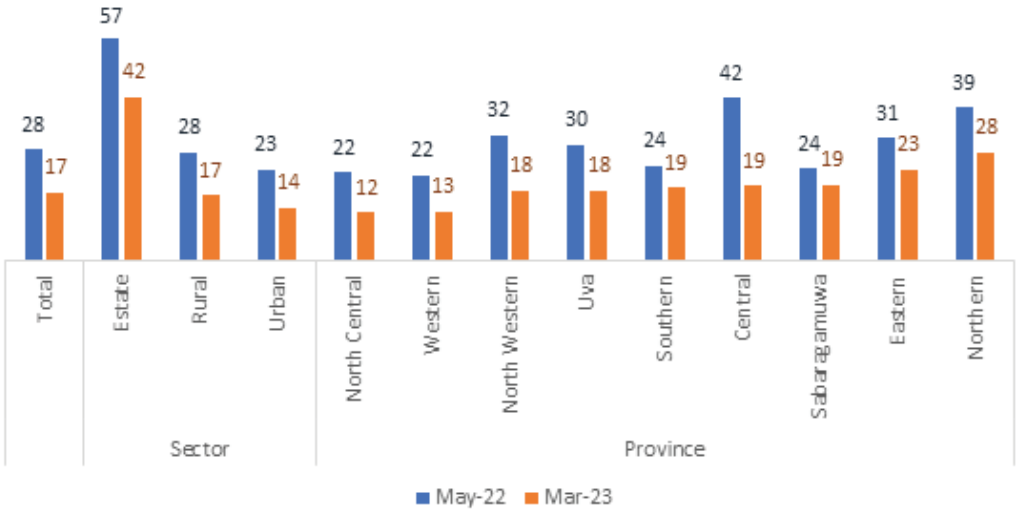
To estimate the number, location and characteristics of the acutely food-insecure households, a F2F household food security survey of 15 035 households was conducted between 20 February to 21 March 2023, generating representative findings for each of the 25 districts of Sri Lanka as well as urban, rural and estate populations. Refer to Annex 4 for the methodological note on survey design.

Based on the survey, 3.9 million people (17 percent) were estimated to be moderately acute food insecure at the time of the mission, including about 10 000 people assessed to be severely acute food insecure. This represents an 11-percentage point decrease from May 2022 (28 percent). This estimate of food insecurity is based upon WFP's standard corporate definition using the Consolidated Approach for Reporting Indicators of Food Security (CARI) methodology (WFP, 2015).

The highest levels of acute food insecurity were once again found in the Estate sector (42 percent). Acute food insecurity was also high in Eastern (23 percent) and Northern (28 percent) provinces. Figure 18 and Map 6 present a summary of the food insecurity findings from the household survey and, where relevant, comparisons with May 2022.

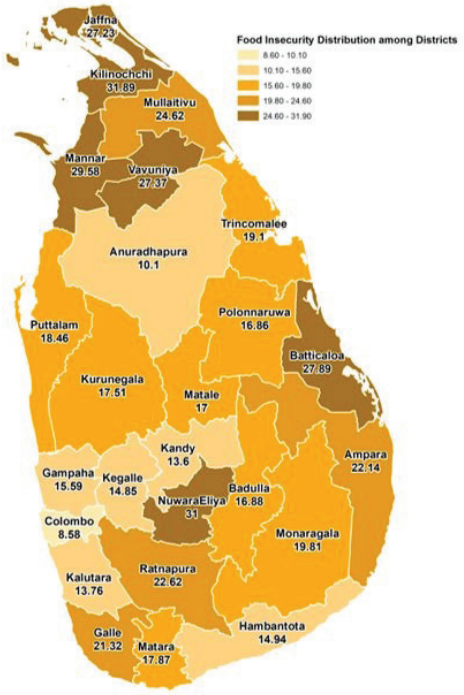
Household characteristics such as gender and education of head of households are important determinants of food insecurity. Female-headed households had higher food insecurity rates (23 percent) compared to male-headed households (16 percent). During the assessment, the mission conducted multiple focus group discussions with female-headed households, based on which this disparity may be attributed to lower income levels and lack of employment opportunities, and the burden of caring for dependents. Women were often paid low wages compared to men and, therefore, faced problems with regular access to adequate and diverse food. They spent considerable amount of time caring for children, which limited their ability to work and to earn a stable income. Education level of the household head was another important characteristic that determined food

Figure 18: Sri Lanka – Acute food insecurity trend by province and sector (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Map 6: Sri Lanka – Acute food insecurity by district, 2023 (percent/household)



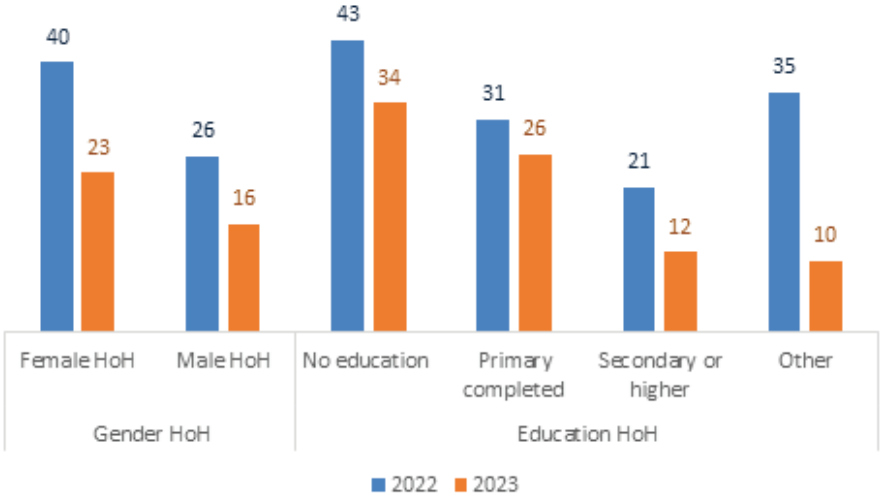
Source: FAO/WFP Crop and Food Supply Assessment Mission (CFSAM, 2023.

security outcome of households. Highest rates of food insecurity were among households where the head of the household had no education (34 percent). In contrast, households where the head of the household had completed secondary school education or higher had significantly lower rates of food insecurity (11.8 percent). Education level of the head of the household is significantly lower in female-headed households, in the Estate sector as well as among households relying on assistance, followed by those depending on unskilled labour and agriculture (Figure 19).

Rates of food insecurity also varied significantly among different income groups. The biggest proportion of food insecure households was found among those who mainly relied on social protection programmes, such as Samurdhi and disability benefits (43 percent), followed by households with unskilled/casual agriculture labour (31.6 percent), aid/gifts (30.6 percent) and production and sale of fish (29.8 percent) as income sources. On the other hand, the lowest percentage of food insecure households was among those who produced and sold staple crops such as rice, where only 6 percent of households were food insecure (Figure 20). This result is likely to be related to the period of the data collection, i.e., during harvest time of the main agriculture season.

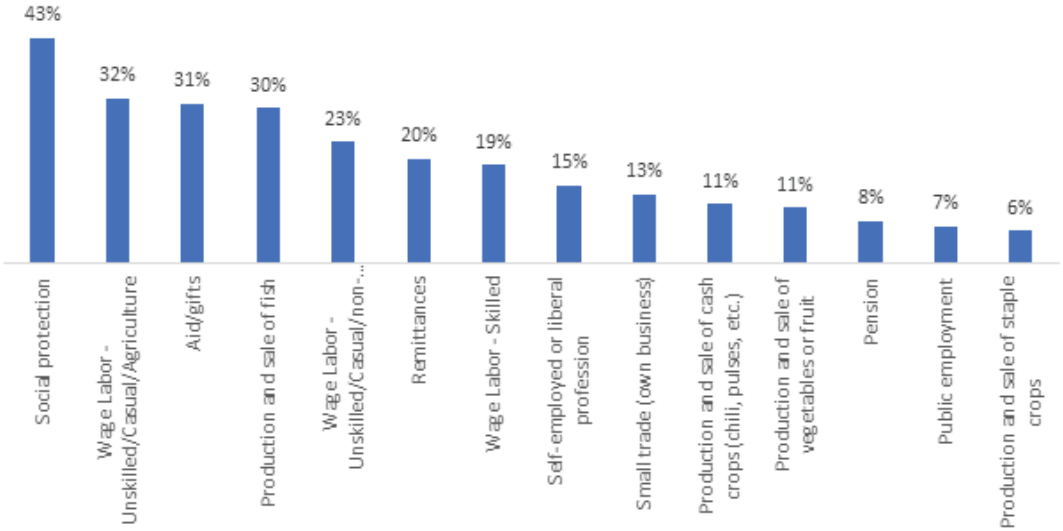
Discussions with households that relied on wage labour showed that the seasonal nature of their employment and fluctuating wages led to inconsistent access to food. They reported that although their wage rates had increased, they were working lesser number of days and, hence, no appreciable increase in income. In contrast, those who produced and sold staple crops had easier access

Figure 19: Sri Lanka – Acute food insecurity trend by gender and education (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 20: Sri Lanka – Acute food insecurity trend by livelihood group (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

to food during the survey period due to the recent harvest resulting in increased consumption levels.

Access to food and coping mechanisms

The CARI methodology assesses availability and access to food through measuring the current status of household consumption using the Food Consumption Score indicator. The CARI measures the ability of a household to stabilize consumption over time by measuring the coping capacity through economic vulnerability and livelihood coping strategies. Each of these indicators are described in this section.

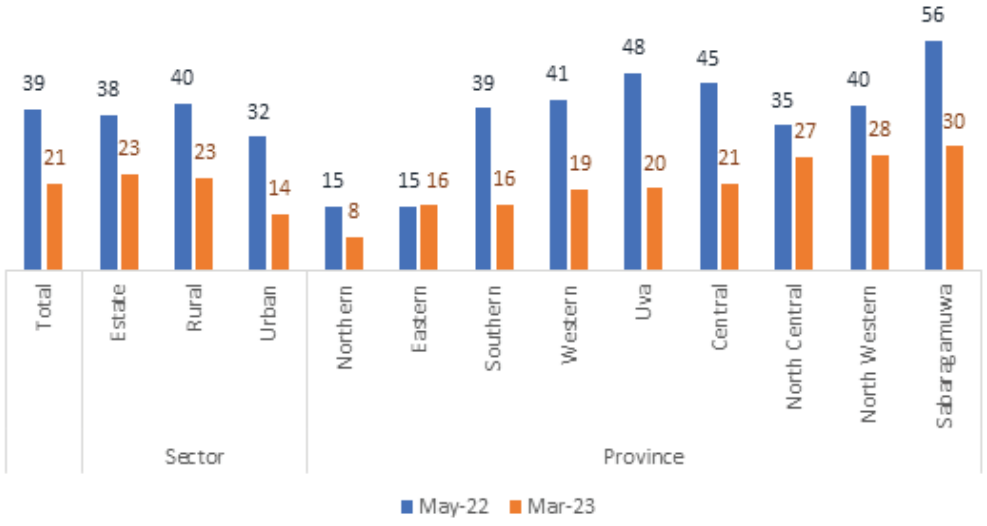
Current status of food consumption

According to the food security assessment, approximately 4.7 million people (21 percent) were not consuming an adequate diet at the time of the mission.[11] This represents a substantial improvement compared to the May 2022 assessment in which 39 percent of the households had inadequate food consumption. Figure 21 and Map 7 present a summary of the food consumption findings from the household assessment and, where relevant, comparisons with May 2022.

Large proportion of female-headed households (26 percent) were experiencing inadequate consumption compared to male-headed households (20 percent) Figure 22. Regarding education, the results showed that a large proportion of households headed by individuals with no education had inadequate consumption (32 percent) compared to households where the head of the household had completed primary (25 percent) or secondary school education or higher (18 percent).

In March 2023, households were broadly consuming more oil, proteins, pulses and sugar than they were in May 2022, while consumption frequency of fruits and dairy have reduced.[12] A comparison of the mean number of days per week that the main food groups were consumed in each survey is presented in Figure 23. The main driver of improved protein consumption was fish:

Figure 21: Sri Lanka – Inadequate food consumption trend by province and sector (percent/household)

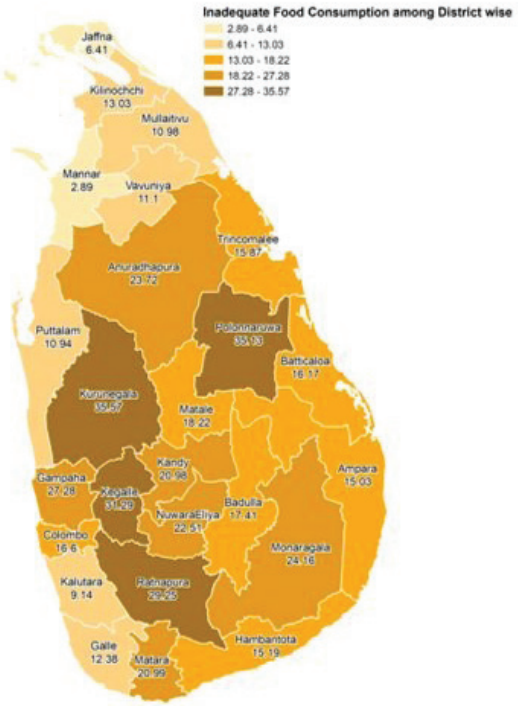


Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

[11] This estimate is based on the Food Consumption Score (FCS) indicator which measures dietary diversity and food frequency. A household food consumption score is calculated according to the types of foods consumed during the previous seven days, the frequencies with which they are consumed and the relative nutritional weight of the different food groups.

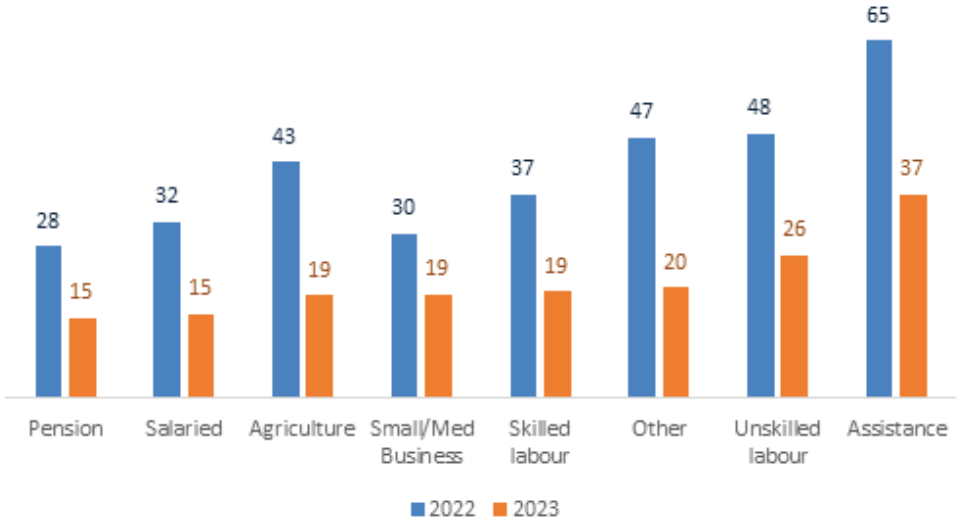
[12] The Food Consumption Score gives a relatively strong weight to protein and pulses such that even small improvements in their consumption can dramatically affect the estimate of inadequate consumption.

Map 7: Sri Lanka – Inadequate food consumption by district, 2023 (percent/household)



Source: FAO/WFP Crop and Food Supply Assessment Mission (CFSAM).

Figure 22: Sri Lanka – Inadequate food consumption trend by livelihood group (percent/household)

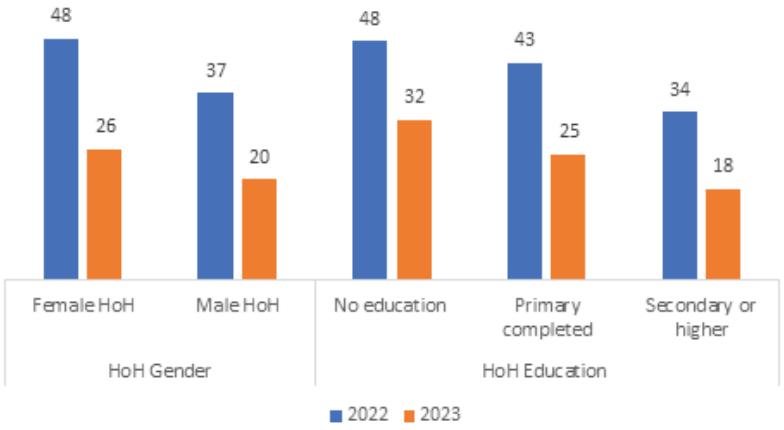


Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

in May 2022, fish was consumed an average of 0.8 days/week compared to 1.7 days/week in March 2023 (Figure 25). Despite the improvement, consumption of fish continues to be well below the consumption frequency before the crisis, that ranged between 2.4 and 4.4 days/week, by the end of 2021 (MRI, 2022).

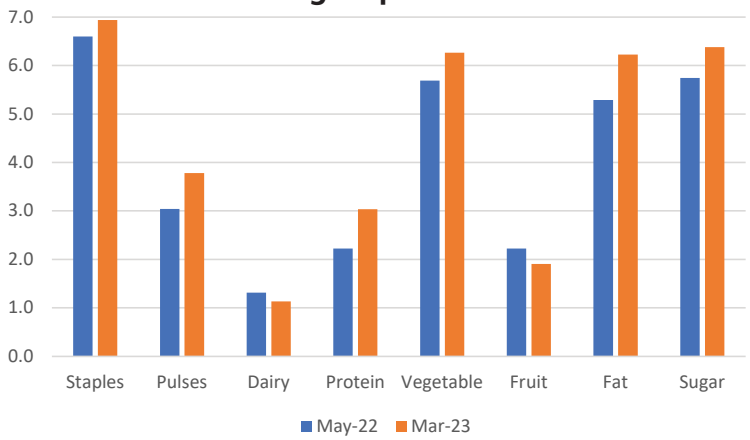
All expenditure quintiles show increased consumption rates (Figure 26), suggesting a general improvement of the country's context likely reflected on households' purchasing power as well as a relative better food availability and affordability, especially for fish and lentils. Across all expenditure quintiles, consumption of oil,

Figure 23: Sri Lanka – Inadequate food consumption trend by gender and education of household head (percent/household)



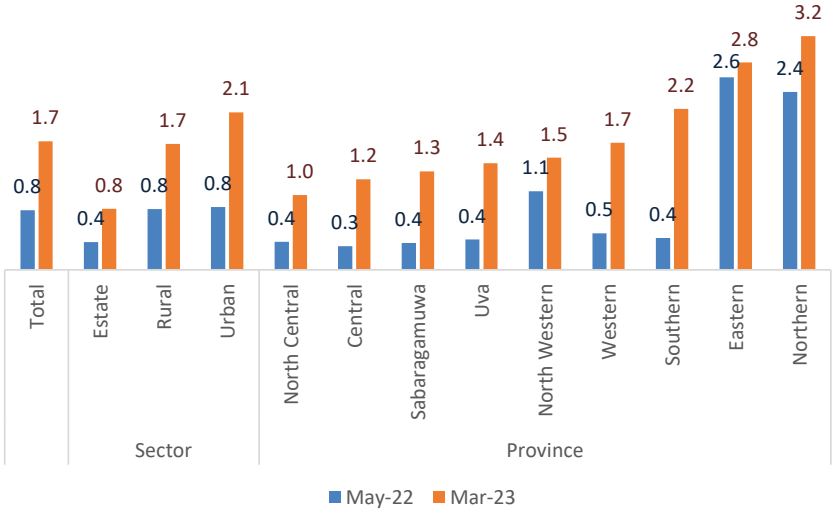
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 24: Sri Lanka – Average number of days per week each food group was consumed



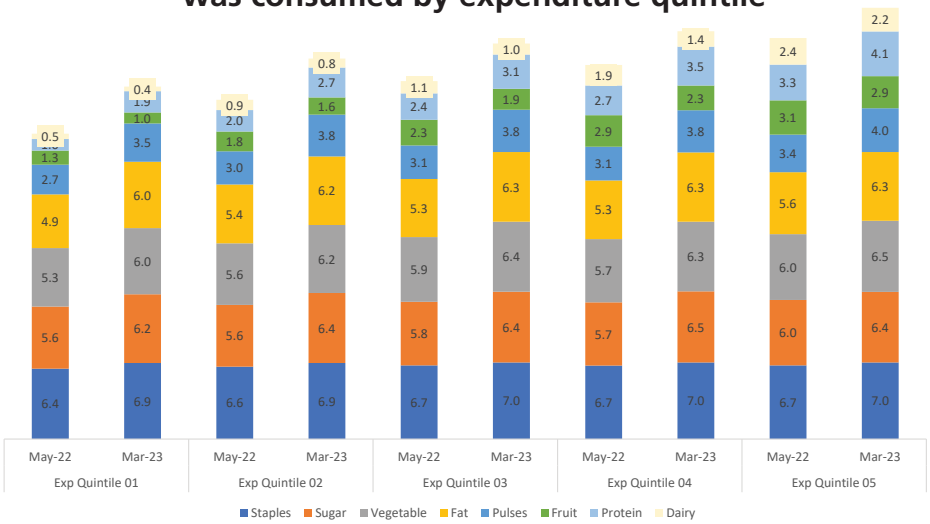
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 25: Sri Lanka – Average number of days per week fish was consumed



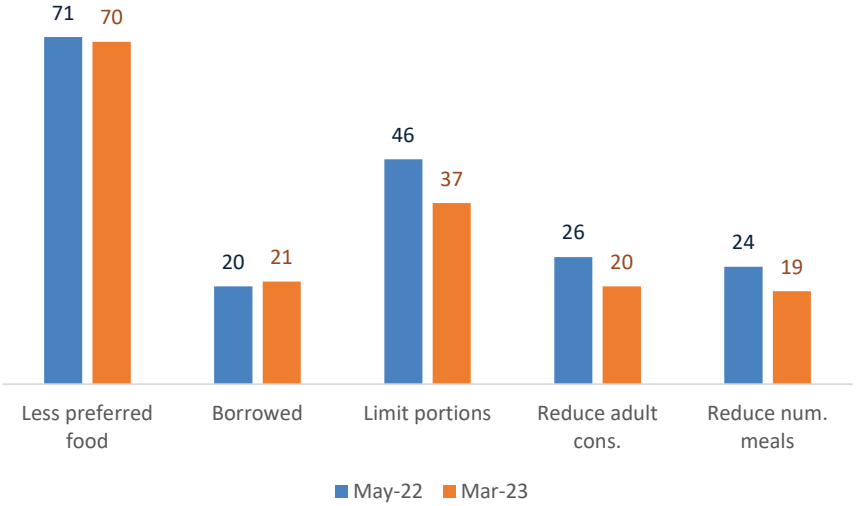
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 26: Sri Lanka – Trend in average number of days per week each food was consumed by expenditure quintile



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 27: Sri Lanka – Food-based coping trend (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

proteins and pulses showed the largest increments, while consumption of fruits and dairy has reduced. However, while the wealthiest quintile increased the consumption of proteins over other food groups, oil/fat was the food group with the largest consumption increment among quintiles 1–4. Despite changes, Figure 26 reflects how the wealthier the quintile the better food consumption of all food groups, but mostly proteins, dairy and fruits, confirming the economic challenges for an adequate diet.

Food-based coping strategies

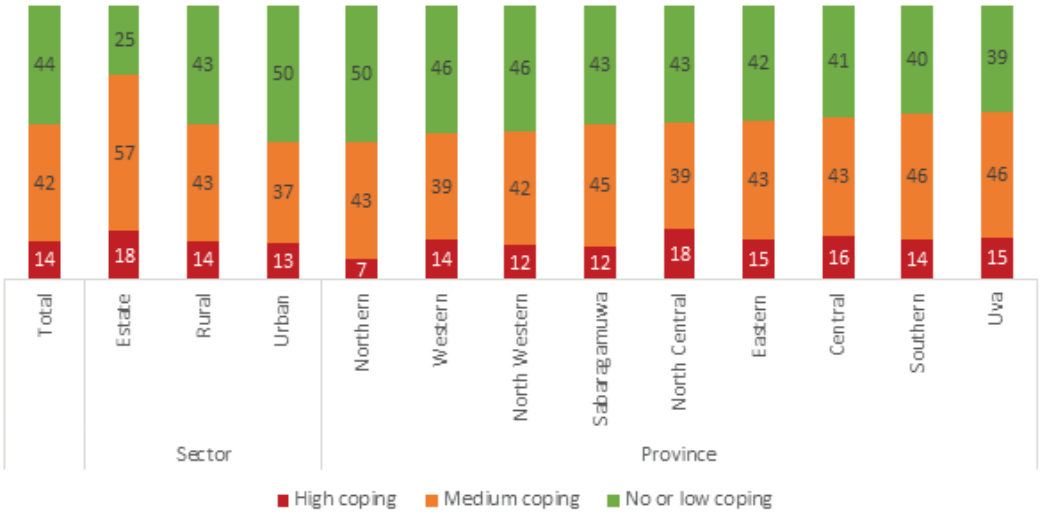
More than half of households (56 percent) reported regularly using medium or high food-based coping strategies (WFP, 2019)[13] because they did not have enough food or money to buy food. This represents a limited improvement compared to May 2022 when 61 percent of households were regularly using these medium-high food-based coping strategies. Findings from the March 2023 assessment indicate that about one in every five households (19 percent) had been

[13] WFP uses a standard set of questionnaires to calculate food-based coping strategies. Based on the severity and frequency of these strategies, households are categorized as adopting high, medium, and low coping strategies.

reducing the number of meals consumed in a day and about one-third (37 percent) had been limiting portion sizes. Overall, the level of food-based coping strategies reduced slightly across most sub-categories between May 2022 and March 2023, except for borrowing food or relying on help from friends and relatives, a strategy that is employed by a similar percentage of households than last year, around 20 percent (Figure 27).

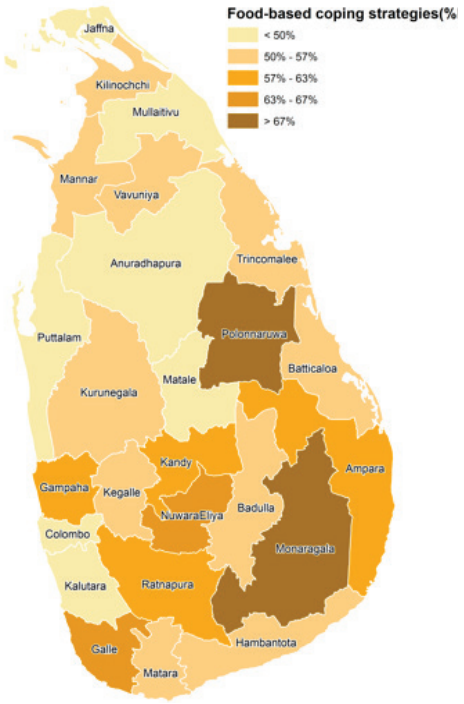
Households in the Estate sector were among the most likely to report regularly using food-based coping strategies (75 percent).[14] By livelihood group, the highest proportion of households employing highly severe food-based coping strategies was found among households relying on assistance (30 percent) followed by unskilled labour (19 percent). Figure 28 and Map 8 present the food-based coping findings.

Figure 28: Sri Lanka – Food-based coping by province and sector (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

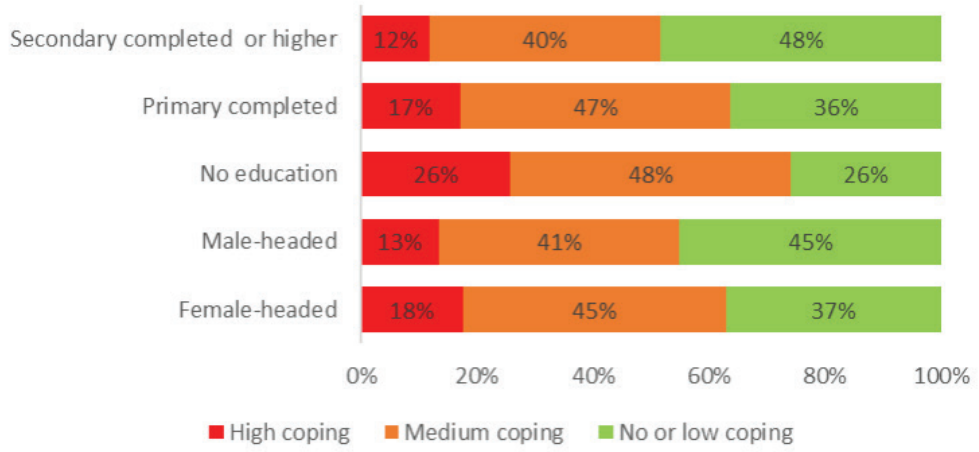
Map 8: Sri Lanka – Adoption of food-based coping by district, 2023 (percent/household)



FAO/WFP Crop and Food Supply Assessment Mission (CFSAM

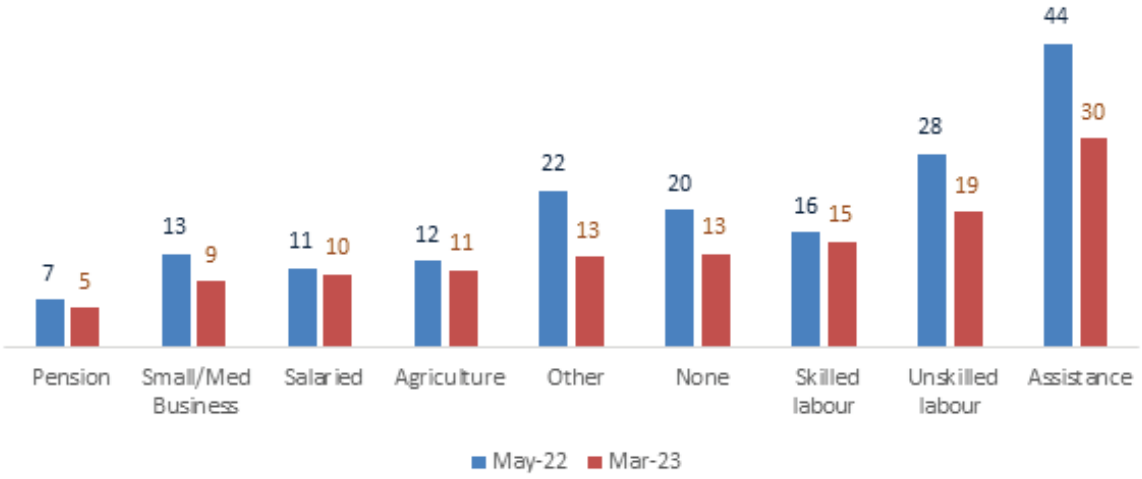
[14] "Regularly" defined as using one or more of five separate food-based coping strategies at least four times in the past seven days.

Figure 29: Sri Lanka – Food-based coping by gender and education (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 30: Sri Lanka – High food-based coping by income source (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

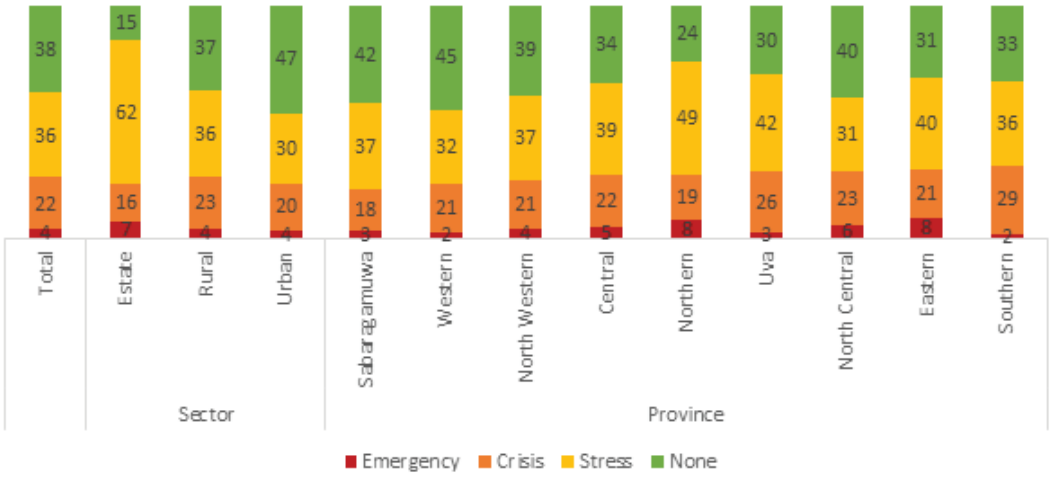
A breakdown of food-based coping strategies by gender of household head showed that larger proportion of female-headed households tend to engage in coping (63 percent) compared to male-headed households (54 percent) when faced with difficulties accessing food. Similarly, 74 percent of households where the head of the household had no education were engaged in medium and high level of coping strategies, significantly different compared to educated households (52 percent).

Figure 29 shows the proportion of households engaged in high levels of coping strategies in 2022 and 2023. An improvement was observed in all livelihood sources, indicated by the reduction in the proportion of households adopting highly severe food-based coping strategies. However, adoption of food-based coping strategies and trends varied significantly among livelihood groups. Households that relied on humanitarian aid and on social protection programmes, such as Samurdhi and disability benefits were adopting food-based coping strategies the most (30 percent), despite showing the largest improvement compared to 2022. On the other hand, households that relied on stable sources of income, such as pension, businesses or regular employment, were least likely to adopt food-based coping strategies (Figure 30).

Livelihood-based coping strategies

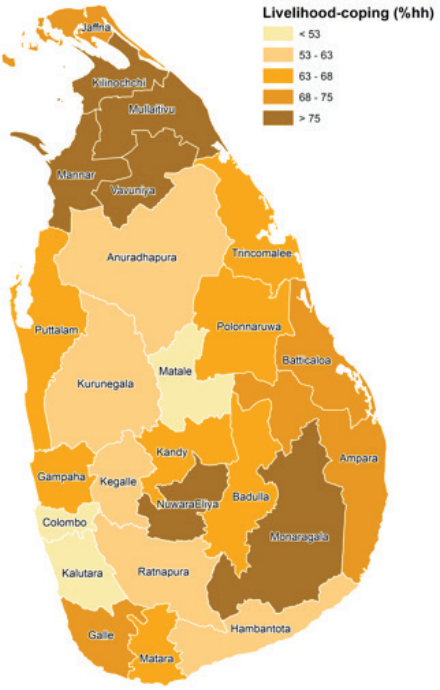
In addition to adjusting their food consumption patterns, households resorted to various livelihood-based coping strategies (WFP, 2021)[15] to cope with insufficient food access and availability. The mission found that nearly two in three households across the country (62 percent) had applied at least one livelihood-based coping strategy to cope with the lack of food or money to buy it. This represents a material deterioration in conditions compared to May 2022 when just under half of households

Figure 31: Sri Lanka – Livelihood-based coping by sector and province, 2023 (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Map 9: Sri Lanka – Proportion of households adopting livelihood-based coping by district (percent/household)



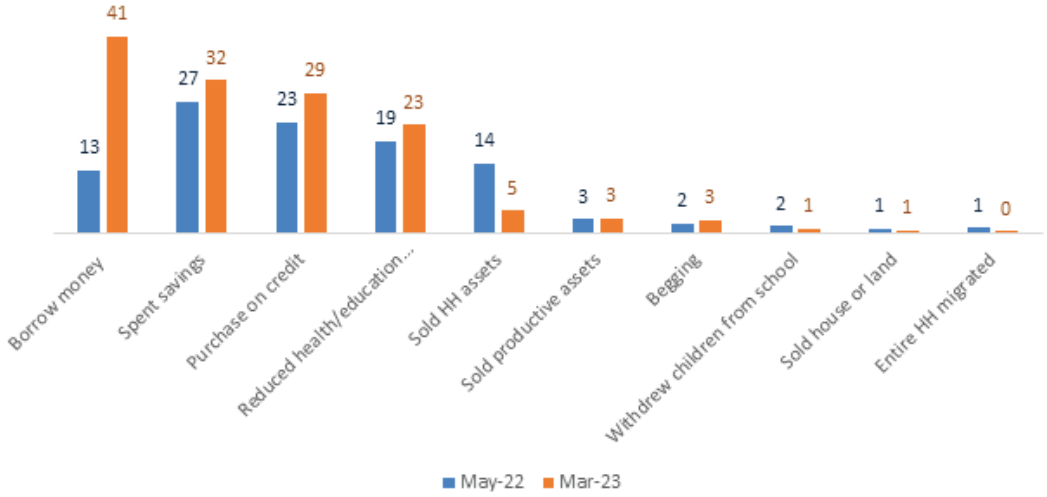
FAO/WFP Crop and Food Supply Assessment Mission (CFSAM

[15] The livelihood-based coping strategies indicator is derived from a series of questions regarding the households' experiences with livelihood stress and asset depletion to cope with food shortages. Based on the severity of these strategies, households are also classified into having adopted stress, crisis or emergency coping strategies.

(48 percent) reported the same. Severity of the strategies employed have also slightly increased; March 2023 findings reveal that nearly 26 percent of households employing emergency or crisis-level livelihood coping strategies up from 23 percent in May 2022 (Figure 31 and Map 9). These actions include, selling productive assets (e.g., farming equipment), reducing essential health/education expenses, withdrawing children completely from school and selling land, many of which can negatively impact their ability to generate income or respond to future shocks.

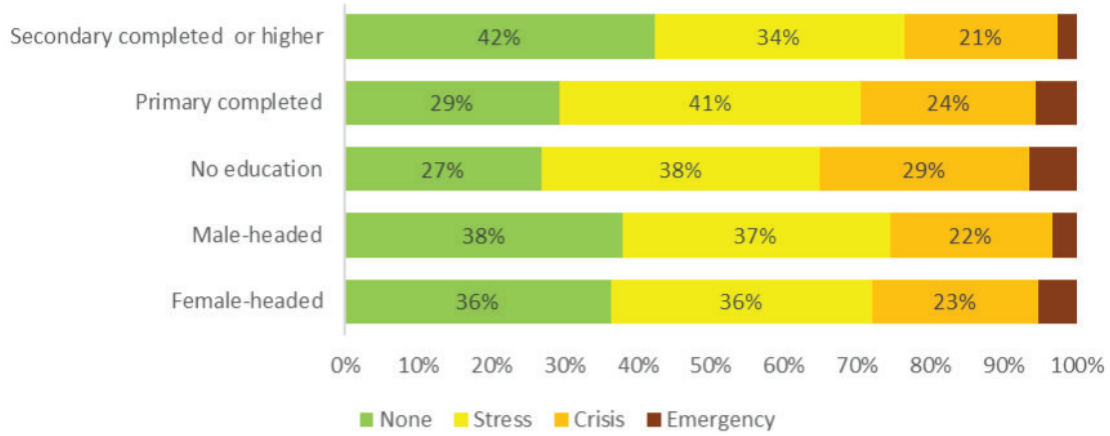
Figure 32 shows the different types of livelihood-based coping strategies adopted by households, among which borrowing money for food, spending savings to buy food and purchasing food on credit were the most common. It is also worth noting that almost one-fourth of households reported reducing health and education expenses that can have detrimental impact on well-being and prospects of the households. Poor health outcomes are often associated with inability to participate in the labour force, leading to lost wages and economic growth. Similarly, if individuals have limited education, they are less likely to secure well-paying jobs. Compared to last year, these strategies are more frequent now, especially the proportion of households borrowing money from formal lenders that have increased by 28 percentage points. This also means that the improvement seen in food consumption in the previous section has come at the cost of borrowing money, loss of savings and credit

Figure 32: Sri Lanka – Livelihood coping strategies trend (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 33: Sri Lanka – Livelihood coping strategies trend by gender and education (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

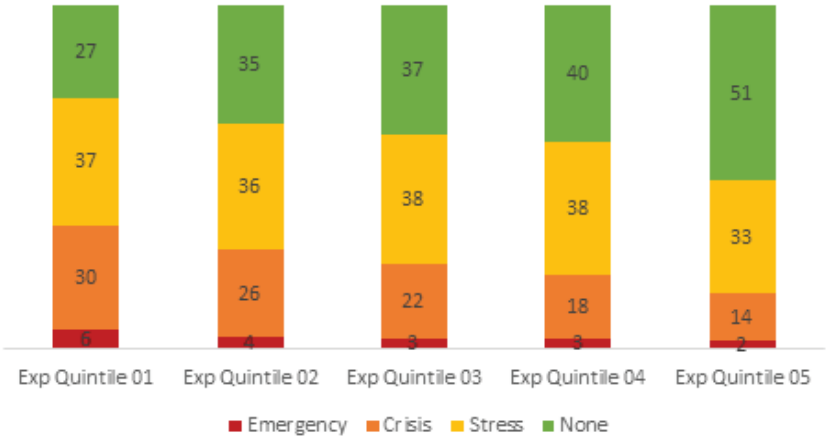
purchases, signalling the hardships currently faced by the households in acquiring food.

No significant differences were observed between coping strategies adopted by male and female-headed households, although female-headed households were slightly more likely to engage in emergency coping strategies. Education attainment was negatively correlated with the livelihood-based coping strategies, with households having better educated household heads less likely to adopt coping strategies (Figure 33).

The summary breakdown above hides some of the additional stresses that households on the lower end of the socioeconomic spectrum are currently facing. Figures 34 and 35 reveal the level of livelihood-based coping strategies according to households' expenditure quintile and main source of income, respectively.

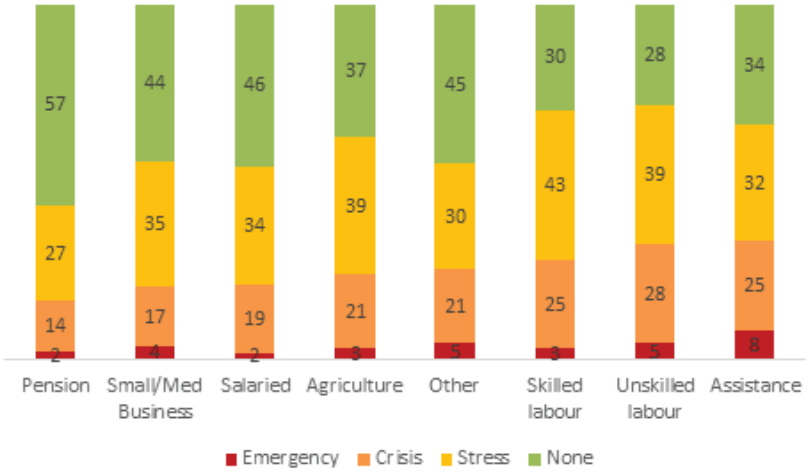
More than one in three households (36 percent) in the lowest expenditure quintile reported employing emergency or crisis-level coping strategies in the month before the survey because they did not have enough food or money to buy food. Similarly, one-third of households depending on assistance or unskilled daily wage labour were using such strategies that are likely to have a negative impact on their future earning ability (34 and 33 percent, respectively). Other household characteristics that were strongly correlated with emergency/crisis coping strategies included households headed by someone with no education (35 percent), Samurdhi beneficiaries (35 percent) and households with more than seven members (33 percent).

Figure 34: Sri Lanka – Livelihood-based coping by expenditure quintile (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 35: Sri Lanka – Livelihood-based coping by income source (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

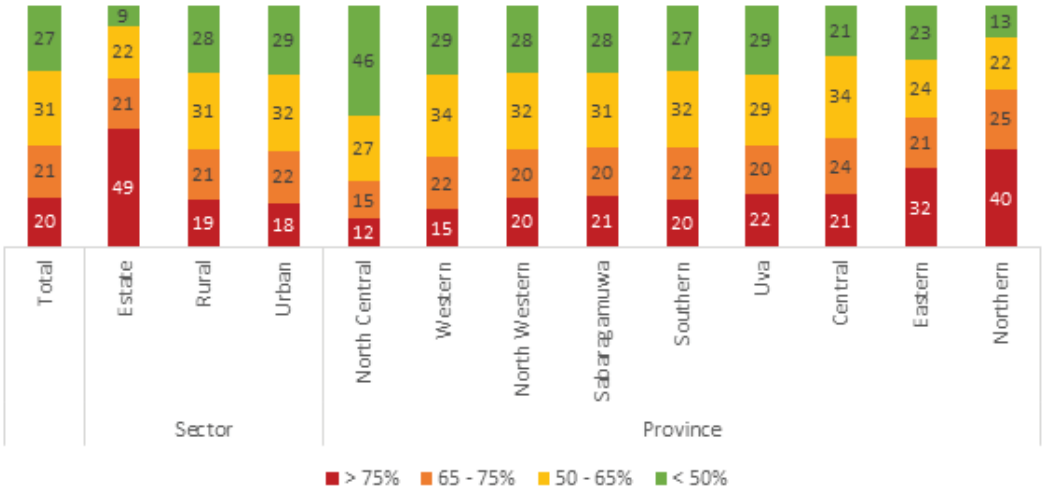
Focus group discussions conducted with households during the mission revealed that daily wages have increased compared to last year but are not yet keeping up with inflation of food and non-food items. As a result, households continue to sell/pawn assets and borrow at high interest rates. With the rate of inflation beginning to cool, after peaking in September 2022, however, there is the potential for real wages to continue strengthening and possibly turn positive, and provide some much-needed support to households' balance sheets.

Food expenditure share

Along with food consumption and coping strategies, WFP uses food expenditure share to compute prevalence of food insecurity through CARI. The mission collected detailed expenditure household data to understand the extent to which the extraordinary price environment over the past year was affecting their spending habits and purchasing power.

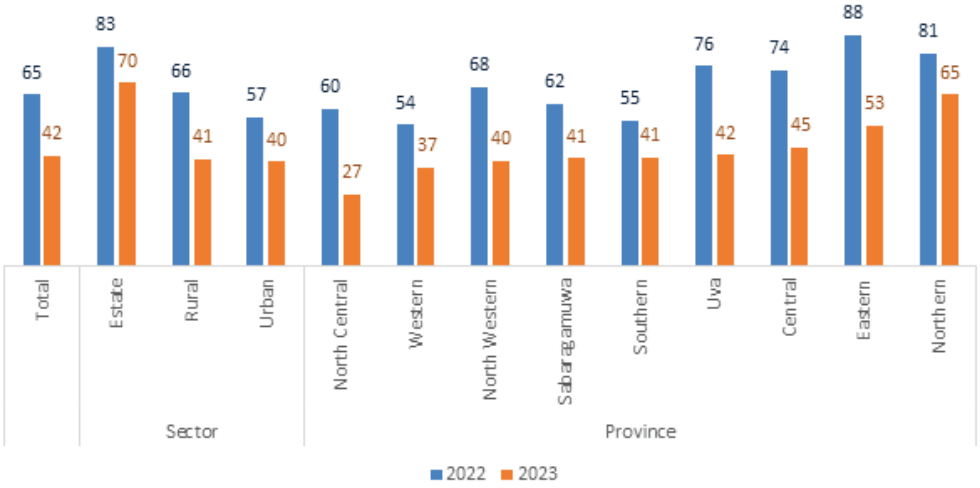
Food expenditure share was significantly higher in the Estate sector than in rural and urban areas that were similar to each other. The proportion of households spending more than 65 percent of their total expenditure on food was the highest in Northern and Eastern provinces, and lowest in North Central and Western (Figure 36). In March 2023, 42 percent of households reported using more than 65 percent of their total monthly expenses in food compared to 65 percent in May 2022, a

Figure 36: Sri Lanka – Food expenditure categories by province and sector (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 37: Sri Lanka – Food expenditure share above 65 percent trend by province and sector (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

23-percentage point decrease. Households with a high proportion of expenditure on food are exceedingly susceptible to shocks, such as price fluctuations or loss of livelihoods/reduced income earning opportunities (Figure 37).

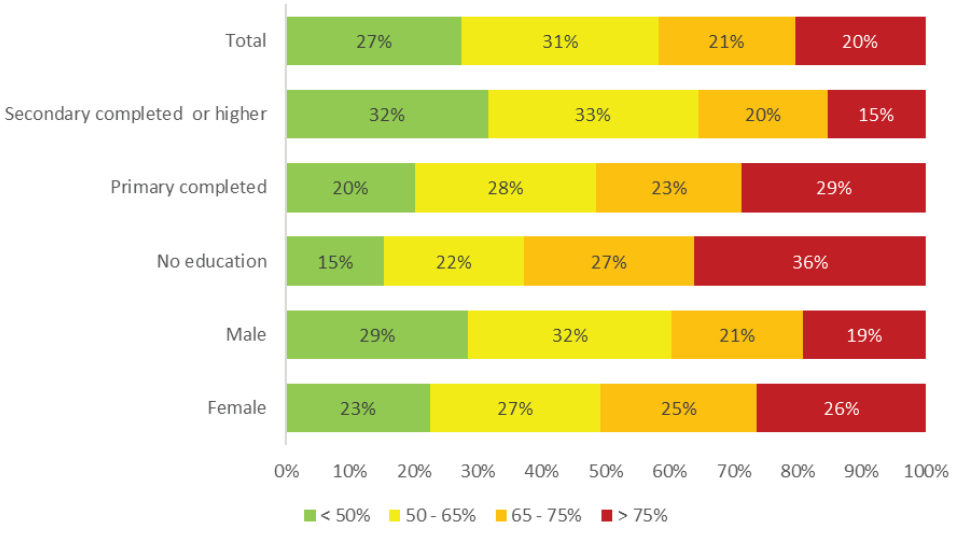
The analysis of food expenditure share by the gender and education of household head is shown in Figure 38 and Map 10. A larger proportion of female-headed households were spending >75 percent of their total expenditure on food compared to male-headed households. If a large portion of income is spent for food, there is fewer financial resources available for other essential expenses like health, education as well as investment, thus limiting households' ability to engage in livelihood-building activities. Similarly, households whose head had no education were spending larger shares of their expenditures on food, compared to households with educated household heads.

Breaking down the expenditures according to category and time reveals that whilst monthly food expenditures per capita have remained constant over the past year, the amount households are directing towards non-food items had increased (figures 39 and 40), which explains the lower food expenditure share this year compared to May 2022.

The improvement in household food consumption with similar food expenditure than last year indicates an increase in household purchasing power of food due to a relatively better availability and affordability of key nutrient rich food items, such as fish or lentils. Prices of lentils have reduced from LKR 601 to LKR 360 between May 2022 and March 2023, and fish (Balaya-Comman one) from LKR 1 763 down to LKR 1 400. Lower food prices in other specific food items compared to May last year, could also respond to a seasonal effect linked with the harvest period and should be closely monitored. Households relying on assistance as income source is the only livelihood group showing an increase in food expenditure, which reflects the positive impact of last year's assistance efforts. On the other hand, households relying on unskilled labour showed the lowest expenditure on food.

The increase in non-food expenditures is likely to reflect the rise in the cost of living as indicated by the inflation rate in March, at 50.3 percent, compared to 39.1 percent in May 2022. The largest increment of non-food expenditures between May 2022 and March 2023 were in urban areas and households relying on agriculture, which also showed the highest non-food expenditures, together with households relying on pension. A seasonal effect cannot be ruled out, with higher expenditures during the harvest

Figure 38: Sri Lanka – Food expenditure share by gender and education of household head (percent/household)

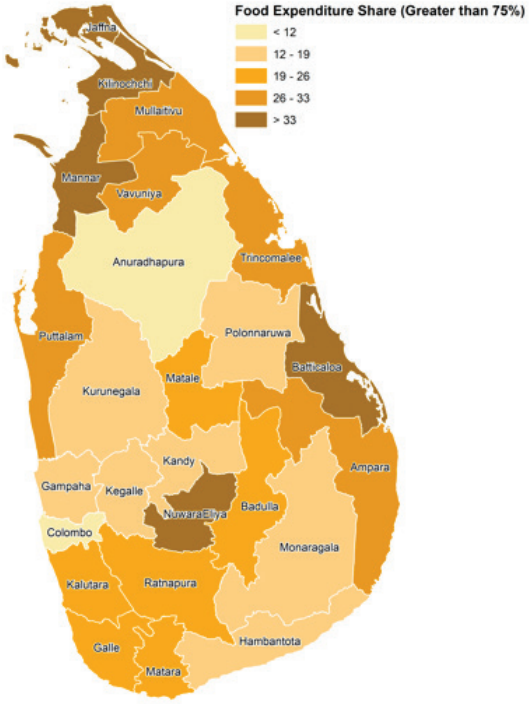


Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

period, especially once the income starts coming in among farmers and related livelihoods. The increase in expenses from May 2022 is observed in most categories as shown in Figure 41, but especially in rent and debt repayment.

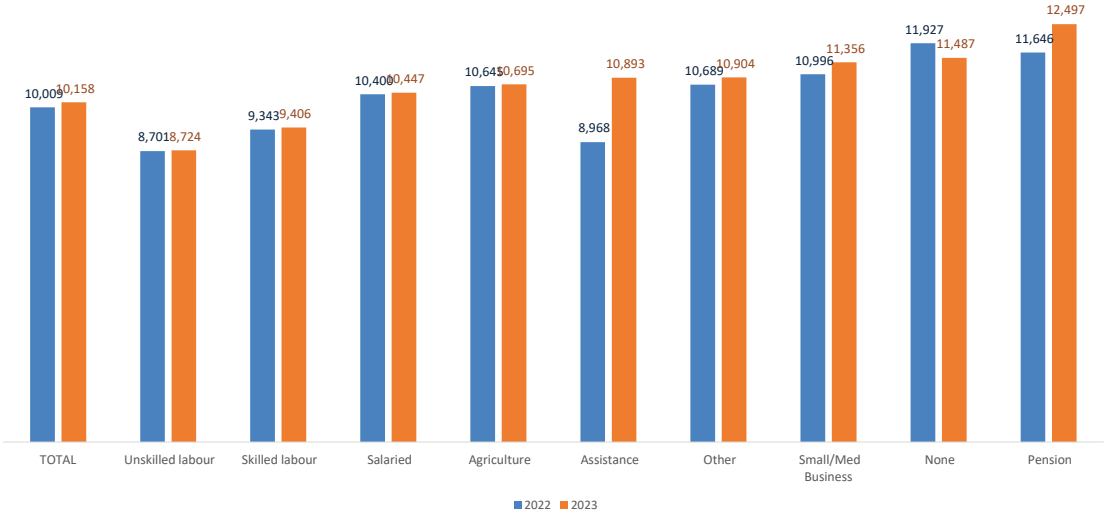
The most common non-food expenditures include those on hygiene items, electricity, communications, medical treatment and transport (Figure 42). Water and fuel expenses are also common in urban and rural areas, although not in the Estate sector. Other relatively common expenses, reported by 30 to 50 percent of households, include education and debt repayment as well as energy in urban areas and alcohol and tobacco in the Estate

Map 10: Sri Lanka – Proportion of households spending more than 75 percent on food, by district



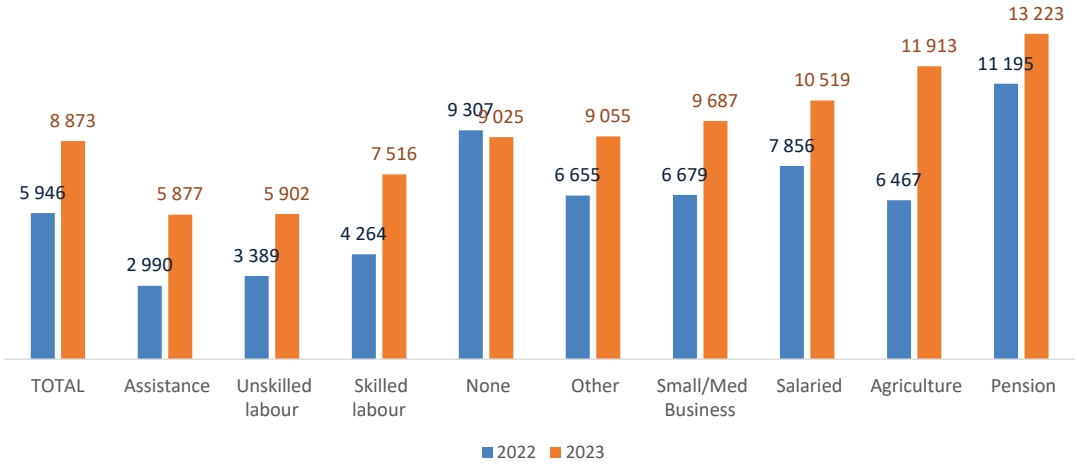
Source: FAO/WFP CFSAM Food Security Survey, 2023.

Figure 39: Sri Lanka – Average monthly per capita food expenditure trend by income source



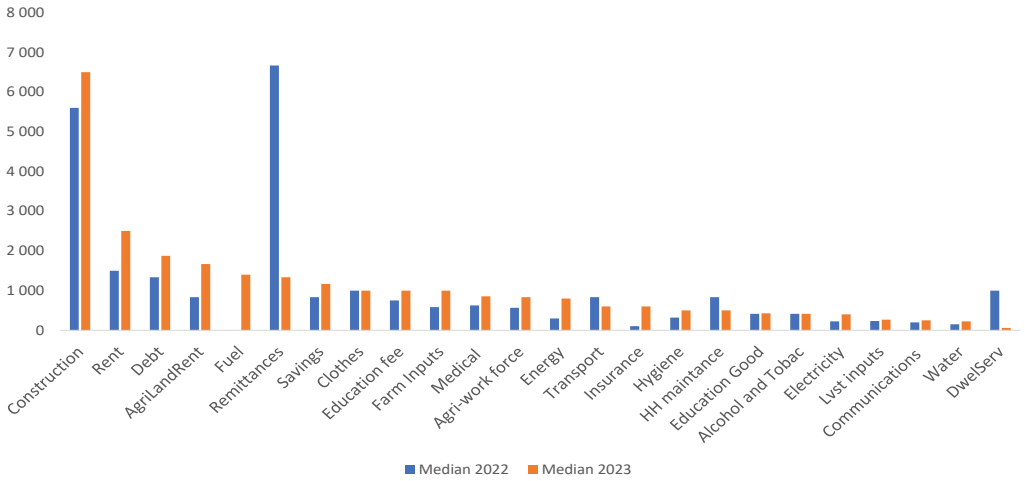
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 40: Sri Lanka – Average monthly per capita non-food expenditure trend by income source



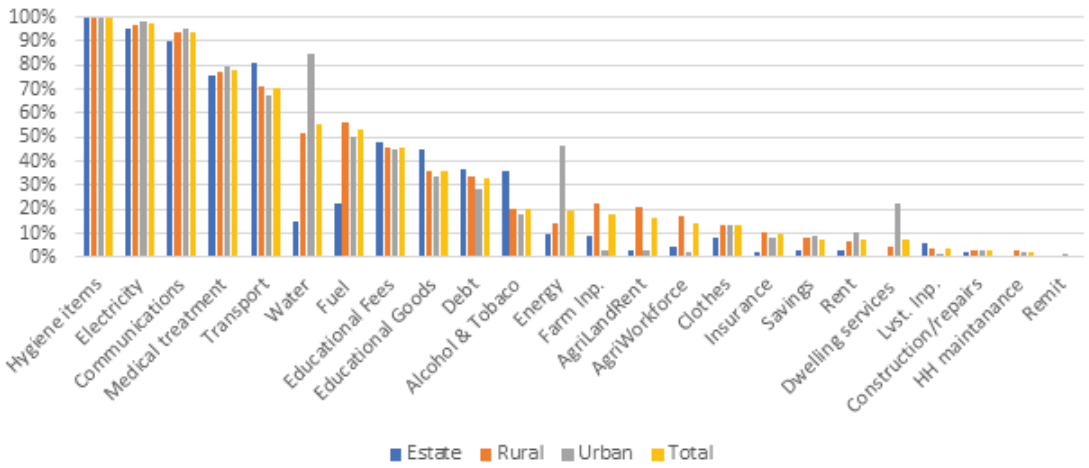
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 41: Sri Lanka – Median monthly per capita non-food expenditure trend by category



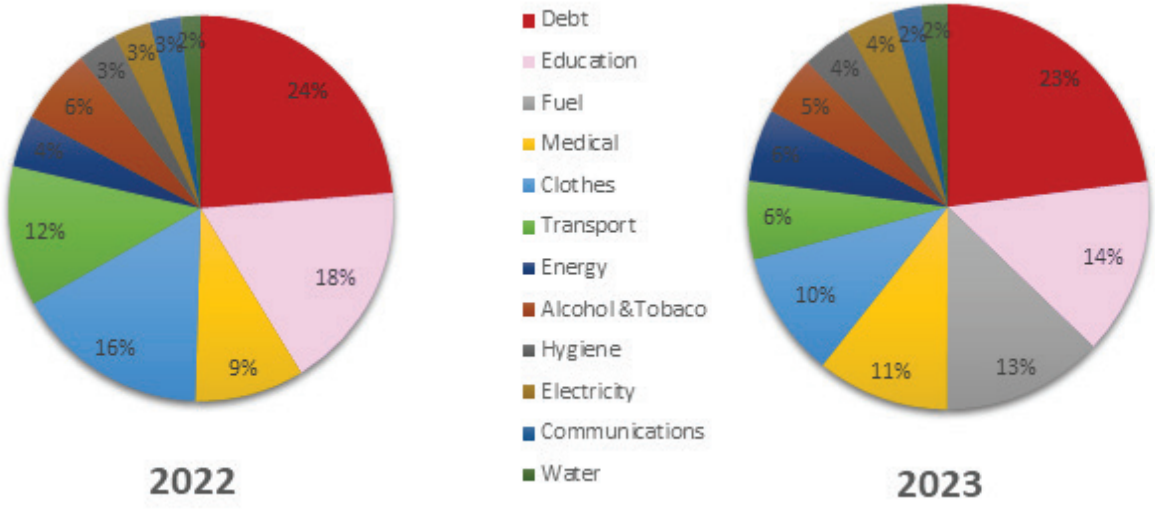
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 42: Sri Lanka – Proportion of households reporting non-food expenditures under different categories



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 43: Sri Lanka – Expenditure share trend



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

sector. The low percentage of households with expenses in non-critical categories such as clothes, insurance, savings, construction and repairs or household maintenance, indicate the economic difficulties faced by households to cover their needs.

When considering only expenses reported by 10 percent or more of households,[16] the highest expense is for debt repayment, followed by education, fuel and medical treatments. The questionnaire expenditure module included farmer-specific expenses such as farming inputs, agriculture land rent or agriculture work force, which tend to be of great magnitude and represent a significant percentage of their total expenditure (Figure 43).

As discussed in the livelihood-coping strategies section and corroborated by expenditure trends, the higher proportion of households employing coping strategies compared to May 2022, such as borrowing money from formal lenders, purchasing food on credit or spending savings, indicates the increased challenges households are facing to cover for critical expenditures.

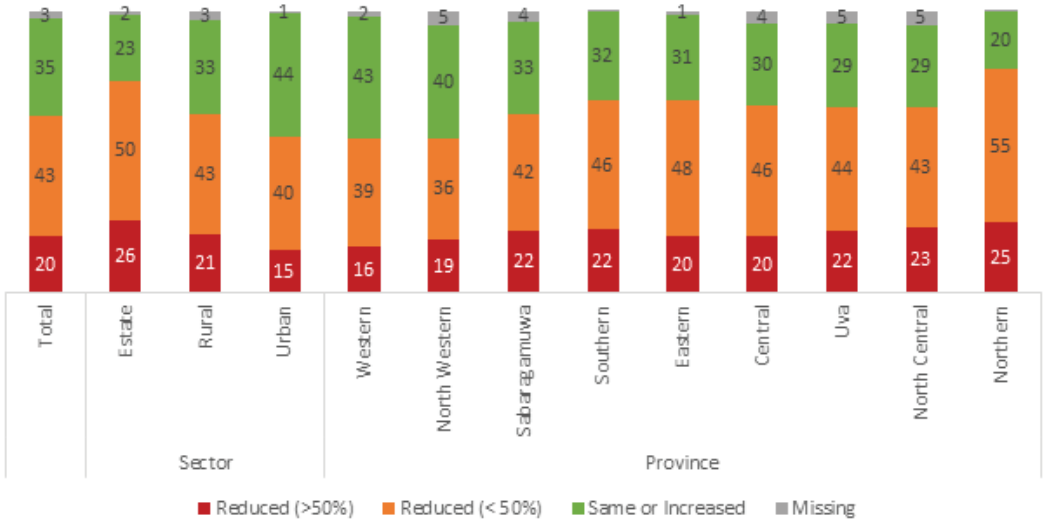
Household income (reported)

Findings from the March 2023 food security survey data reveal that about 62 percent of households reported that their total monthly income had reduced compared to the previous year (down from 78 percent in May 2022). Likewise, almost one in three households (35 percent) reported their income had increased (up from 18 percent in May 2022).

As shown in figures 44 and 45, households engaged in agricultural activities reported the biggest loss in income compared to the same period last year, likely in part related with higher expenses in land rent, workforce, fuel, agricultural inputs and debt repayment. In general, between 20 percent to 30 percent of households that participated in the labour force with various forms of employment inside Sri Lanka had reported income losses by more than 50 percent. The economic activities least affected by income losses included remittances and public employment such as government jobs. These findings are in line with the overall macroeconomic condition of the country where the GDP growth rate was negative in 2022 at 8 percent, with a 3 percent decline projected for 2023 (ADB, 2023). It is also

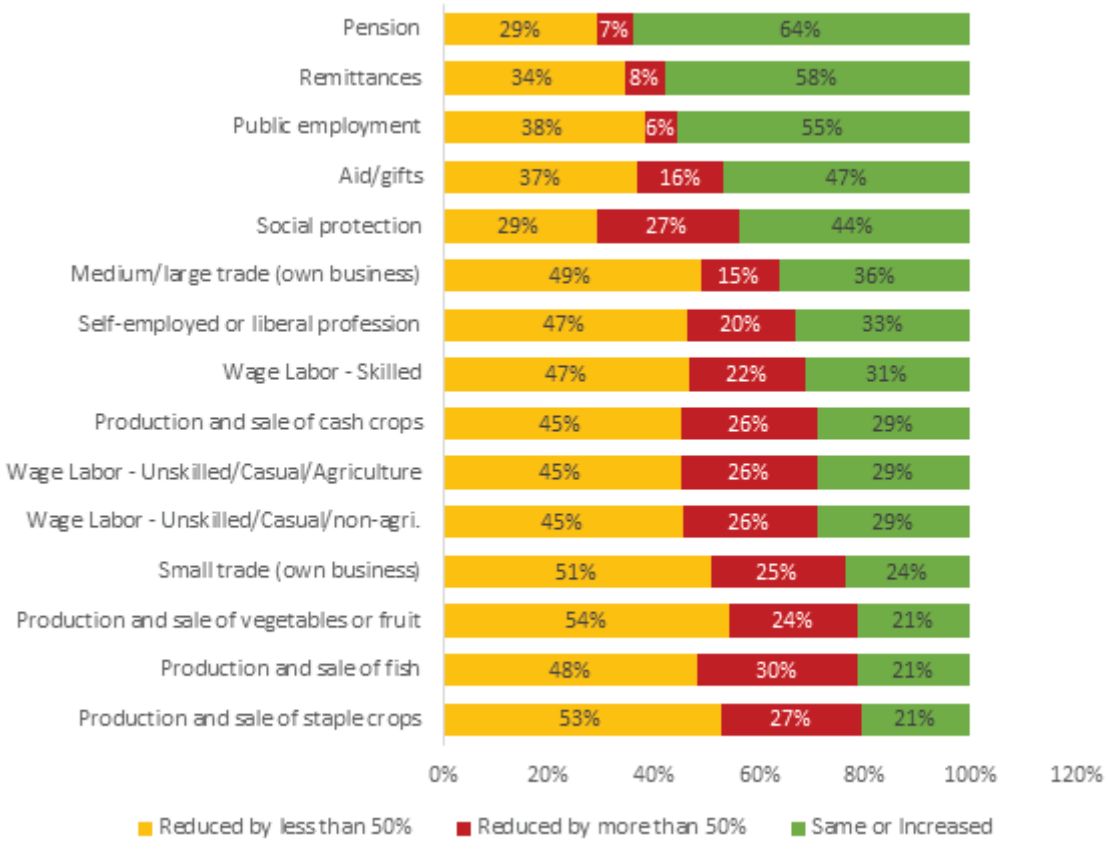
[16] Expenditures reported by less than 10 percent of households are not considered in the analysis to avoid a too distorted figure of non-food expenditure share due to the relative high cost and low proportion of households engaged in these expenditures: remittances, construction and repairs, household maintenance, dwelling services, savings, livestock inputs, rent, insurance.

Figure 44: Sri Lanka – Change in income by province and sector (percent/household)



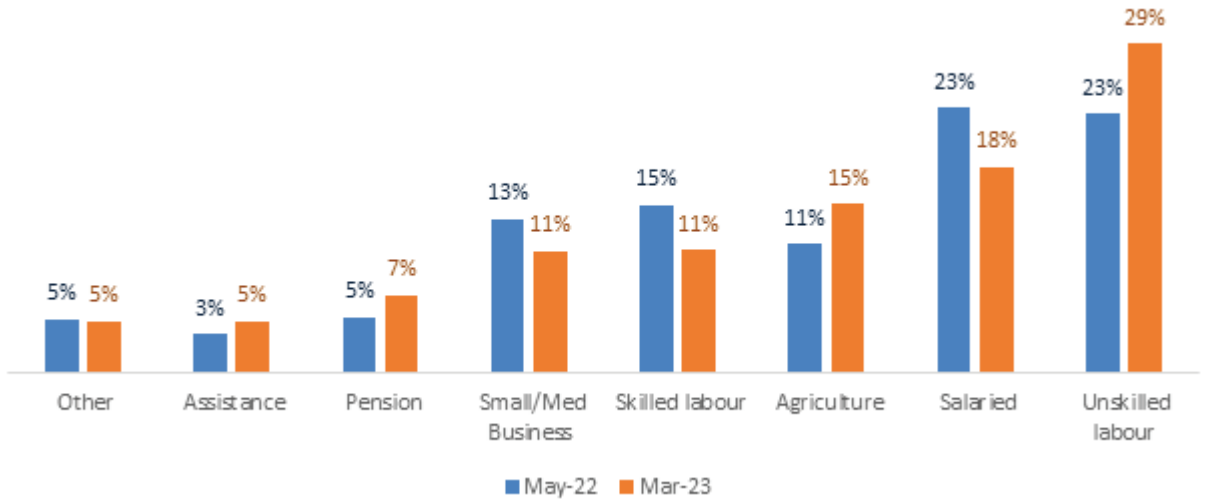
Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 45: Sri Lanka – Change in income by livelihood source (percent/household)



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

Figure 46: Sri Lanka – Livelihood profile trend



Sources: Authors' own elaboration based on the data collected during the FAO/WFP Crop and Food Supply Assessment Mission (CFSAM) to the Democratic Socialist Republic of Sri Lanka, 2023.

worth noting that households that relied mainly on social protection, pensions and humanitarian assistance reported income stability or increase, compared to the same period last year, highlighting the increased efforts made by the government and non-government organizations to support the most vulnerable population.

The livelihood profile of the population has changed compared to 2022 (Figure 46), which could be a seasonal effect of the harvest season and/or reflect the impact of the economic recession and general macroeconomic situation. Households relying on better income sources, such as salaried work, skilled labour or business, have reduced, while those depending on unskilled labour, agriculture, pension or assistance, have increased. This trend is more evident in urban areas and the Estate sector, where unskilled labour has increased 17 and 19 percentage points, respectively, compared to 3 percent in rural areas. In the Estate sector, households relying on salaried work and on skilled work have reduced by 17 and 10 percentage points, respectively. Skilled labour was the most affected in urban areas, followed by households relying on business, that were reduced by 10 and 7 percentage points, respectively. Monitoring the trend on livelihood profile is recommended to contribute identifying the seasonal from the potential recession effect on sources of income.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RECOMMENDATIONS

Agriculture

The mission recommends the implementation of a set of measures, which includes one urgent measure to support the paddy sector and one measure to address issues related to long-term soil fertility and crop productivity. Two additional recommendations aim to address immediate and medium-term constraints in the livestock and fishery sectors. The recommendations build on the well-established support mechanisms to agricultural producers through MoA, ACS, the "Mahaweli" Authority and the Ministry of Fisheries/NAQDA.


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Measure 1: Ensure adequate fertilizer supply and access to paddy producers to maintain national food security objectives. The Ministry of Finance clearly indicated to the mission its intention to move out of fertilizer subsidies. Past years' experiences show that sudden policy changes could results in further declines of paddy production and negative impacts on household food security. Therefore, if the government intends to cease the fertilizer subsidy system, the mission recommends to implement it over a transition period of at least three years (2023–2026).

A. For the 2023 "Yala", the mission recommends to:

- Make available fertilizers in public stocks to farmers in order to strengthen the ongoing "Yala" production and to make urgent provisions to ensure fertilizers availability for the 2023/24 "Maha" season. As fertilizers are available in stock, all three straight fertilizers (Urea, MOP and TSP) should be made accessible to farmers to strengthen the 2023 "Yala" season.
- Test the provision of electronic fertilizer vouchers to be redeemed through registered input suppliers to improve fertilizer access to the most vulnerable farmers.

B. From the 2023/24 "Maha" onward, the mission recommends to:

- Transfer the responsibility of paddy fertilizer imports and distribution to the private sector, guided by a newly-established "fertilizer task force" under the President's office.
- Guarantee policy directions with clear, formal communication to both farmers and input importers/distributors.
- Scale up nationwide the electronic fertilizer voucher support mechanism targeted to paddy smallholder farmers.
- Retain the crop insurance scheme as the primary agricultural risk transfer mechanism during the transition period, with a gradual shift towards a weather index-based insurance scheme, particularly for the DZ, instead of blanket schemes for the entire country.

Measure 2: Initiate applied research to explore, adapt and expand climate-smart agriculture practices and technologies for sustainable crop intensification. Given the country's historical dependence on fertilizer subsidies, there is a need to catch up on implementing sustainable farming methods. The mission has identified certain high-potential for climate smart agriculture practices. These practices aim to assist farmers in maintaining and enhancing soil fertility through the production of their own compost and nitrogen fertilizer and optimizing the use of chemical fertilizers, thereby reducing the needs and the import bill of chemical fertilizers.

- ***Paddy Crop Rotation:*** Encourage farmers to transition to nitrogen-fixing legume crops, such as soybeans, in well-draining paddy areas to enhance water efficiency and soil fertility. In water-abundant regions, introduce early maturing crops like green gram, black gram or cowpea after the paddy harvest to utilize residual moisture. Legume fodder crops could also complement the paddy harvest, strengthening the connection between livestock and soil fertility.

- ***Green Manure Crops:*** Incorporate high-yielding legume crops as green manure between the main paddy cropping seasons. Such crops can add 30-50 kg/hectare of nitrogen for subsequent paddy cultivation (equivalent to 60 to 100 kg of urea).

- ***Conservation Agriculture:*** Promote maize cultivation intercropped or relay cropped with nitrogen-fixing cover crops, such as soybeans or pigeon peas, practicing no or minimal tillage.

- ***Compost Production:*** Offer guidance and financial incentives for farmers to produce their own compost using livestock manure, crop residues and local biomass. Implement penalties for burning crop residue biomass.

- ***Soil Testing:*** Enhance the efficient use of chemical fertilizers by expanding soil testing capabilities, thus enabling site-specific fertilizer recommendations. This could involve the use of portable soil testing kits.

Testing of the above CSA practices could be conducted in the MoA research centres, while the adoption and scaling up could be promoted through Farmers Field Schools (FFS) with the support of the extension services.

Measure 3: Facilitate the transfer of value addition along the supply chain to paddy smallholder farmers. During the crisis, paddy farmers seem to be losing influence in the value chain, while downstream actors are capturing a greater share of the value addition.

- ***Scale up the negotiable warehouse receipt system.*** Expand the negotiable warehouse receipt system to counter seasonal paddy price fluctuations exploited by intermediaries. This system, promoted by Regional Development Banks in Sri Lanka, allows farmers to store their produce securely and use the receipts as collateral for bank loans, enabling them to sell their harvest later at higher prices. To amplify this approach, consider using the government's existing food storage capacity of 350 000 tonnes across 20 districts (Annex 2).

Measure 4: Provide support to the livestock and fishery actors to access production inputs until inflation is stabilized and protect access to grazing and fishing resources.

- ***Cattle:*** Increase fodder crop and maize production by providing seeds for both rainfed and irrigated land. Promote silage production from fodder crops to preserve feed during low fodder availability periods.

- ***Pastureland:*** Collaborate with the Forestry Department to delineate common pastureland and establish management procedures. This could mitigate threats from land fragmentation and population growth, improving access to grazing grounds and expanding the feed resource base.

- ***Poultry:*** Facilitate the import of essential animal feed (maize and soybeans) and reactivate the production/importation of parent and grandparent day-old chicks for hatcheries, aiding sector growth with macroeconomic recovery.

- ***Marine Fishery:*** Provide fishing equipment to the most vulnerable fishing households to reduce operational costs, especially in coastal fisheries. Address concerns about foreign trawlers' activities.

- ***Inland Fishery:*** Support the restocking of water bodies in 2023 with fingerlings currently raised in nurseries in collaboration with NAQDA. Conduct a review of the inland fishery support business model to promote a sustainable private sector growth.

Food security

The mission concluded that 3.9 million people are acutely food insecure and pockets of severe vulnerability remain, including some 10 000 households severely acute food insecure and in need of immediate food assistance. The current level of acute food insecurity represents an improvement compared to that of May 2022, although households' resilience and future productivity continues to deteriorate as more households adopt livelihood coping strategies. Gains in food security at household level could be related to the seasonality of production and harvest period, translating into better food availability and affordability as well as a seasonal access to income by farmers and related livelihoods. The improvements in food security of farmers have not been similarly registered by other population groups. Additionally, while income from the harvest was starting to become available at the time of the survey, farmers were in general reporting a lower income in comparison to past agricultural seasons. The impact of the income could therefore be more limited in time.

The following measures are recommended:

Measure 1: Continue to provide assistance in the form of food and cash transfers to population groups in significantly difficult food security conditions compared to other groups. This includes households whose main source of income depends on national social protection schemes, unskilled daily wages, including agricultural wage labour and Estate sector households working on tea plantation. Selection criteria should also prioritize female-headed households and households with low education attainment.

Measure 2: Increase livelihood support aimed at building resilience to various shocks for households engaged in irregular income sources, with special focus on fishery as they are shown to have elevated levels of food insecurity. Integrating resilience building activities is paramount to ensure improved access to food and prevent households from engaging in livelihood-based coping strategies, the prevalence of which has increased by 14 percentage points compared to May 2022, despite an overall improvement in food consumption.

Measure 3: Provide integrated interventions with a food system approach directed to increase affordability of adequate and nutritious diets and improve food consumption, which remains well below the pre-crisis situation.

Measure 4: Design and implement stronger integration and promotion of nutrition-sensitive approaches in addressing acute food insecurity and supporting the transition to a sustainable recovery.

Measure 5: Given the volatility of the macroeconomic situation and high levels of inflation, a close monitoring of markets and the food security situation is required. The setup of a regular monitoring system would provide updates on the current situation with identification of high food insecurity clusters and early warning signs of deterioration. In this regard, strengthening the capacity of the Department of Census and Statistics in setting up a food security surveillance system and supporting the Ministry of Agriculture with the digitalization of its price data collection system through technical and financial assistance are strongly recommended.


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ANNEXES

ANNEX 1
Fertilizer distribution by district through the subsidy programme

Table A1: Sri Lanka – Distribution of Urea, MOP and solid organic fertilizer and average availability per net area cultivated with paddy, 2022/23 "Maha" season

District	Net Area cultivated (hectares)	Urea		MOP		Solid organic fertilizer	
		(tonnes)	(kg/hectare)	(tonnes)	(kg/hectare)	(tonnes)	(kg/hectare)
Colombo	3 430	259.6	75.7	97.0	28.3	624.1	181.9
Gampaha	9 827	772.4	78.6	182.0	18.5	2 343.1	238.4
Kalutara	11 730	861.5	73.4	200.8	17.1	2 033.8	173.4
Kandy	9 542	1 517.5	159.0	61.1	6.4	2 576.8	270.1
Matale	19 837	2 424.5	122.2	35.1	1.8	3 939.4	198.6
Nuwara Eliya	2 785	625.7	224.7	2.7	1.0	787.1	282.6
Galle	8 194	845.5	103.2	265.2	32.4	1 635.5	199.6
Matara	10 930	1 270.2	116.2	163.0	14.9	2 707.5	247.7
Hambantota	35 809	5 747.3	160.5	228.0	6.4	3 727.8	104.1
Jaffna	7 584	1 218.0	160.6	81.9	10.8	0.0	0.0
Mannar	19 682	3 186.2	161.9	75.4	3.8	185.8	9.4
Vavuniya	18 291	2 844.7	155.5	9.0	0.5	425.8	23.3
Mullathivu	19 580	2 783.8	142.2	3.6	0.2	2 958.5	151.1
Killinochchi	23 831	3 508.0	147.2	7.6	0.3	0.0	0.0
Batticaloa	57 500	7 716.0	134.2	0.0	0.0	8 013.3	139.4
Ampara	76 966	11 068.9	143.8	36.8	0.5	14 975.3	194.6
Trincomalee	42 775	4 906.3	114.7	5.5	0.1	768.4	18.0
Kurunegala	82 683	8 895.1	107.6	238.5	2.9	3 853.4	46.6
Puttalam	17 946	2 266.9	126.3	120.1	6.7	3 383.2	188.5
Anuradhapura	91 509	13 128.2	143.5	58.0	0.6	3 176.2	34.7
Polonnaruwa	57 704	10 055.0	174.3	104.6	1.8	11 152.7	193.3
Badulla	19 266	2 821.6	146.5	67.8	3.5	2 516.4	130.6
Moneragala	32 932	4 418.4	134.2	60.2	1.8	6 193.9	188.1
Ratnapura	10 023	1 762.1	175.8	127.6	12.7	2 760.0	275.4
Kegalle	6 121	454.3	74.2	54.9	9.0	1 563.3	255.4
Total	**696 477**	**95 357.6**	**136.9**	**2 285.8**	**3.3**	**82 301.2**	**118.2**

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Ministry of Agriculture and Department of Census and Statistics, 2023.

ANNEX 2
Government and cooperatives warehouse capacity by districts

Table A2a: Sri Lanka – Government and cooperatives warehouse capacity and number of warehouses

District	Net area cultivated (hectares)	Urea (tonnes)
Kurunegala	16 050	19
Puththalama	7 400	7
Matale	9 100	9
Gamapaha	14 000	2
Trincomali	19 280	25
Baticallo	5 100	10
Monaragala	11 500	9
Rathnapura	6 750	8
Hambantota	20 750	19
Matara	1 000	1
Ampara	60 875	67
Badulla	8 120	7
Kandy	10 120	10
Anuradhapura	60 500	69
Polonnaruwa	52 640	57
Kilinochchi	5 950	8
Vavunia	9 600	7
Mulative	6 100	14
Mannar	5 600	4
Jafna	400	1
Total	**330 835**	**353**

Note: Figures may not add up due to rounding.
Sources: Authors' own elaboration based on the data provided by the Paddy Marketing Board, 2023.

Table A2b: Sri Lanka – Government and cooperatives warehouse capacity and number of warehouses

Department	Storage capacity (tonnes)	Warehouses
Paddy Marketing Board	247 935	219
Food Department	15 300	8
Divisional Secretariat	4 100	5
District Secretariat	22 500	24
Agrarian Department	5 000	13
Mahaweli Authority	26 550	69
Cooperative Societies	6 700	6
Cooperative Wholesale Establishment	400	2
Farmer Organisations	1 850	6
Other	500	1

Sources: Authors' own elaboration based on the data provided by the Paddy Marketing Board, 2023.

ANNEX 3
CFSAM to the Democratic Socialist Republic of Sri Lanka – Crop, livestock and fishery checklist

Province/District Format
Sample multidisciplinary interview guide and data recording format

Season: 2022/23	"Maha" season X / Yala season ☐

1. General Information

Province (District):	Key Informants (list):
# HH interviewed:	# fields visited:

2. Growing conditions (Information from Provincial / District Agriculture Directorates, farmers, traders and other key informants).

Rainfall

Start ("Maha" **2022/23)**		**Dry spells/High T°**		**Rainfall amount**	**Compared previous year**
Early ☐ Normal ☐ Late ☐	Date	Month	Number of weeks	Below average ☐ Average ☐ Above average ☐	Better ☐ Same ☐ Lower ☐
Description of the "Maha"2022/23 seasons:					
Field observations:					

Irrigation

Type	**Compared to previous year** (amount regularity, timing, costs)	**Observations on the irrigation status**
Tanks ☐ Agro wells ☐ River ☐ Other ☐	Better ☐ Same ☐ Lover ☐	
Field observations:		

3. Most seriously affected areas by drought, flood and other shocks (Information from Provincial/District Agriculture directorates and other key informants – [severity damages: 5 = very severe; 1 = minimal damages]).

Locations	Type of damage (drought, other shocks, floods, strong winds, frosts, wild animals, etc.)	Total acreage of agriculture land affected (hectares)	Acreage of main crops affected (hectares)	Yield reduction (percent)	Severity of the damages (scale 1 to 5)	Remarks
1.						
2.						
3.						
4.						

4. Agricultural inputs availability (Information mainly from Provincial/District Agriculture directorates, farmers, traders and other key informants).

	Availability			Price/cost			Remarks
	Below normal	Normal	Above normal	Below normal	Normal	Above normal	
Seeds	☐	☐	☐	☐	☐	☐	
Fertilizers	☐	☐	☐	☐	☐	☐	
Agrochemicals	☐	☐	☐	☐	☐	☐	
Agriculture Machinery/ mechanisation	☐	☐	☐	☐	☐	☐	
Fuel	☐	☐	☐	☐	☐	☐	
Labour	☐	☐	☐	☐	☐	☐	
Access to credit/grants	☐	☐	☐	☐	☐	☐	
Post-harvest operations	☐	☐	☐	☐	☐	☐	
Other	☐	☐	☐	☐	☐	☐	

5. Area, yield and production (Information mainly from Provincial/District Agriculture directorates, farmers, traders and other key informants).

Staple Crops ("Maha" season)		**Rice (Paddy)**	**Maize**	**Finger millet**	**Green gram**	**Cowpeas**	**Black gram**	**Groundnuts**	**Manioc**	**Sweet potatoes**	**Potatoes**
Planted area (hectares)	Last "Maha"										
	Current "Maha"										
Harvested area (hectares)	Last "Maha"										
	Current "Maha"										
Yield (kg/hectare)	Last "Maha"										
	Current "Maha"										
Production (tonnes)	Last "Maha"										
	Current "Maha"										

Major Vegetables and fruits ("Maha" **Season**)		**Veg. 1** (specify)	**Veg. 2** (specify)	**Veg. 3** (specify)	**Veg. 4** (specify)	**Fruit 1** (specify)	**Fruit 2** (specify)	**Fruit 3** (specify)	**Fruit 4** (specify)
Harvested area (hectares)	Last "Maha"								
	Current "Maha"								
Yield (kg/hectare)	Last "Maha"								
	Current "Maha"								
Production (tonnes)	Last "Maha"								
	Current "Maha"								
Factors that affected area, yield and losses (where this is different by crop, please specify):									

6. Pests and crop diseases (Information from Provincial/District Agriculture directorates, farmers, Agriculture Directorate staff and other key informants).

Specify	Crop affected	Level of damage		
		Mild	Average	Serious
Remarks (comparison with last year):				

7. Livestock (Condition: 1 = very poor; 5 = very good. Information from Provincial/District Agriculture directorates staff, farmers and other key informants).

	Numbers		Condition (1–5)	**Remarks** (specify condition and reasons if decrease/increase compares to last year, type of diseases, etc.)
	2022	2023		
Cattle				
Pigs				
Sheep and goats				
Poultry				
Other				

8. Pasture and fodder crops for livestock (Condition: 1 = very poor; 5 = very good. Information from Provincial / District Agriculture directorates staff, farmers and other key informants).

	Condition (1-5)	Compare to previous year (improve/same/worse)	Remarks
Pasture			
Animal feed			

9. Fishery inputs supply (Information mainly from fishers, traders and other key informants).

	Availability			Price/cost			Remarks
	Below normal	Same	Above last year	Below normal	Same	Above last year	
Fuel	☐	☐	☐	☐	☐	☐	
Ice	☐	☐	☐	☐	☐	☐	
Boat maintenance and repair services	☐	☐	☐	☐	☐	☐	
Fry/juvenile	☐	☐	☐	☐	☐	☐	
Other	☐	☐	☐	☐	☐	☐	

10. Fish production (Condition: 1 = very poor; 5 = very good. Information from Provincial/District Agriculture directorates staff, farmers and other key informants).

	Numbers		Condition (1–5)	Remarks (specify condition and reasons if decrease/increase compares to last year, type of diseases, etc.)
	2022	2023		
Marine				
Costal				
Inland				
Aquaculture				

ANNEX 4
Household survey methodology

The assessment followed a stratified two-stage cluster sampling design with the aim of generating representative estimates at district level covering all areas including urban, rural and Estate sectors. There are 25 districts in Sri Lanka. For each of the 25 districts, 600 households were randomly chosen for interview giving a total sample size of 15 000 households. Interviews were conducted F2F using a structured questionnaire that included sections on demographic and socioeconomic characteristics, income and expenditures, access to food, livelihood strategies, including agricultural livelihoods and coping strategies. A total of 150 enumerators were trained to conduct the household survey using the computer-assisted personal interviews (CAPI) method.

For each stratum (district), sample selection was conducted in two stages:

- Stage 1: Random selection of 60 Primary Sampling Units (PSUs) or clusters which are GN divisions based on probability proportion to size (PPS) with total households used as measure of size (MoS).

- Stage 2: Selection of ten randomly selected households from each GN Division selected at stage 1.

This gave a total sample size of 600 households for each district, which was calculated based on a 5 percent margin of error with design effect 1.5, confidence level of 95 percent and prevalence of estimate set at 50 percent.

The selection of PSUs at stage 1 was done by using the sample frame provided by the Department of Census and Statistics (DCS) of the Government of Sri Lanka. The GN divisions were used as the PSUs. While doing the PPS-based selection of the GN divisions, the total number of households in the GN divisions were used as MoS.

At stage 2, after reaching the selected GN Division, a complete list of households was obtained from the GN Office, from which a systematic random sampling method was used to select ten households.

To ensure data quality, data was supervised and monitored on a daily basis by each team supervisor on the field and by data analysts once the data was uploaded.

During the analysis, the base weights were first created considering the probability of selection of households and non-response rates. In addition, an adjustment factor which is a ratio of actual MoS to estimated MoS was applied at GN Division level to the base weights to account for the difference between the estimated MoS and actual MoS that was found when the GN divisions were visited, resulting in the formula below to compute normalized weights for each GN Division:

(N_dist /n_dist)/(N/n)*(act_mos/est_MoS), where,

N_dist = Total households in the district
N_dist = Sampled households in the district
N = Total households in Sri Lanka
n = Total sample size used in the assessment
act_MoS = Actual MoS observed after visiting the GN Division
est_MoS = Estimated MoS received from DCS during PSU selection.


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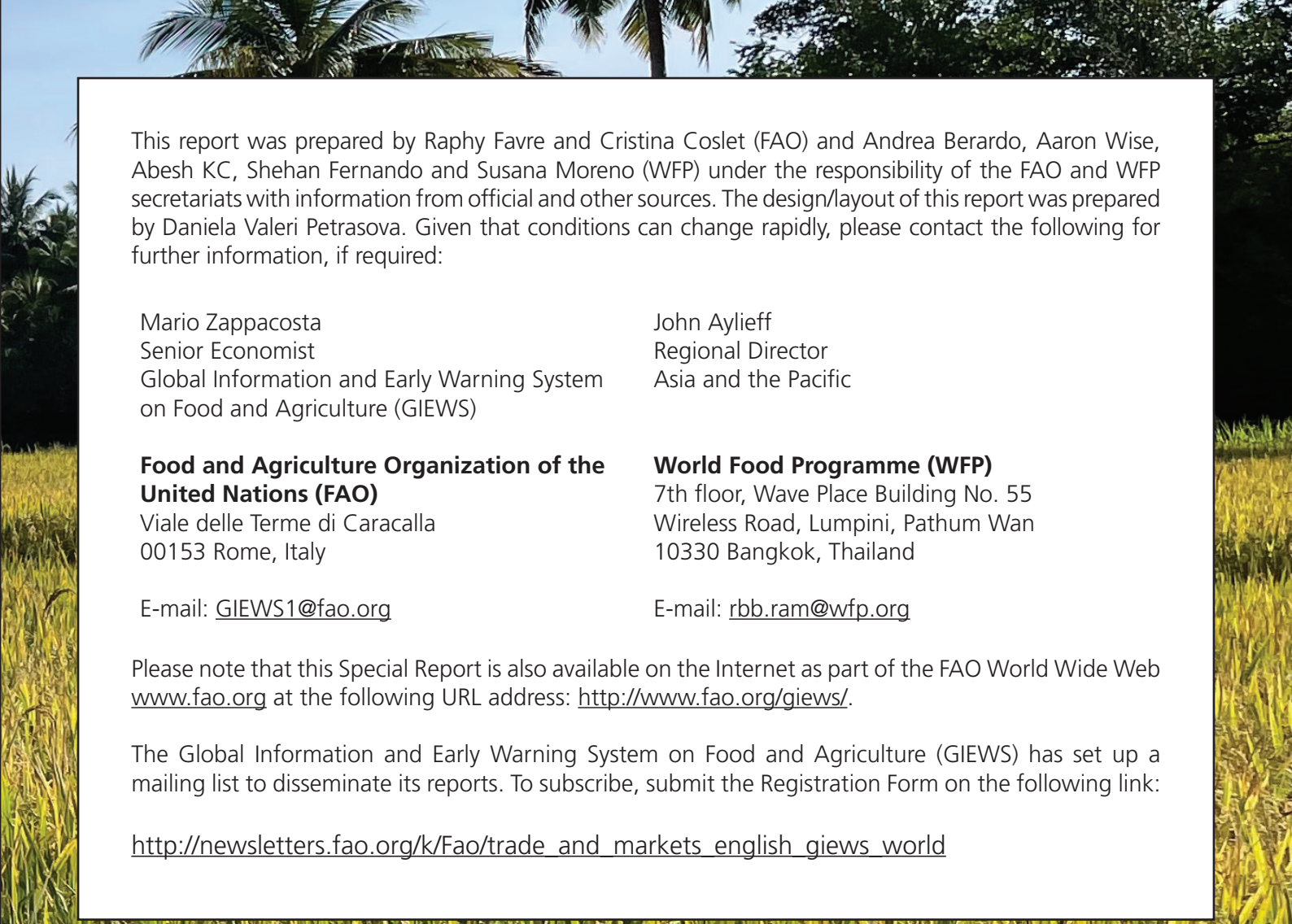

This report was prepared by Raphy Favre and Cristina Coslet (FAO) and Andrea Berardo, Aaron Wise, Abesh KC, Shehan Fernando and Susana Moreno (WFP) under the responsibility of the FAO and WFP secretariats with information from official and other sources. The design/layout of this report was prepared by Daniela Valeri Petrasova. Given that conditions can change rapidly, please contact the following for further information, if required:

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ISBN 978-92-5-137902-8 ISSN 2707-2479

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CC6202EN/1/05.23