



# Minimum Cost of Diet Sri Lanka

Maha Planting Season (October 2013 - January 2014)



**World Food Programme**



# WHAT IS THE COD?

ANY OTHER FOOD BASKET AT THE SAME PRICE WILL BE LESS NUTRITIOUS, AND ANY OTHER FOOD BASKET OF THE SAME NUTRIENT VALUE WILL BE MORE EXPENSIVE

The Cost of Diet (COD) is a method to model the cost of a theoretical, simulated diet (food basket) which satisfies all nutritional requirements<sup>1</sup> of a household of specific composition of interest (e.g. breastfed child, lactating mother, and other members) at the minimal possible cost, based on the availability, price, and nutrient content of local foods. Any other food basket at the same price will be less nutritious, and any other food basket of the same nutrient value will be more expensive. When combined with household income data, the COD can be used to estimate the proportion of households that could theoretically afford the modelled nutritious diet. Hence, the COD tool can be used to calculate the affordability or economic access to a nutritious diet. It thus helps to identify whether malnutrition and micronutrient deficiencies are caused by insufficient access to nutritious food.

The 1996 World Food Summit in Rome defined food security as existing 'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. There are very few approaches measuring food access in terms of access to a diet that meets all nutrient requirements (nutritious diet). Although not looking at actual food consumption, the COD tool can help to determine the prevalence of households that cannot access a nutritious diet. Poverty estimates usually consider affordability of sufficient calories only. Using the COD to identify a Nutrient Poverty Line can complement existing food poverty lines which represent the required purchasing power to acquire sufficient energy.

The COD approach was developed by Save the Children UK as a response to research undertaken by Save the Children which demonstrated that the impact of traditional nutrition education programmes has been limited because of the economic constraints faced by many households in low-income countries (Chastre et al, 2009). Even in contexts where food is sufficiently available households might face inadequate food consumption not

only resulting from lack of knowledge about a nutritious diet, and food and nutrition practices. In this context it remains unknown how much of the nutrient gap is due to economic constraints on acquiring a nutritious diet or lack of knowledge. Meeting nutrient intake recommendations through a nutritious diet requires purchasing power. This required purchasing power can be quantified using the Cost of Diet approach. Based on locally available foods, the COD software identifies the cost of the cheapest possible combination of food items that meets the nutrient requirements of a household. The purchasing power required to meet nutrient intake recommendations can then be compared to actual purchasing power, based on the proportion of household income that can be spent on food.

Where the proportion of households that cannot afford a nutritious diet is high, specific nutrition assistance through interventions that provide nutritious dense food and/or income assistance with eligibility being linked to social safety nets might be required. Where most people are able to afford an adequately nutritious diet, but where malnutrition still affects a considerable proportion of the population interventions could be focused on education and behaviour change to assure that nutritious choices are made combined with some sort of micronutrient interventions for specific groups (Geniez et al, 2014 ).

The COD serves as advocacy tool to make the case for the importance of food based nutrition interventions. Furthermore, the COD results can be used to model the comparative cost-effectiveness of various potential nutrition interventions and strategies (such as fortified complementary foods) by pointing out how much the cost of a nutritious diet can be reduced for households as a result of the intervention. On the purchasing power side, the COD approach can be used to model the effect of social safety nets on the affordability of a nutritious diet (vouchers or cash transfers) (Baldi et al, 2013; Frega et al, 2012).

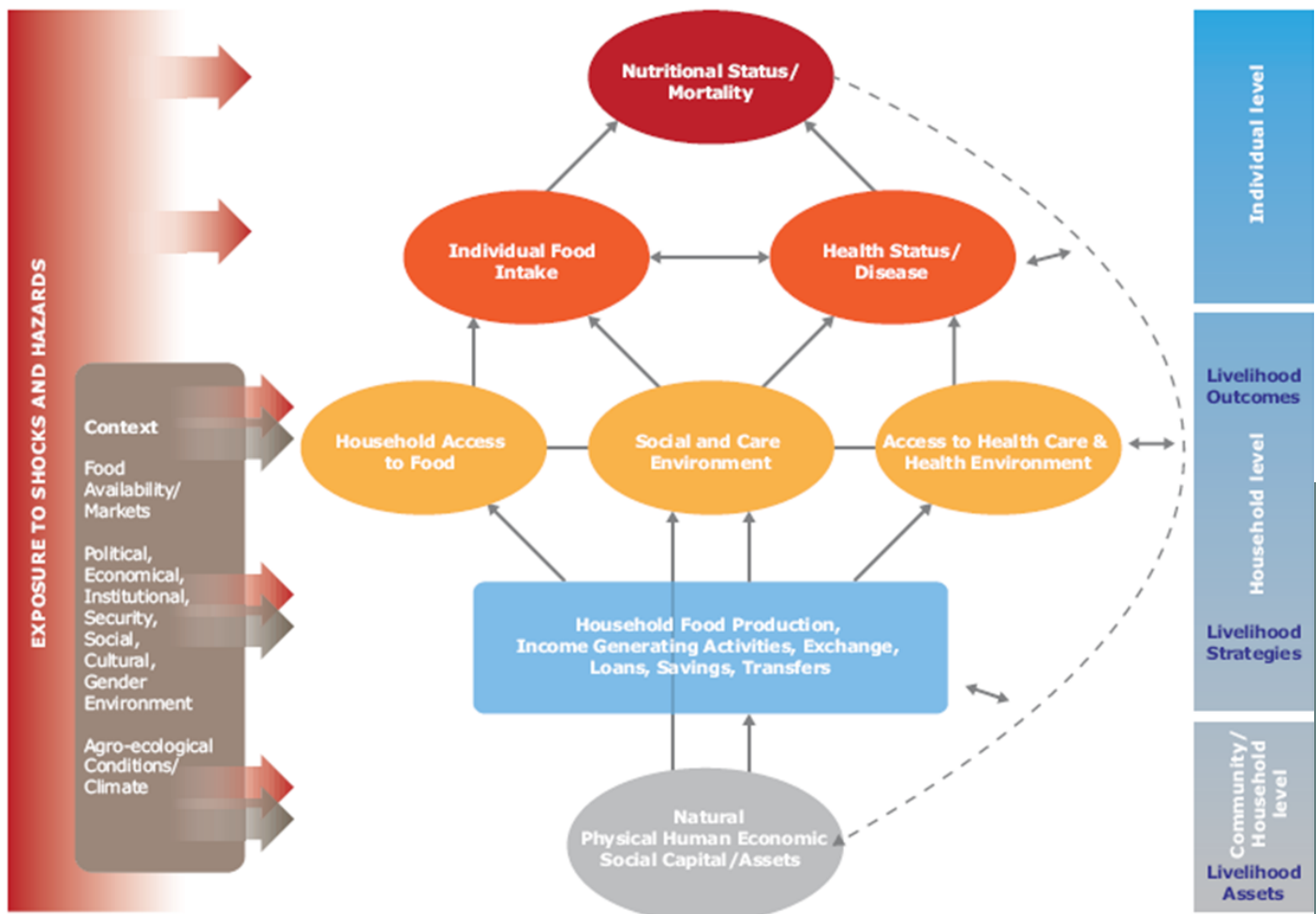
<sup>1</sup>The tool takes into consideration the following individual nutritional requirements: energy, proteins, fat, absorbed calcium, magnesium, zinc, absorbed iron, thiamine (B1), riboflavin (B2), niacin equivalent, vitamin B6, pantothenic acid, folic acid, vitamin B12, vitamin C and retinol equivalent.

# HOW DOES THE COD FIT INTO THE FOOD AND NUTRITION SECURITY FRAMEWORK?

The COD approach helps to examine the role of economic constraints as one of the key underlying causes of malnutrition. It thus addresses insufficient *Household Access to Food* as a root cause for malnutrition by identifying whether households have sufficient purchasing power to afford the cheapest possible diet that meets the nutrient requirements of all household members. The underlying assumption is that household members of a household that cannot afford the cheapest possible nutritious diet are at higher risk to be malnourished.

It is important to understand that the COD is not about what people are actually eating (not reflecting people's actual consumption). There are multiple reasons why members of households with access to nutritious food might be malnourished (e.g. inadequate intra-household distribution and/or health status). Having economic access to nutritious food does not mean that such a nutritious diet is actually purchased and consumed by household members. In some contexts the COD tool can not identify a nutritious diet based on local foods. In this case the COD tool helps to point out a lack in availability of nutritious food and can identify nutrients for which requirements can not be met through locally available food items.

Food and Nutrition Security Conceptual Framework. Source: WFP expanded version of the UNICEF conceptual framework.



# COD APPLICATIONS

THE COD HELPS US SOLVE A COMPLEX PROBLEM: OPTIMIZING FOR NUTRIENTS WHILE CONSUMING FOOD ITEMS

## WHAT IS THE MINIMUM COST OF FOODS THAT MEET THE NUTRIENT NEEDS OF A TYPICAL HOUSEHOLD?

The Cost of the Diet software applies linear programming routines in Microsoft Excel to generate hypothetical diets using a combination of foods that will enable a household to meet their energy and nutrient requirements according to WHO/FAO recommendations at the lowest possible cost. The software can estimate the cost of four hypothetical diets:

1. **MCCAL:** A lowest cost diet that only meets the average energy requirements
2. **MCEFP:** A lowest cost diet that only meets the average energy and the recommended protein and fat requirements
3. **MCNUT:** A lowest cost diet that meets the average energy and the recommended nutrient requirements
4. **LACON:** A lowest cost diet that meets the average energy and the recommended nutrient requirements of the household and reflects cultural consumption patterns

The software provides the weekly cost of the cheapest possible nutritious diet based on locally available food items and an overview of the composition of that diet and its cost. It also generates a breakdown of the quantity at which each food item was included into the diet and the nutrients contributed by each food item. Based on the MCNUT diet results the analysts will decide whether or not a LACON should be calculated. While reflecting a typical local diet the LACON will always be more expensive and can not be considered as the cheapest possible nutritious diet anymore.

## CAN A NUTRITIOUS DIET BE ACHIEVED BY PEOPLE USING LOCALLY AVAILABLE FOODS?

The COD software determines whether a locally available diet is nutritious by comparing nutrients in the diet with household requirements. World Health Organization (WHO)-recommended nutrient requirements for different nutrients and for different age, sex, and physiological condition groups are embedded into the tool. The nutrient content of locally available food items is determined through the World Food Composition Database.

In certain contexts the COD software can not optimize simply because locally available foods are insufficient to identify a nutritious diet. In this case the software will highlight the nutrients for which requirements could not be met and indicate the percentage at which requirements have been met. This will allow analysts to identify limiting nutrients. The COD software will calculate the diet that comes closest to meeting all nutrient requirements and its respective cost.

If no nutritious diet can be identified, analysis should focus on modelling potential interventions to make a nutritious diet available. The COD results are often interpreted in combination with income data to estimate the percentage of households that can afford a nutritious diet and therefore whether households have access to a nutritious diet. If locally available foods are insufficient to provide a nutritious diet, the result should be interpreted as an availability problem. In this case affordability is difficult to estimate as the cost of a nutritious diet is unknown.



## IS THIS DIET AFFORDABLE?

When combined with income data the results produced with the COD software can be used to estimate the percentage of households that can or cannot afford a nutritious diet. The underlying assumption is that members of households that can not afford the cheapest possible nutritious diet are more likely to be malnourished. The MCNUT as a threshold to estimate whether income is sufficient to afford a nutritious diet is also referred to as the “Nutrient Poverty Line”. In addition to the MCNUT the affordability of a diet that only meets calorie requirements can be calculated using the COD software. This calorie threshold is also referred to as “Calorie Poverty Line”.

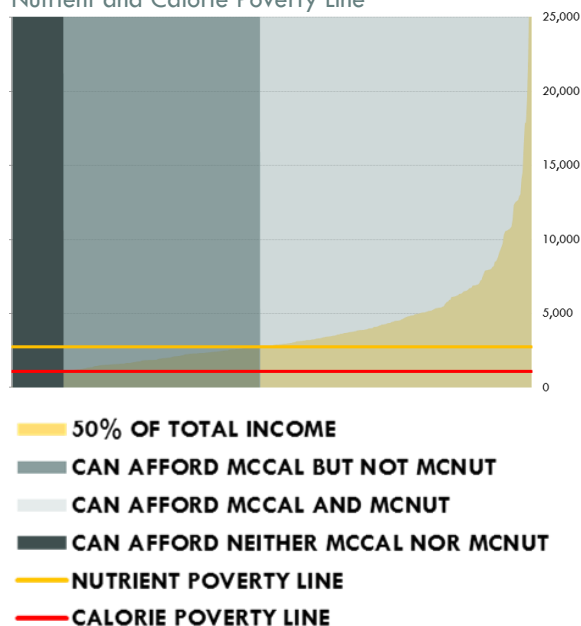
Together, the Calorie and Nutrient Poverty Line show that affordability to sufficient food in quantity (meeting calorie requirements) is often not an issue while a large percentage of households rather does not have economic access to a nutritious diet. In light of the fact that official poverty lines are usually calculated based on the cost of meeting calorie requirements only, the COD results can show income above the poverty line might not be sufficient to access nutritious food and therefore contribute to preventing malnutrition.

Understanding the prevalence of households without access to nutritious food and the share of households that can not even afford sufficient calories can be crucial for determining nutrition interventions. While behavioral change communication can often be considered as important for all households, micronutrient interventions might be most relevant for households which can afford calories but not a nutritious diet. Households that can neither afford calories nor the nutritious diet might need interventions that provide nutritious dense food and/or income assistance (Geniez et al, 2014).

## IF NOT, WHAT COULD BE DONE?

In order to determine why locally an affordable diet can not be provided through locally available foods, different factors need to be examined. Often one or two limiting nutrients may be identified which can only be obtained from high cost food items. By calculating the COD with different supplements, micronutrient powders or fortified foods providing these limiting nutrients, the potential of decreasing the COD and therefore improving access to a nutritious diet, can be modeled. On the income side the potential of social safety nets (cash or vouchers) to increase access to nutritious food can be modeled. This information can be used as entry point for discussions regarding food based nutrition interventions and for advocacy purposes. The COD shows the cost effectiveness of different nutrition interventions on the household side rather than looking at the cost-effectiveness from the donor’s perspective.

Nutrient and Calorie Poverty Line





# COD SRI LANKA

MALNUTRITION REMAINS A MAJOR CHALLENGE IN SRI LANKA, PARTICULARLY IN TERMS OF ACUTE MALNUTRITION (WASTING).

Since the end of the civil war in May 2009, Sri Lanka has demonstrated strong economic performance and transitioned to a middle income country in January 2010. Despite the progress, vulnerability to food and nutrition insecurity and low resilience to climate variability persists around the country, affecting the poorest households most. Malnutrition still remains a major challenge in Sri Lanka, particularly acute malnutrition. In the latest National Nutrition Survey, Global Acute Malnutrition (GAM) was reported at 19.6% (MoH & UNICEF, 2012). Rates have shown little improvement over the past decade, fluctuating around 15 percent stunted and wasted respectively and 25 percent underweight (WFP & MED, 2014).

As a result of Sri Lanka's rapid economic development mostly centralized in urban areas, food shortages mostly prevail in vulnerable pockets of the country. This can change rapidly whenever emergencies arise usually following natural disasters such as severe droughts and floods which can have detrimental effects on livelihood assets and destroy entire harvest with effects on food prices throughout the country (WFP, MED & HARTI, 2012).

In this context the Hector Kobbekaduwa Agrarian Research & Training Institute (HARTI) has initiated a study on the "Minimum Cost of Diet" with the financial and technical assistance of the UN World Food Programme (WFP). The study was undertaken in collaboration with the Department of Census and Statistics and the Nutrition Enhancement Unit of the Ministry of Health. The Marketing, Food policy and Agribusiness division of HARTI collects retail and wholesale prices of over 110 food commodities on a weekly basis as part of a food price monitoring system. The prices are collected in all district markets and district level major food producing areas of the island. This existing price data was used for COD analysis. Given that prices are collected regularly, the COD and its affordability for Sri Lanka can be monitored over time and will be included into the regular food price monitoring system of HARTI. Even

though Sri Lanka reported to have mostly seasonal price variations of staple commodities, most other food commodity prices have increased over the last five years period. This has resulted in reduced access to nutritious food.

The objective of the COD analysis in Sri Lanka is to identify whether a nutritious diet can be found using locally available foods and whether this diet can be afforded by the population across different geographical areas and seasons. The first analysis depicted in this report, covers the Maha Planting Season (October 2013 - January 2014). There are two cultivation seasons namely Maha and Yala which are synonymous with two monsoons. Maha Season falls during "North-east monsoon" from September to March. Yala season is effective during the period from May to end of August. The Maha Season is the major growing season of the whole country.

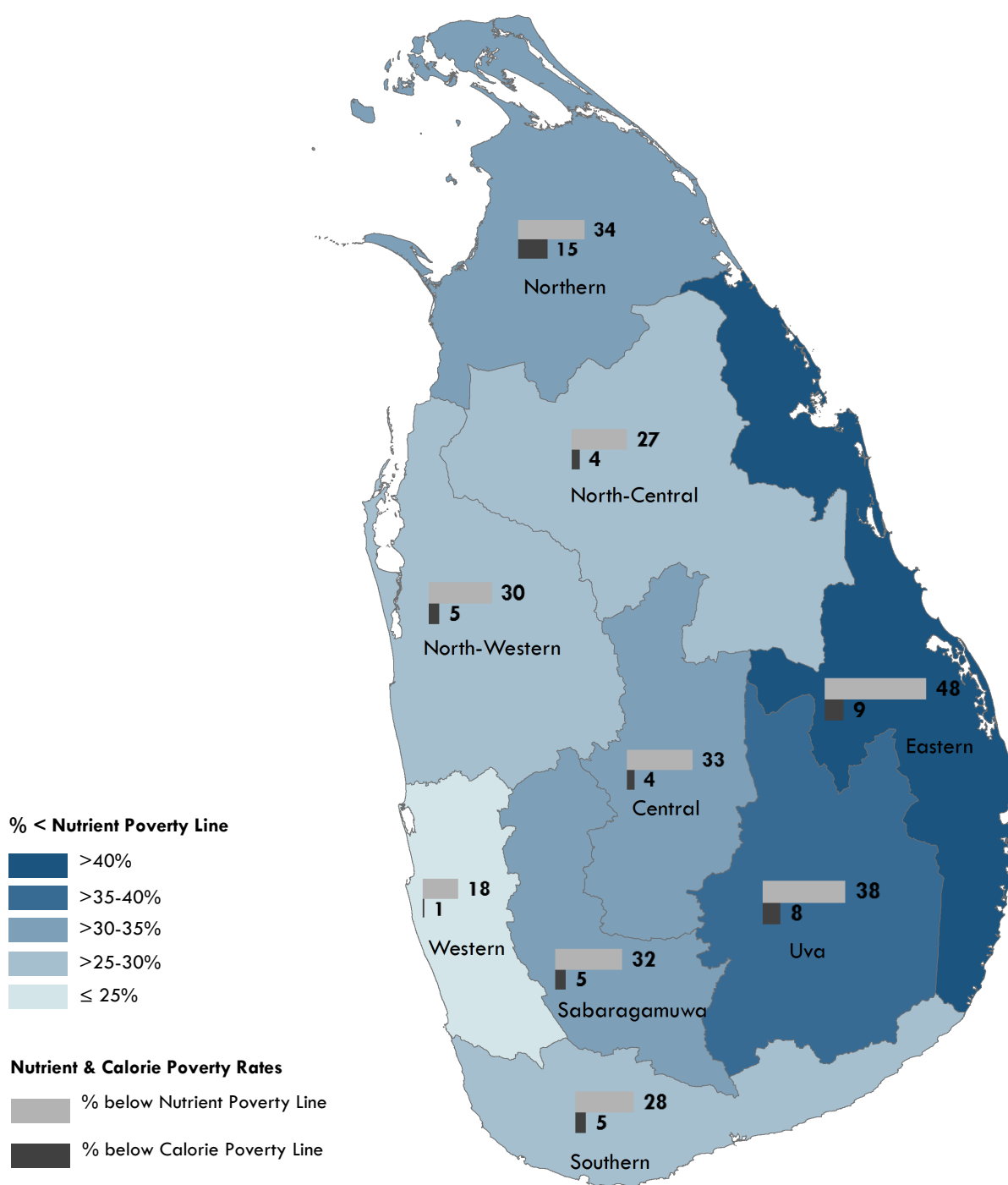
The COD analysis for the Maha Planting Season is based on secondary price data from HARTI, household composition information from the Department of Census & Statistics, Sri Lanka (DCS, 2012) and income data from the Household Income and Expenditure Survey (HIES) 2012/13 (DCS, 2013b). During the analysis workshop with participants from HARTI, the Ministry of Health and Department of Census and Statistics (DCS) the MCNUT (nutritious diet) and MCCAL (energy only diet) for a model household (including separate results

## MODEL HOUSEHOLD FOR SRI LANKA COD ANALYSIS

- 1 Woman 30-59 years (lactating) 55 kg, moderately active
- 1 Man 30-59 years, 60 kg, moderately active
- 1 child 12-23 months
- 1 child 5-6 years
- 1 child 12-13 years

for the child 12-23 months) and for an adult male (30-59 years old, 60 kg, moderately active) were calculated for all 9 Provinces of Sri Lanka. The model household was determined based on household composition data from the Sri Lanka Census of Population and Housing (DCS, 2012). District price data for 110 food items which is collected on a weekly basis was averaged for the whole Maha Planting Season and aggregated at Province level. The resulting per capita MCNUT and MCCAL were then compared to per capita income data from the same Province. Based on food expenditure data from the HIES, the group of analyst determined that upon excluding the wealthiest quintile, households spend around 50% of income on food. Per capita MCNUT and MCCAL were thus compared to 50% of per capita income to determine the percentage of households that can theoretically afford and therefore have economic access to a nutritious diet and/or sufficient calories.

## NUTRIENT AND CALORIE POVERTY LINE



# RESULTS

EVEN THOUGH FOOD IS GENERALLY AVAILABLE ACROSS ALL PROVINCES OF SRI LANKA ECONOMIC ACCESS TO NUTRITIOUS FOOD CANNOT BE CONSIDERED AS GRANTED

The cost of a nutritious diet for the model household varies from LKR 12,208 in the Northern Province to LKR 15,371 in the Western Province. That difference is much smaller for the energy only diet ranging from LKR 5,291 in Uva Province to LKR 5,882 in the Northern Province. It is remarkable that the energy only diet is most expensive in one of the poorest provinces. The smaller difference for the MCCAL diet can be partially attributed to the stabilization policy for staple foods through the Sri Lankan government.

Across all provinces a nutritious diet was found for all household members. Certain nutrients however, appeared to be more difficult to be met and contributed to the increased cost of the nutritious diet. These were iron across all provinces and calcium in half of the provinces. For the Northern Province even Vitamin C and Vitamin B2 were just met at 100% which indicates that the tool might have found a cheaper diet if cheaper food items with Vitamin C and Vitamin B2 would have been available. Out of all food items included for the analysis, the following were picked by the tool to be combined to the most cost-efficient nutritious diet: Rice, Dhal, Mukunuwenna, Dried Salaya, Chickpea, Coconut oil, Palm oil, Chicken liver, Manioc, Dried Sprats, Dried chilies.

Differences across provinces are more pronounced when comparing the affordability of the MCNUT and

MCCAL. Even though the MCNUT is highest in the Western Province purchasing power of the population in the Western Province matches the higher cost resulting in only 15% of households that cannot afford the MCNUT. In contrast, purchasing power in the Eastern Province is very low and with a comparably high MCNUT (LKR 13,779) as many as 48% of households do not have economic access to nutritious food. Economic access to nutritious food is also impaired for households in Uva Province, where 38% of households are below the Nutrient Poverty Line followed by Northern Province (34%), Central Province (33%), and Sabaragamuwa (32%).

The affordability of the MCCAL varies across provinces but can be attributed mostly to differences in purchasing power. In the Northern Province as many as 15% of households can not afford sufficient calories, followed by the Eastern Province (9%) and Uva Province (8%) while in the Western Province only 1% of households are below the Calorie Poverty Line.

The Maha Planting Season COD results demonstrate that economic access to nutritious diet can not be considered as granted in the Sri Lankan context. Although economic access to nutritious food is not the sole determinant of malnutrition, it is an important prerequisite to fulfil. Being able to measure this dimension is therefore a necessary first step to inform policy decision making.

Results MCCAL and MCNUT

PROVINCE	MCCAL IN LKR	MCNUT IN LKR	% CAN NOT AFFORD MCCAL	% CAN NOT AFFORD MCNUT
Central	5,601	14,246	4%	33%
Eastern	5,297	13,779	9%	48%
North-Central	5,428	14,295	4%	27%
Northern	5,882	12,208	15%	34%
North-Western	5,438	13,550	5%	30%
Sabaragamuwa	5,662	13,763	5%	32%
Southern	5,782	13,041	5%	28%
Uva	5,291	13,085	8%	38%
Western	5,542	15,371	1%	18%



# DISCUSSION AND CONCLUSION

These results point out the magnitude of the potential error in exclusive reliance on an energy-based food poverty indicator. According to 2009/10 data, poverty was highest in Eastern, Uva and Northern Provinces (14.8%, 13.7% and 12.8% respectively) (DCS, 2013a). Affordability of a nutritious diet follows the same pattern with highest nutrient poverty rates in Eastern, Uva and Northern Provinces (48%, 38% and 34% respectively). However, setting the poverty threshold by considering a full range of nutrients (i.e. using the Nutrient Poverty Line) indicates that almost three times as many households are in nutrient poverty compared to looking at the energy-based official poverty rate<sup>2</sup>. Likewise, the prevalence of wasting is high in the Northern, Eastern and Uva Provinces (MoH & UNICEF, 2012).

By calculating both, the Nutrient and Calorie Poverty Line, the approach provides a refined framework for policy decision making as it allows categorizing groups based on their purchasing power and their capacity to afford diets. Households in Group C can afford both, sufficient calories and nutrients, Group B can afford calories but not nutrients and Group A can afford neither of the two. It can be assumed that members of households in Group A are more likely to be deficient in both micro- and macronutrients, members of households in Group B are more likely to be deficient in micronutrients, while members of households in Group C can afford both micro- and macronutrients. However, this does not guarantee that households in Group C consume a nutritious diet.

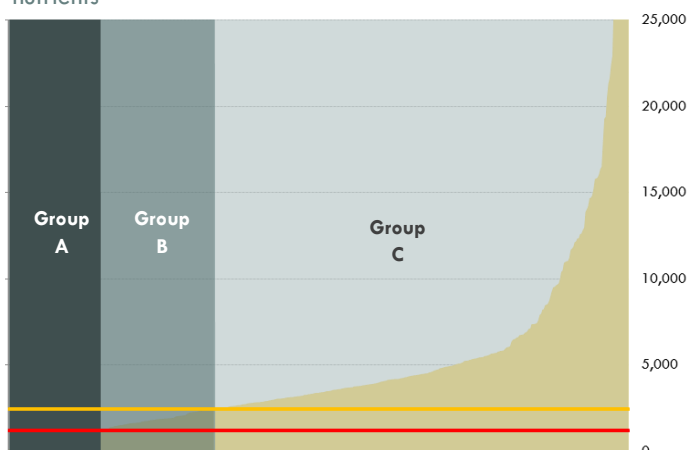
In addition to malnutrition, food security and poverty data, the COD can contribute to identifying suitable interventions for households in the three determined groups. The below proposed interventions are in line with the National Nutrition Policy of Sri Lanka (MoH, 2010) and the Multi-sector Action Plan for Nutrition (NNC, 2013).

**Group A:** Food based approaches to ensure access to adequate, nutritious, safe and quality food at affordable price throughout the year. Interventions for this group might include food assistance and social safety interventions to improve access to sufficient micro- and macronutrients.

**Group B:** Nutrient enhancement by promoting and facilitating improvement of commonly consumed food items (eg. Food fortification) to ensure micronutrient supplementation to vulnerable groups. Interventions for this group include micronutrient supplementations as well as social safety net interventions which improve access to sufficient micronutrients.

**Group C:** Promotion of dietary diversification to ensure consumption of a wide variety of foods ensuring intake of all macro- and micronutrients to prevent deficiency disorders and diet related chronic diseases. Interventions include nutrition education campaigns, behavioural change communication to increase awareness and improve consumption of nutritious food amongst households which can afford a nutritious diet.

Household groups based on economic access to energy and nutrients

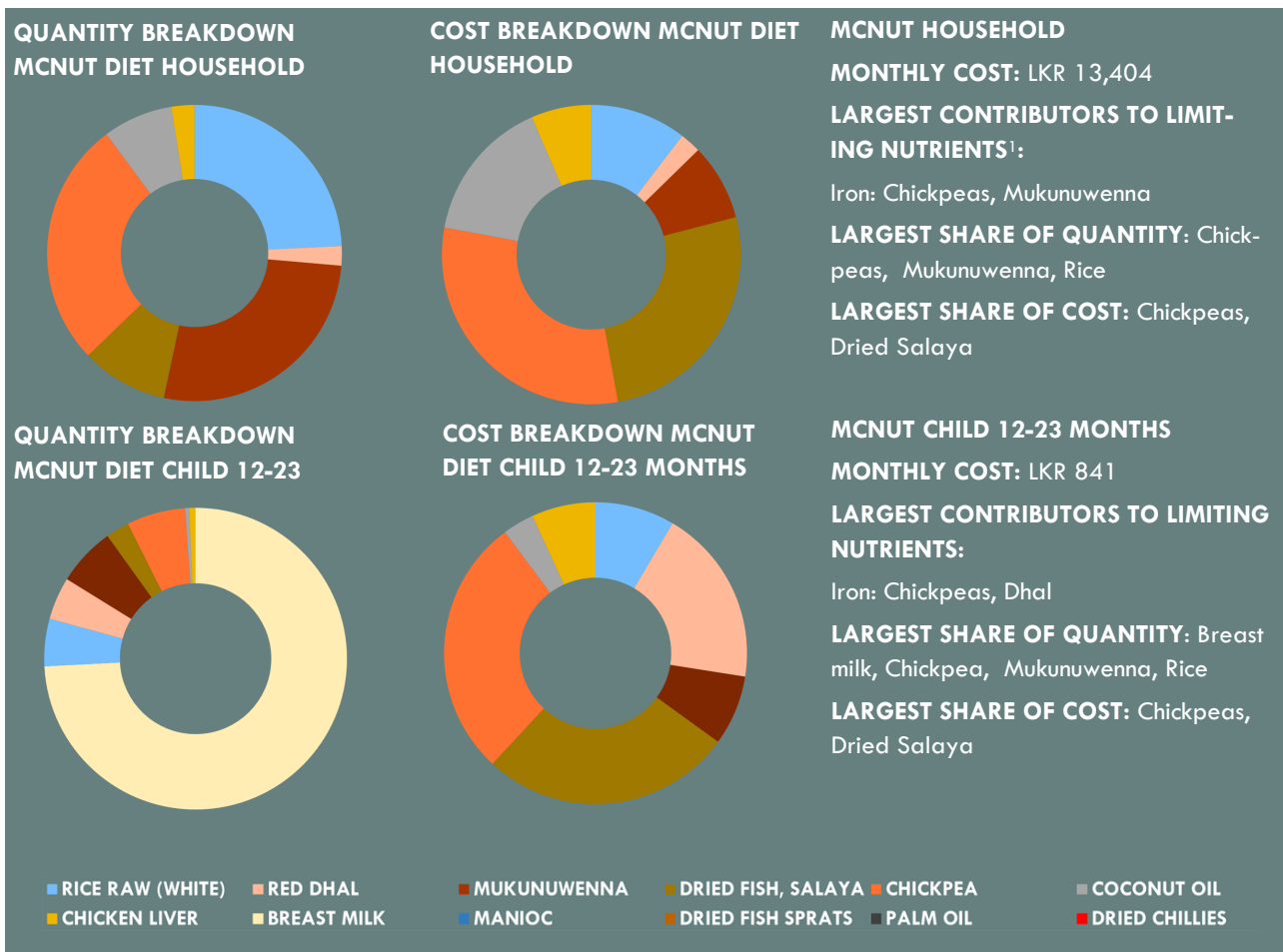


<sup>2</sup>The official poverty rate is calculated based on food and non-food requirements and 100% of income while affordability of the MCNUT is based on the cost of a nutritious diet and 50% of income.

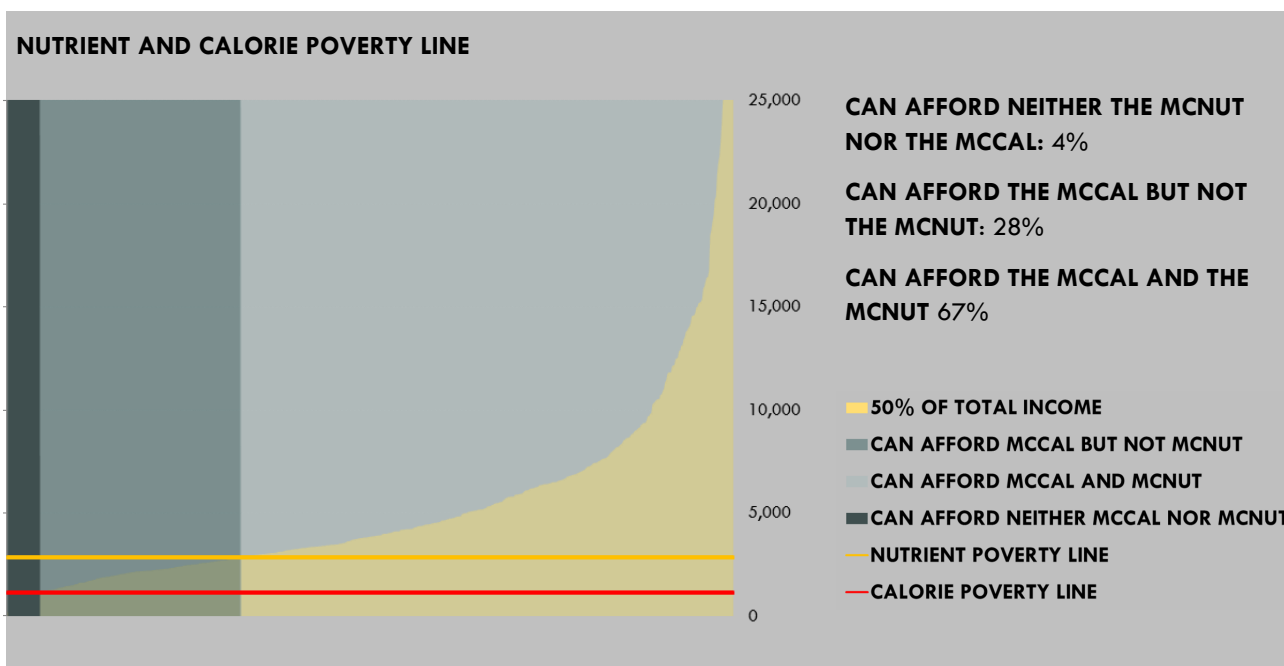
# CENTRAL PROVINCE

The **Central Province** consists primarily in the central mountainous terrain of Sri Lanka. It is the 6th largest by area and is home to 2.5 million people. The province is famous for its production of Ceylon tea, and attracts many tourists. Food prices in the central province seem to be slightly higher than in other provinces, especially the price of oil and raw rice which caused the household MCNUT to be the third highest of all provinces. When combined with 50% of total per capita income, 33% of households can not afford a nutritious diet. Only 4% of households can not afford the MCCAL. Per capita income in Central Province is close to average.

## DIET COMPOSITION



## NUTRIENT POVERTY



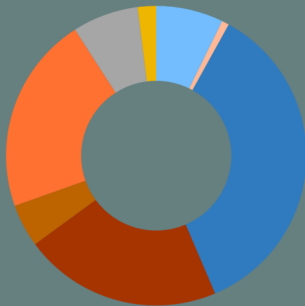
<sup>1</sup> Limiting Nutrients refer to the nutrients of which just around 100% of nutritional requirements are met. This means that given the current market prices of the available foods as well as their nutrient content, the solver function had to continue to add foods and increase the cost of the diet in order to meet the requirements.

# EASTERN PROVINCE

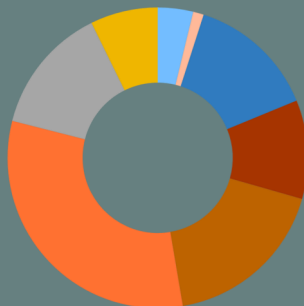
The **Eastern Province** was heavily affected by the civil war and now remains one of the provinces with the highest poverty and malnutrition rates (DCS, 2013b). Food prices in the Eastern province are similar to the average, and the MCCAL is among the cheapest of all provinces. However, per capita income is by far the lowest in the Eastern province. Using 50% of total per capita income, 48% of households can not afford the MCNUT and 9% can not afford the MCCAL. The percentage of households that do not have access to a nutritious diet is thus highest in the Eastern Province. The MCNUT diet in the Eastern Province includes Manioc, which is cheaper in the Eastern Province than rice. Manioc is a less preferred food item and its higher consumption indicates a higher level of poverty in the Eastern Province.

## DIET COMPOSITION

**QUANTITY BREAKDOWN  
MCNUT DIET HOUSEHOLD**



**COST BREAKDOWN MCNUT DIET  
HOUSEHOLD**



**MCNUT HOUSEHOLD**

**MONTHLY COST:** LKR 12,924

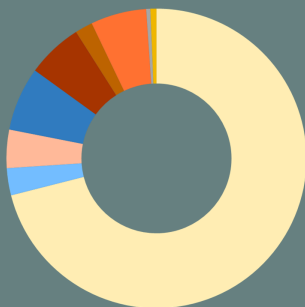
**LARGEST CONTRIBUTORS TO LIMITING NUTRIENTS:**

Iron: Chickpeas, Mukunuwenna

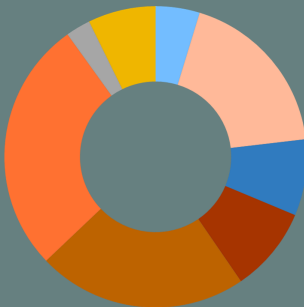
**LARGEST SHARE OF QUANTITY:** Manioc, Mukunuwenna, Chickpea

**LARGEST SHARE OF COST:** Chickpea, Dried Sprats

**QUANTITY BREAKDOWN  
MCNUT DIET CHILD 12-23**



**COST BREAKDOWN MCNUT  
DIET CHILD 12-23 MONTHS**



**MCNUT CHILD 12-23 MONTHS**

**MONTHLY COST:** LKR 894

**LARGEST CONTRIBUTORS TO LIMITING NUTRIENTS:**

Iron: Chickpea, Dhal

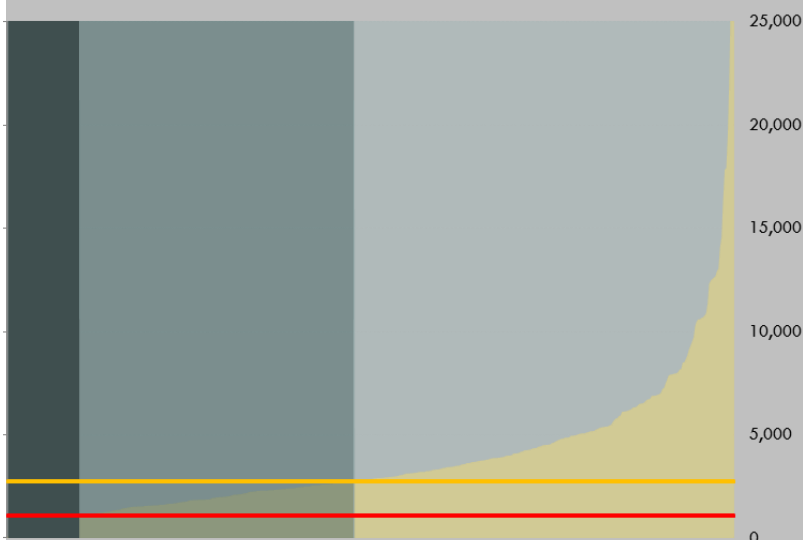
Calcium: Dried sprats, breast milk

**LARGEST SHARE OF QUANTITY:** Breast milk, Manioc, Chickpea, Dried Sprats

**LARGEST SHARE OF COST:** Chickpeas, Dried Sprats, Dhal

■ RICE RAW (WHITE) ■ RED DHAL ■ MUKUNUWENNA ■ DRIED FISH, SALAYA ■ CHICKPEA ■ COCONUT OIL  
■ CHICKEN LIVER ■ BREAST MILK ■ MANIOC ■ DRIED FISH SPRATS ■ PALM OIL ■ DRIED CHILLIES

**NUTRIENT AND CALORIE POVERTY LINE**



**CAN AFFORD NEITHER THE MCNUT  
NOR THE MCCAL:** 9%

**CAN AFFORD THE MCCAL BUT NOT  
THE MCNUT:** 38%

**CAN AFFORD THE MCCAL AND THE  
MCNUT:** 52%

■ 50% OF TOTAL INCOME

■ CAN AFFORD MCCAL BUT NOT MCNUT

■ CAN AFFORD MCCAL AND MCNUT

■ CAN AFFORD NEITHER MCCAL NOR MCNUT

■ NUTRIENT POVERTY LINE

■ CALORIE POVERTY LINE

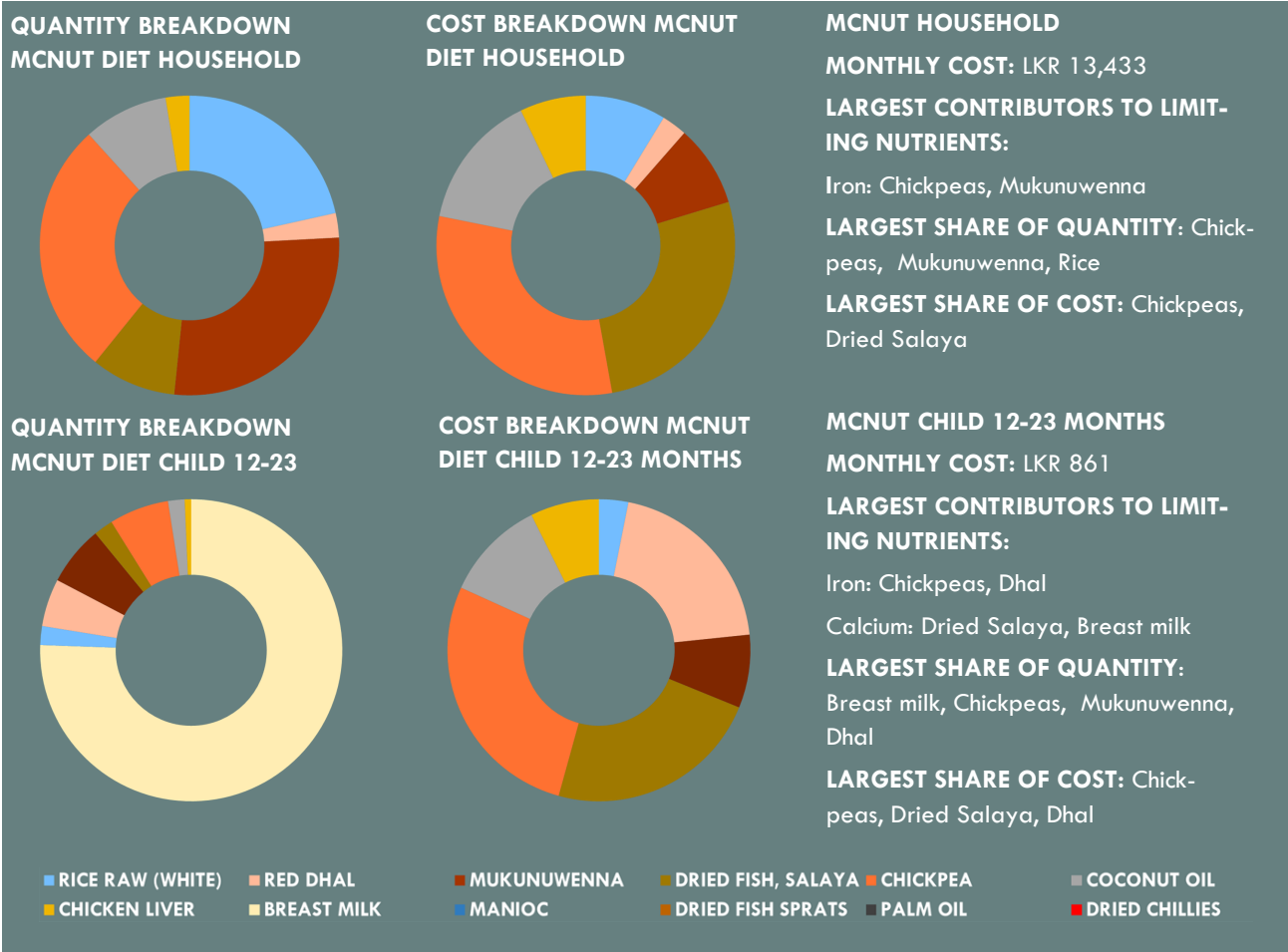
## NUTRIENT POVERTY



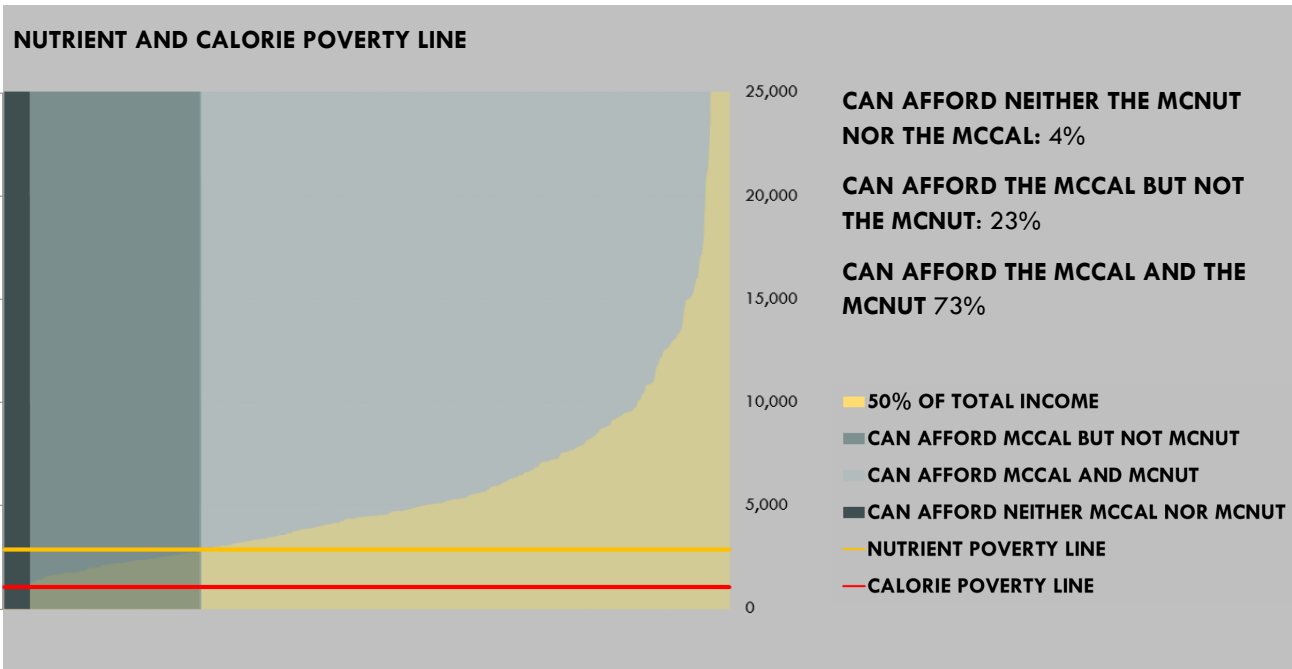
# NORTH CENTRAL PROVINCE

The **North Central Province** is dominated by paddy farming. Rice prices are slightly lower than average rice prices but due to higher prices for protein rich foods (dried fish and chickpeas) the MCNUT results in the second highest while the MCCAL is one of the lowest. Combined with one of the highest per capita income, 27% of the population in the North Central Province can not afford at nutritious diet (MCNUT) out of which 4% do not have access to sufficient calories (MCCAL). Thus, in terms of access to a nutritious diet, the North Central Province is better off, only the population in the Western Province has better access to a nutritious diet.

## DIET COMPOSITION



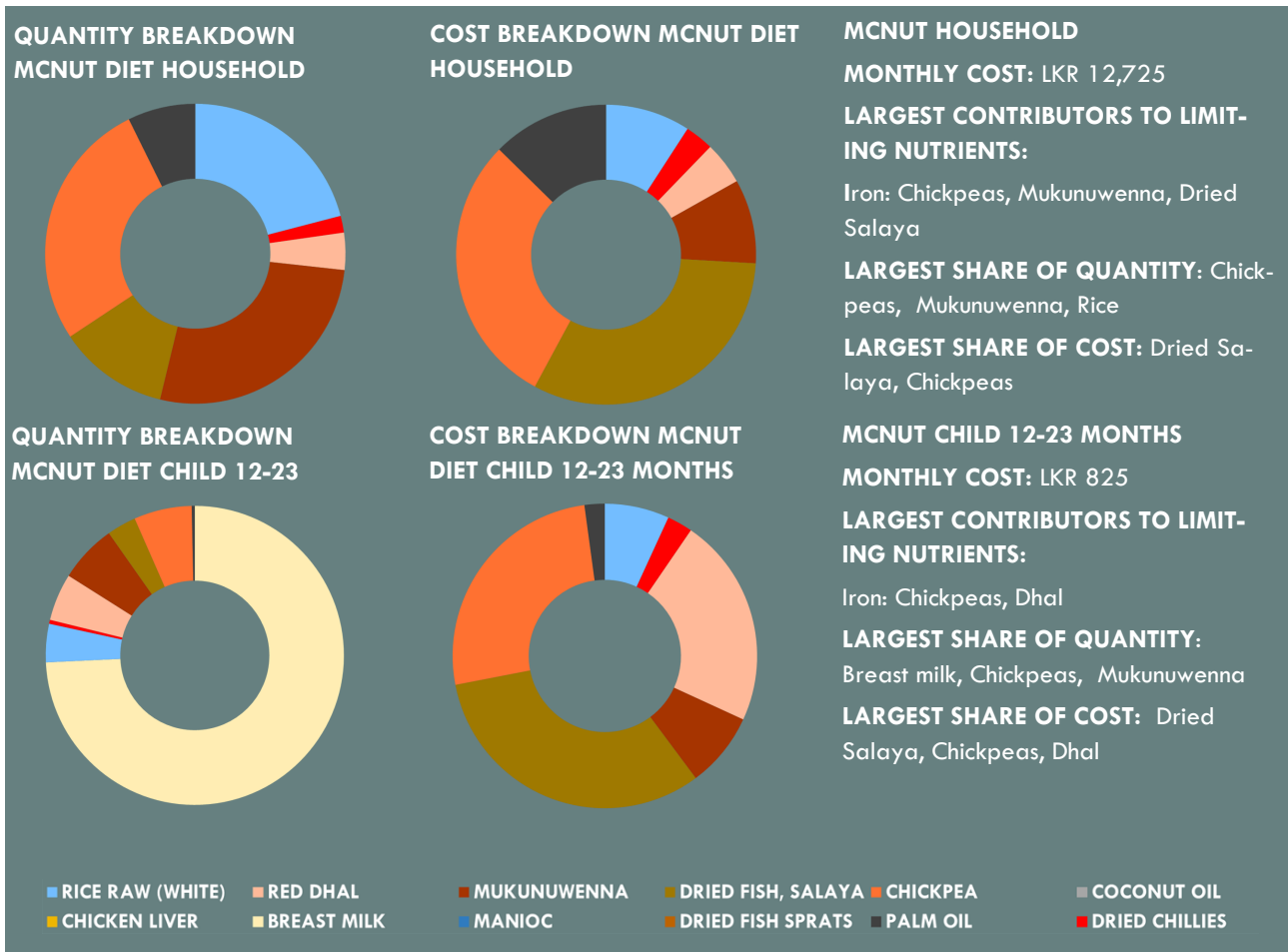
## NUTRIENT POVERTY



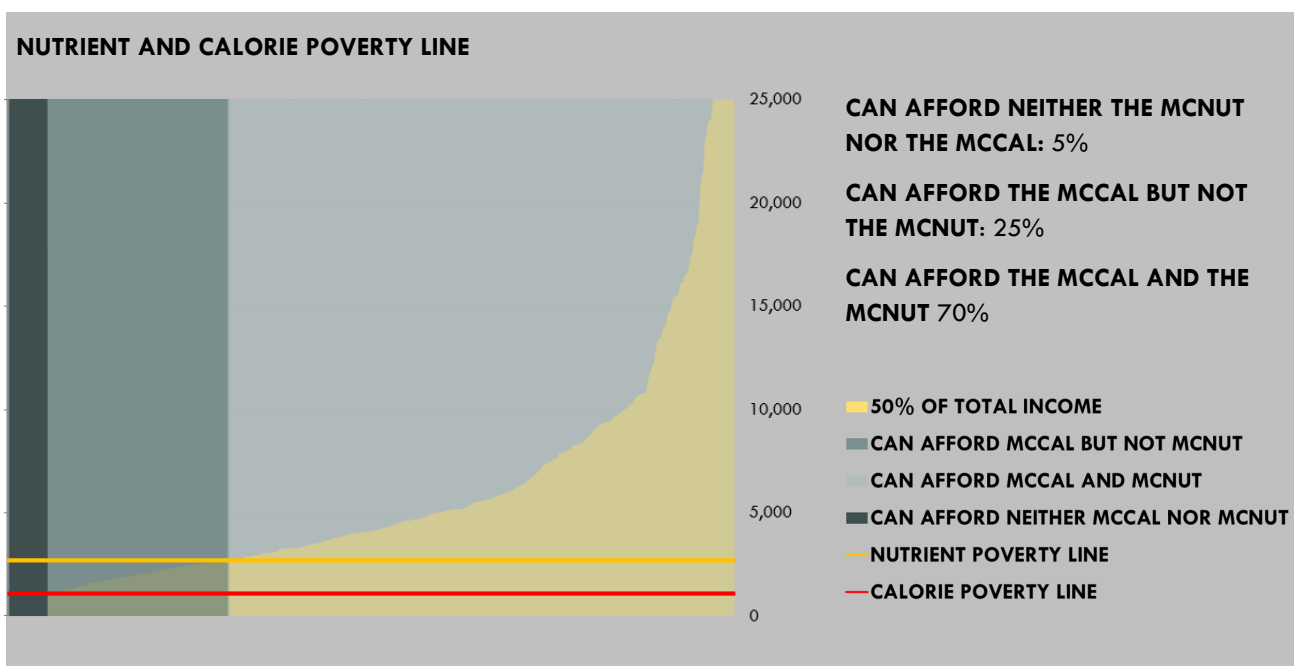
# NORTH WESTERN PROVINCE

The **North Western Province** (NWP) covers the coconut triangle and other agricultural land. In recent decades, NWP has shown improvements in the industrial sector such as the garment industry. Prices are similar to average and so is the cost of both, the nutritious diet and the energy only diet. Per capita income is the second highest across all provinces which results in 30% of households that cannot afford the MCNUT and thereof 5% cannot afford the MCCAL. Chicken liver is comparably more expensive in the North Western province and therefore was not picked by the tool for neither the household nor the child's diet.

## DIET COMPOSITION



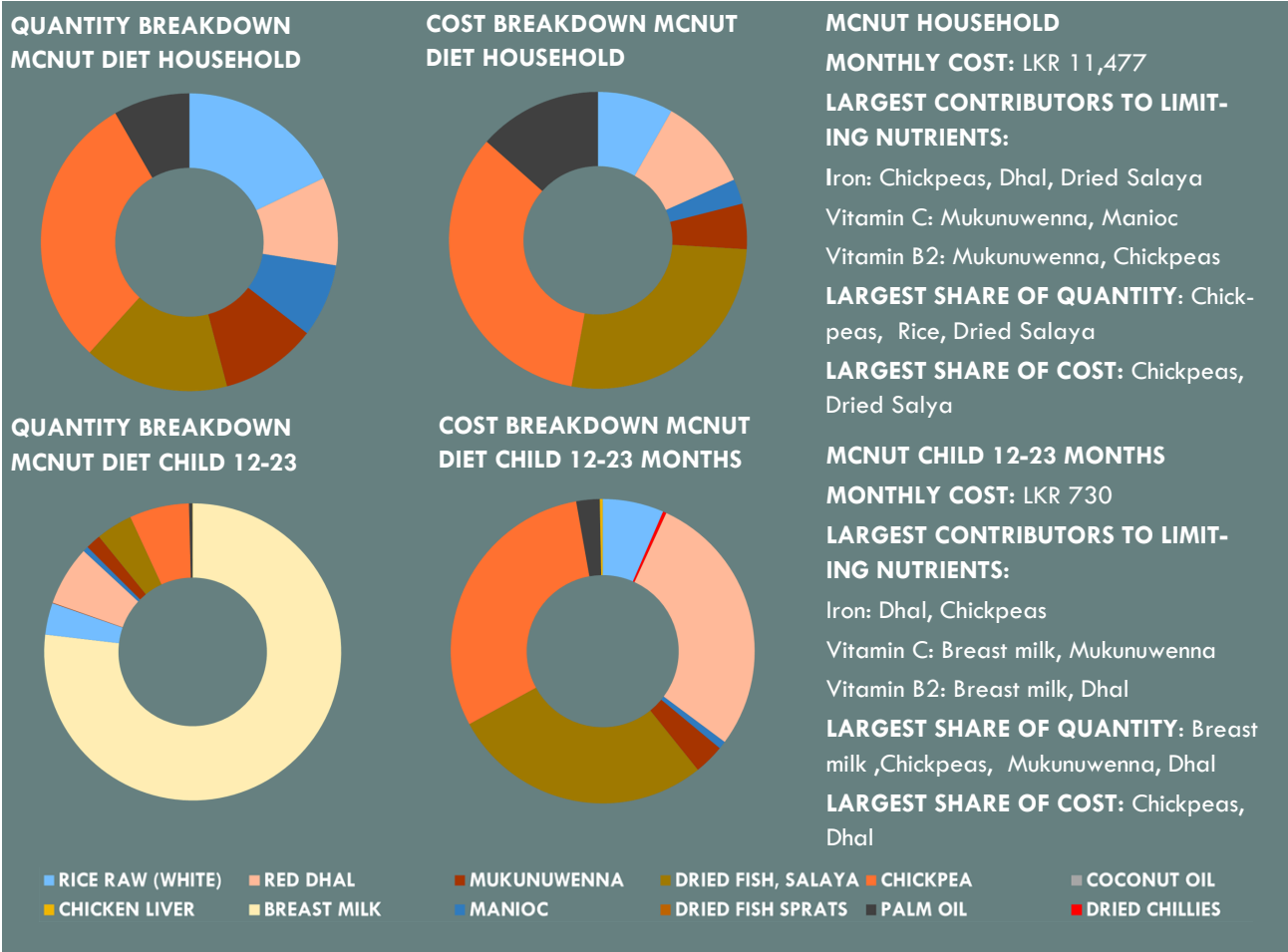
## NUTRIENT POVERTY



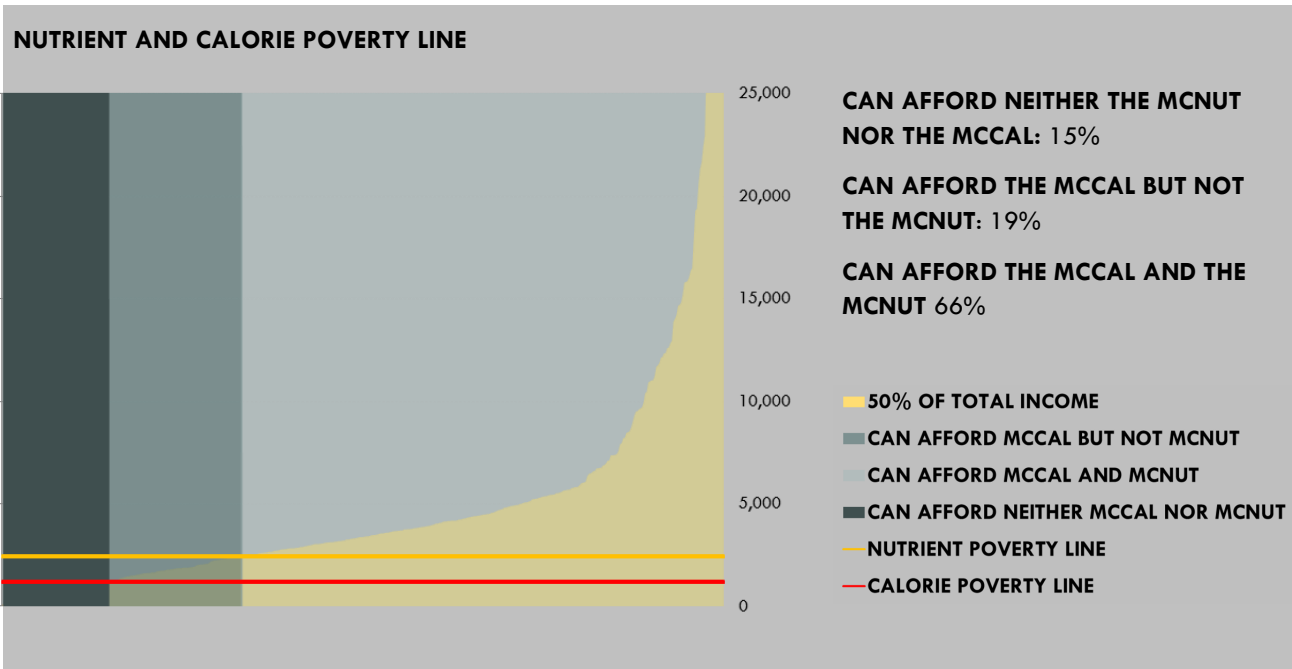
# NORTHERN PROVINCE

The **Northern Province**, temporarily merged with the Eastern Province (1988-2006), was the scene of the Sri Lankan Civil War. The province is now struck by poverty and high malnutrition rates. Prices are generally lower than average in the Northern Province but rice, Mukunuwenna and Coconut Oil were slightly more expensive during the Maha Planting Season. As a consequence the MCNUT is the lowest in the North while the MCCAL turns out to be the most expensive of all provinces. When combined with one of the lowest per capita incomes, 34% can not afford a nutritious diet and as many as 15% of the households do not have access to sufficient calories. Mukunuwenna was picked in a comparably small quantity due to its higher price and Palm Oil was picked to replace the more expensive Coconut Oil.

## DIET COMPOSITION



## NUTRIENT POVERTY



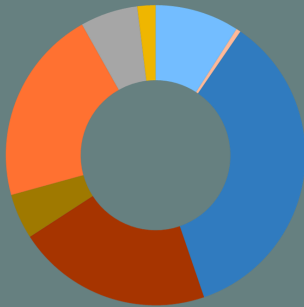


# SABARAGAMUWA

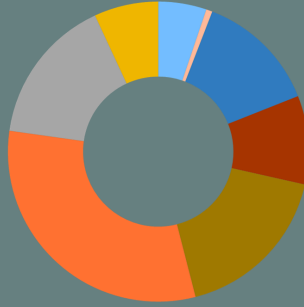
The main livelihoods of households in **Sabaragamuwa Province** are mixed perennial plantation (tea & rubber), gem mining and small holder agriculture, in particular dense fruit farming. While prices are generally lower, rice prices are slightly higher than average. The MCNUT is close to overage while the MCCAL in Sabaragamuwa Province turns out to be amongst the most expensive ones. When comparing these results with the second lowest purchasing power of all provinces, 32% of the population do not have access a nutritious diet and thereof 5% can not afford sufficient energy. By reason that rice is more expensive and manioc cheaper than in any of the other provinces, the tool picked only small amounts of rice complemented with manioc.

## DIET COMPOSITION

QUANTITY BREAKDOWN  
MCNUT DIET HOUSEHOLD



COST BREAKDOWN MCNUT DIET  
HOUSEHOLD



MCNUT HOUSEHOLD

MONTHLY COST: LKR 12,942

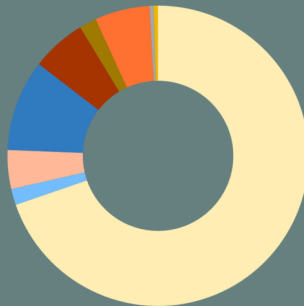
LARGEST CONTRIBUTORS TO LIMITING NUTRIENTS:

Iron: Chickpeas, Mukunuwenna, Chicken liver

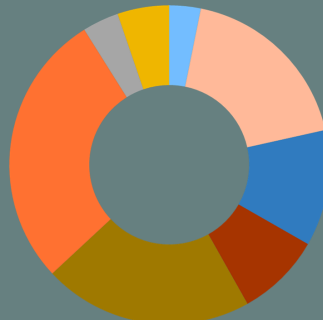
LARGEST SHARE OF QUANTITY: Cassava, Chickpeas, Mukunuwenna

LARGEST SHARE OF COST: Chickpeas, Dried Salaya, Coconut oil

QUANTITY BREAKDOWN  
MCNUT DIET CHILD 12-23



COST BREAKDOWN MCNUT



MCNUT CHILD 12-23 MONTHS

MONTHLY COST: LKR 820

LARGEST CONTRIBUTORS TO LIMITING NUTRIENTS:

Iron: Chickpeas, Dhal

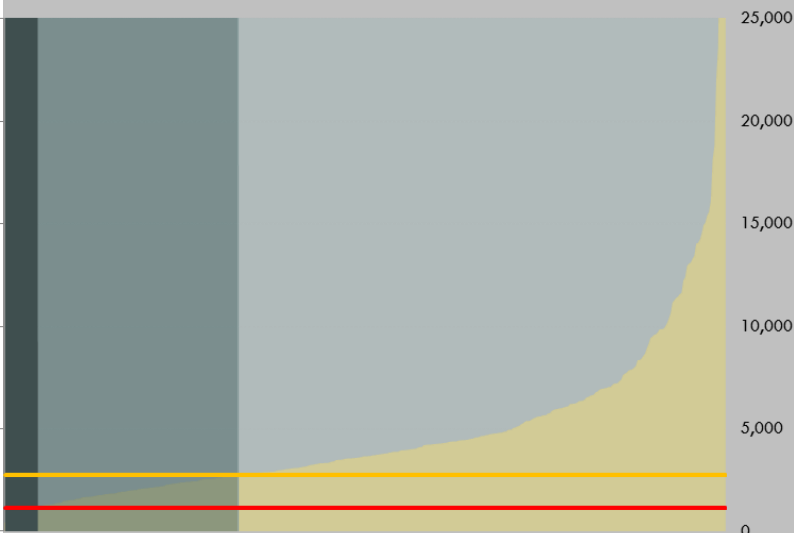
Calcium: Dried Salaya, Breast milk

LARGEST SHARE OF QUANTITY: Breast milk, Cassava, Chickpeas, Mukunuwenna

LARGEST SHARE OF COST: Chickpeas, Dried Salaya, Dhal

■ RICE RAW (WHITE) ■ RED DHAL ■ MUKUNUWENNA ■ DRIED FISH, SALAYA ■ CHICKPEA ■ COCONUT OIL  
■ CHICKEN LIVER ■ BREAST MILK ■ MANIOC ■ DRIED FISH SPRATS ■ PALM OIL ■ DRIED CHILLIES

NUTRIENT AND CALORIE POVERTY LINE



CAN AFFORD NEITHER THE MCNUT NOR THE MCCAL: 5%

CAN AFFORD THE MCCAL BUT NOT THE MCNUT: 28%

CAN AFFORD THE MCCAL AND THE MCNUT: 68%

■ 50% OF TOTAL INCOME

■ CAN AFFORD MCCAL BUT NOT MCNUT

■ CAN AFFORD MCCAL AND MCNUT

■ CAN AFFORD NEITHER MCCAL NOR MCNUT

■ NUTRIENT POVERTY LINE

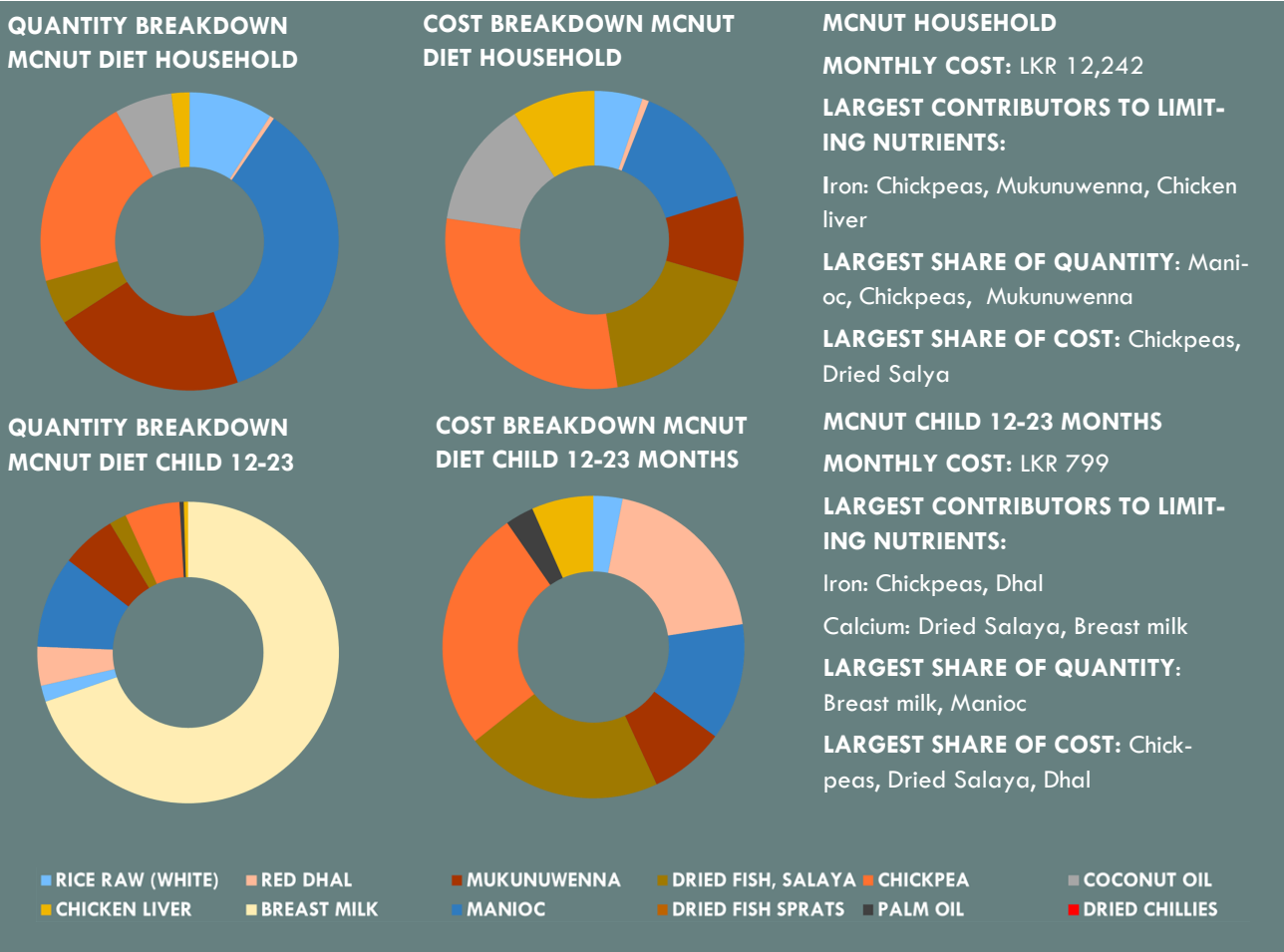
■ CALORIE POVERTY LINE

## NUTRIENT POVERTY

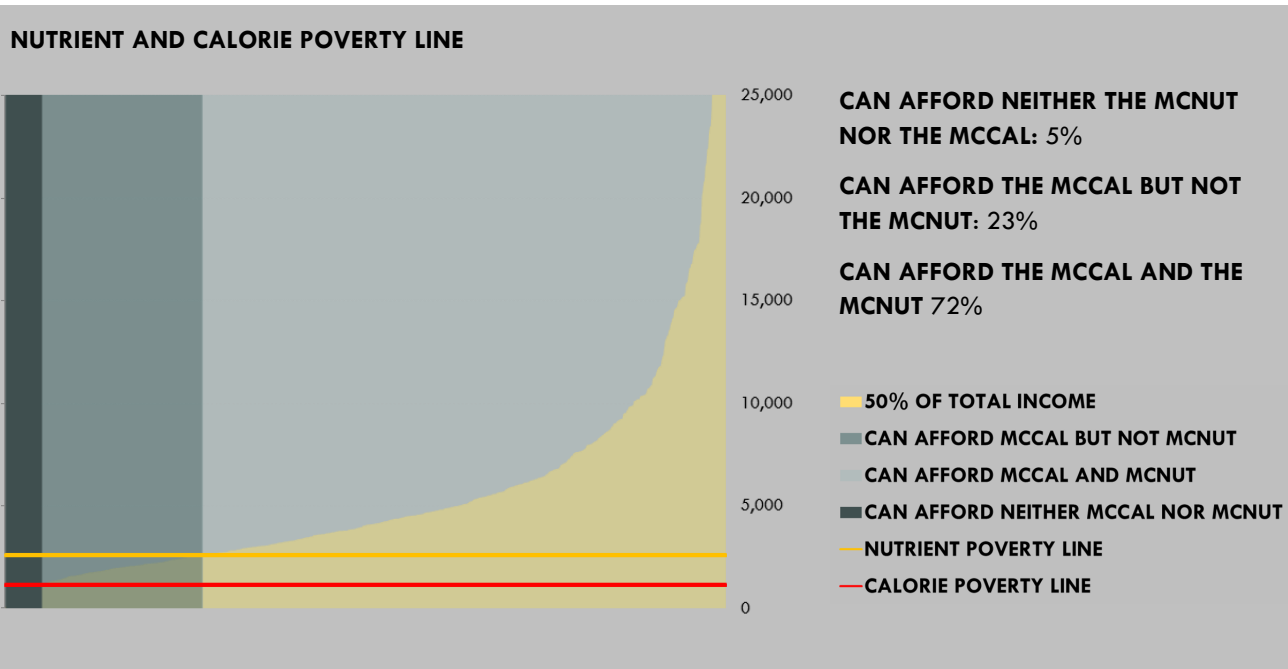
# SOUTHERN PROVINCE

The main livelihoods in the **Southern Province** are fishing, as well as small scale tea and small holder agriculture with dense fruit farming. This province was seriously affected by the Tsunami in 2004 and is now going through a rebuilding process. Food prices in the Southern Province seem to be slightly lower than in other provinces, especially the price of oil and fish which caused the MCNUT to be the third lowest of all provinces. When combined with 50% of total per capita income, 28% of households can not afford a nutritious diet. However, rice prices are comparably higher in the Southern Province, resulting in the second highest MCCAAL.

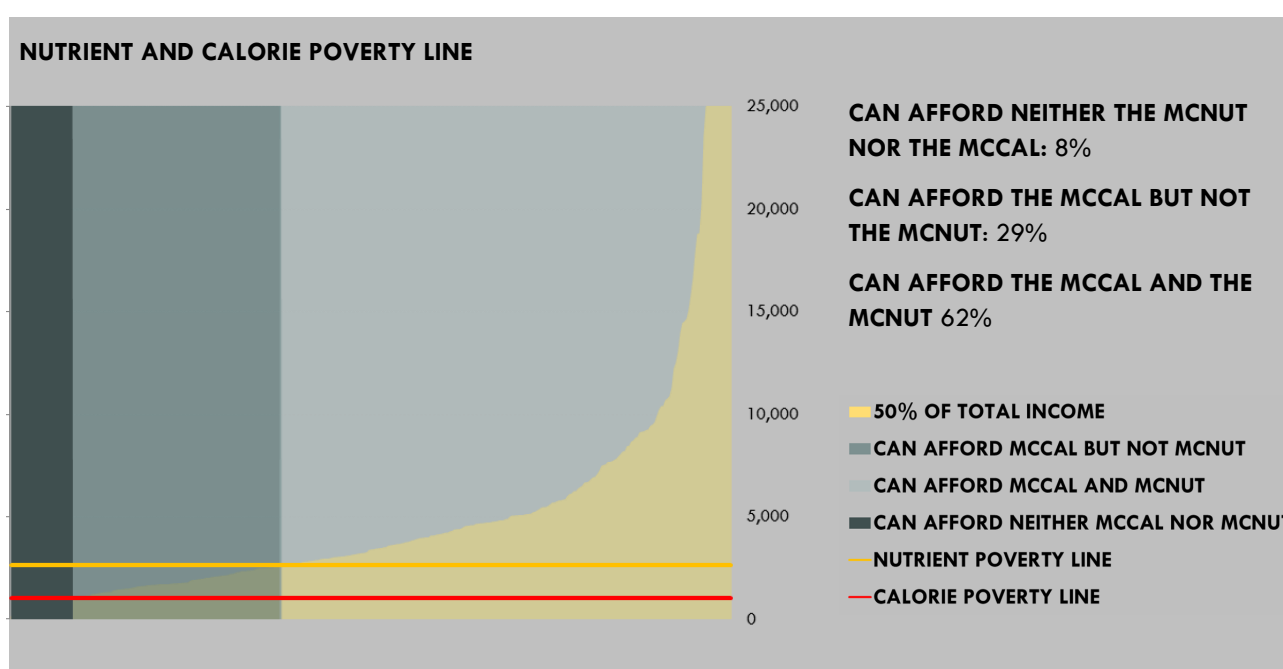
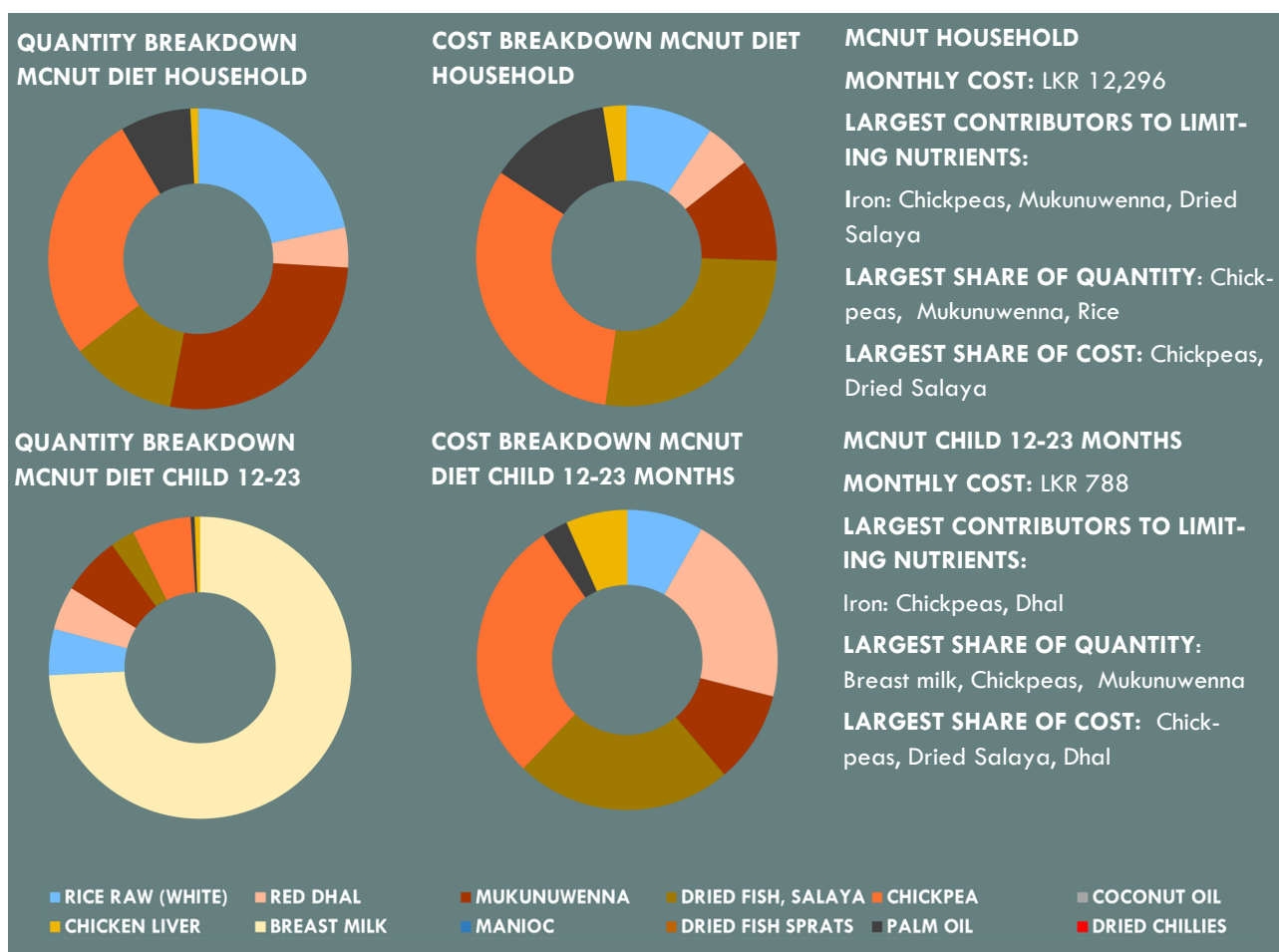
## DIET COMPOSITION



## NUTRIENT POVERTY



**Uva Province** is the second least populated province of Sri Lanka and the one with the highest prevalence of poverty. Prices are generally lower in Uva Province which results in one of the lowest MCNUT and MCCAL. However, income is also comparably low and unequally distributed, leading to low purchasing power and high percentage of the population that can not afford a nutritious diet (37% can not afford that MCNUT) and even sufficient calories (8% can not afford the MCCAL). Palm oil was picked by the tool as it is cheaper than Coconut oil in Uva Province.

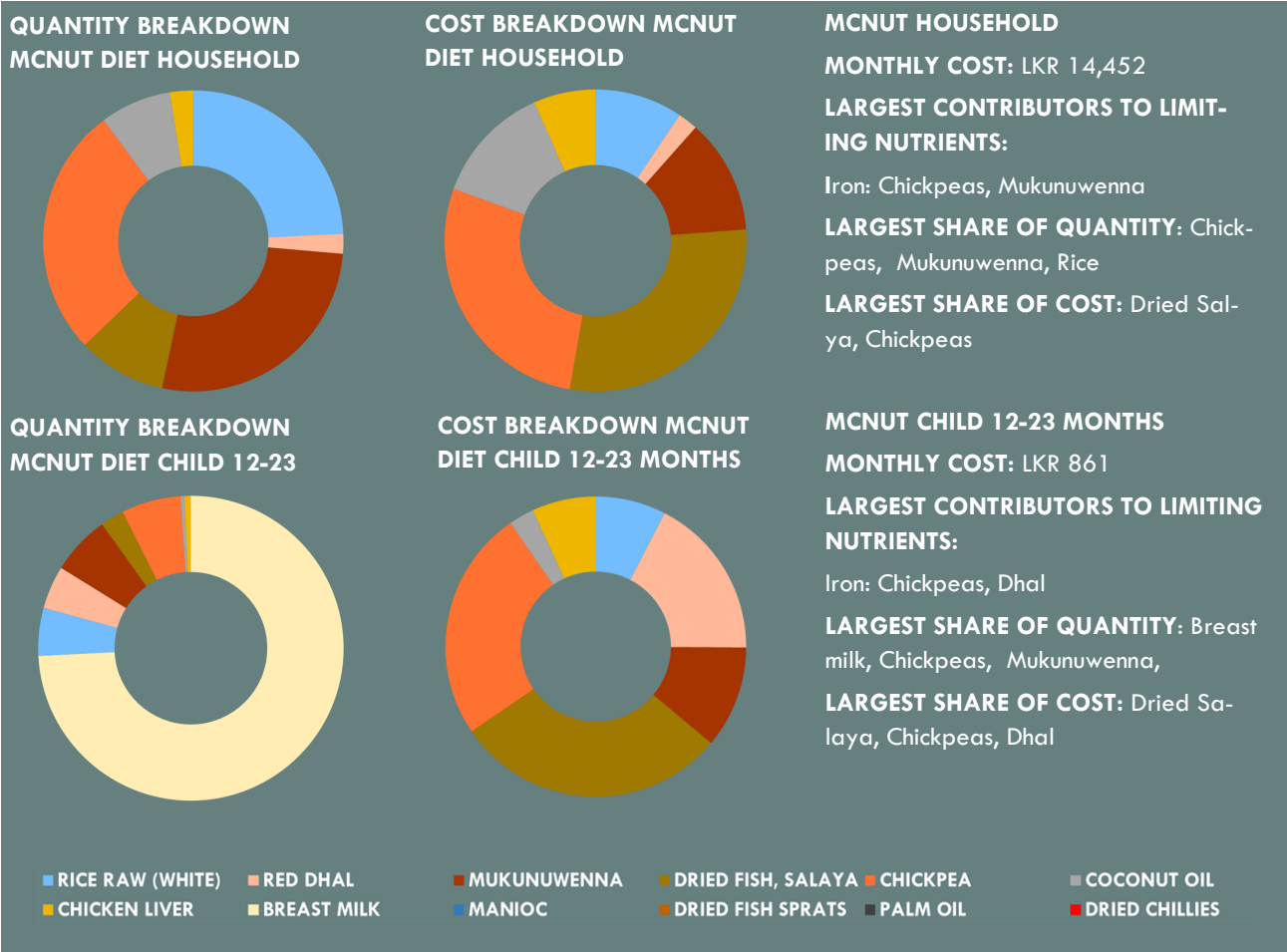




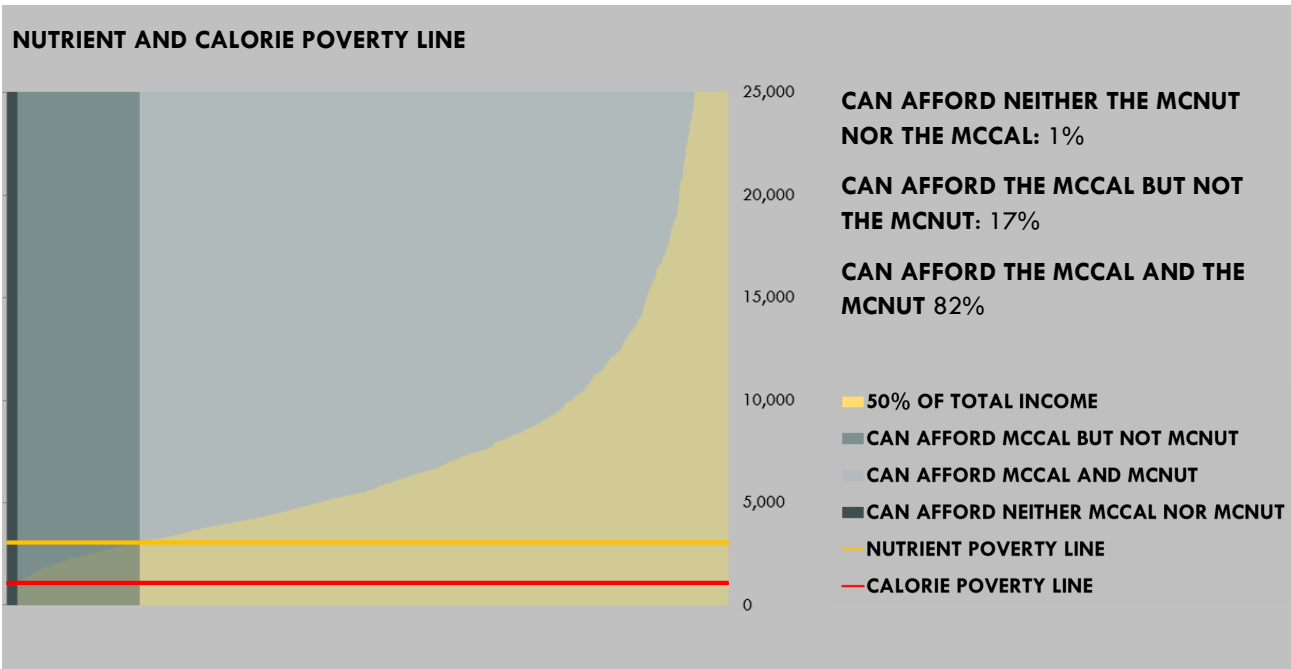
# WESTERN PROVINCE

The **Western Province** is the most densely populated province in the country and home to the capital Colombo. It is the province with the lowest poverty rate. Prices are generally higher in the Western Province but only slightly higher for rice, resulting in the highest MCNUT and a close to average MCCAL. In combination with the country's highest purchasing power 18% of households cannot access a nutritious diet and thereof 1 % cannot afford sufficient energy.

## DIET COMPOSITION



## NUTRIENT POVERTY



# LITERATURE SOURCES

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