ANALYSIS, PLANNING AND PERFORMANCE

Guidance on Food Gap Analysis

For In-Kind Food Rations

WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

September 2025

Contents

1. Why Base Rations Sizes on Food Gaps

In a time of needs at alarming highs and constrained humanitarian budgets, efficient use of resources is more important than ever. This includes matching ration sizes for emergency food assistance to quantified food gaps, i.e., food needs that the targeted populations cannot meet through their own resources. Understanding the food gap that needs to be filled using food assistance ensures that WFP provides adequate rations and can prioritize resources to those most in need.

This guidance offers operational direction to help Country Offices determine appropriate in-kind ration sizes for Unrestricted Resource Transfer (URT)/ General Food Assistance (GFA) programmes taking into account the food gap households are facing, building on the already established methodology for cash-based operations. This document directly supports the operationalization of the Interim Policy Brief on Nutritional Adequacy of Household Food Assistance, which provides broader considerations for the quality of response and recommends to base rations on food gaps. Food gap analysis is additionally considered a good practice for any prioritization exercise, as discussed in the WFP guidance "Considerations for prioritising humanitarian assistance".

This guidance proposes a methodology to estimate rations for households on average, calculated on per-capita level, suitable for Unconditional Resource Transfer and General Food Distribution programmes in emergency contexts. It does not provide guidance on estimating specific individual needs, such as adolescent girls, young children or pregnant and lactating women. To cover the needs of these groups additional targeted support is required through prevention programming and top ups.

2. Methodology – Food Gaps for In-Kind Operations

The starting point for ration design in in-kind food assistance programs is the food gap: the difference between food accessed by households and their nutritional requirements. The food gap should ideally be defined in terms of energy, macronutrients – carbohydrates, protein, and fat – and micronutrients – vitamins and minerals. To simplify and approximate, however, this document expresses gaps in terms of kilocalories (kcal). Requirements for micronutrients and macronutrients are then estimated based on kcal needs. While not explicitly addressed here, these are covered in the Interim Policy Brief on Nutritional Adequacy and the upcoming Planning for Nutritionally Adequate General Food Assistance Guidance note.

A direct estimation of the food gap requires information on calorie consumption at household level. This information is typically unavailable and a direct estimation, thus, is in most cases not possible.

Expenditure data[1] offer a readily available and low-cost solution to fill the calorie-intake information gap. WFP collects expenditure data through its regular assessments and commonly uses these to estimate household resources. Minimum Expenditure Baskets are often estimated starting from expenditure data and quantify household's minimum food and non-food needs. In turn, the food gap can be estimated as the share of a Minimum Expenditure Basket that households cannot cover with their own resources. Applying this percentage gap to a full food ration expressed in calories then provides an estimate of the food gap which can be used to determine in-kind ration size. The **full ration** amounts to 2100 kilocalories and is composed of foods in quantities and varieties that are nutritionally adequate, as detailed in the in the Interim Policy Brief on Nutritional Adequacy.

This approach builds on the methodology in place to establish cash transfers and is described in detail in Chapter six of the gap analysis guidance note. We recommend triangulating information on food gaps from expenditure data with other data on food insecurity, including qualitative information.

1. Expenditure data is a proxy for consumption and includes purchases in cash and on credit, gifts and assistance, as well as food consumed from own production.

3. Recommendations

Estimate in-kind food gaps in practice

OPTION A

EXPENDITURE DATA AND MINIMUM EXPENDITURE BASKET ARE AVAILABLE

In contexts where expenditure data and a Minimum Expenditure Basket are available from a recent, relevant survey, Country Offices are encouraged to **calculate the food gap following the gap analysis guidance note for cash operations and apply the gap, expressed in percentage terms, to the full ration.** With this approach, the analysis can be directly focused on the targeted, food insecure population.

A relevant survey should cover the targeted population during the relevant season (mostly lean season), and contain required indicators at a sufficient data quality (see data quality guidance). The annex to this guidance note presents the minimum requirements for the Minimum Expenditure Basket and expenditure data to ensure an accurate estimation.

If no recent survey is available, an older survey can be used if food security status and economic situation of the targeted population can still be considered relevant, as for example no new major shocks affected the population. Prices need to be adjusted to inflation in this case.

A triangulation of results with the recommendations described below in Option B and additional food insecurity information, including qualitative information, is advisable.

OPTION B

EXPENDITURE DATA OR MINIMUM EXPENDITURE BASKET IS NOT AVAILABLE

An indicative food gap by food security level was calculated using data from seven different countries across all WFP regions (except for the Latin American and Caribbean region). **In the absence of sufficiently updated household expenditure and MEB data, the ranges obtained here can serve as best-guess estimations of the food gap.** Details of the analysis are described in the annex.

To reflect different levels of needs, in-kind food gaps are calculated for different levels of acute food insecurity as defined by WFP's Consolidated Approach for Reporting Indicators of Food Security (CARI). CARI distinguishes households into four different groups (food secure, marginally food secure, moderately food insecure, severely food insecure) based on the level of acute food insecurity and corresponding needs. Moderate food insecurity is regarded as an approximation of IPC Phase 3, while severe food insecurity approximates IPC Phase 4 and above. Households at both moderate or severe levels of acute food insecurity require emergency food assistance. Table 1 shows the determined food gaps by level of acute food insecurity based on CARI, with an additional consideration for populations in IPC Phase 5. **For IPC Phase 5, which entails a high risk of death, a no-regrets approach is recommended, assuming 100% of the full ration as gap.** The food gaps are expressed in terms of the percentage of the full ration, and in kilocalories.

Table 1. Option B: Approximated food gaps by level of food insecurity

	% of the full ration	Kcal per person per day
Moderate Food Insecure	60 to 50%	1155 to 945 kcal
Severely Food Insecure	70 to 60 %	1470 to 1260 kcal
Populations in IPC 5	100%	2100 kcal

4. Recommendations

Designing ration sizes based on food gaps

Which of the ranges is chosen for a programme depends on the targeted population. In the case of a ration size being applied uniformly across a given area, it is recommended to **use the range for severely food insecure populations for areas where at least 25% of the population is severely food insecure**, which is the threshold for area classifications based on CARI (see CARI guidance). Where the context allows, tiered programmes can provide larger ration sizes for the most vulnerable populations and smaller for populations with lower vulnerabilities.

The recommended ranges reflect the need to calibrate assistance levels based on severity of needs in the targeted population. Country Offices are encouraged to decide on the exact percentage of the full ration within the adequate range by considering the context:

- **Values towards the upper end of the range should be chosen where household food insecurity and vulnerability are high** (for example, a relatively high share of severely food insecure households, although area is classified as moderately food insecure, food access or livelihoods are extremely constrained, coping capacities are depleted or where no complementary assistance exists).
- **Higher rations can be appropriate for displaced populations** with limited access to livelihoods.

WFP recommends for rations to complement household resources to fully meet their daily needs (2,100 Kcal). **In time of resource constraints where prioritization is needed, rations should not fall to an amount that would not enable beneficiaries to meet 70% of their daily Kcal requirements** (i.e. WHO survival level) taking into consideration all food sources.[2] For example, if the food gap for a population is estimated to 1,155 kcal, the ration cannot be below 810 kcal. Recognizing that prioritisation will inevitably affect the food and nutrition security of households and individuals in vulnerable situations, it is recommended that rations at 70% are not implemented for more than three months in IPC 4 classified areas (this applies also to areas classified as severely food insecure based on CARI) or more than one month in areas with the existence of IPC 5 conditions in the past 6 months.[3]

Ration aiming at filling the food gap, similarly to when a full ration 2100 Kcal is provided, should aim at being nutritional adequate in terms of macro- and micronutrient intake.[4] While the macro and micronutrient content of the ration are critical, they must be paired with operational considerations to maximize the impact of GFA on affected populations. Factors such as the timing, duration, frequency, geographic and demographic targeting and prioritization of the food basket play a pivotal role in determining the overall effectiveness of GFA.

2. Interim Policy Brief on Nutritional Adequacy of Household Food Assistance
3. WFP. 2025. Considerations for prioritizing humanitarian assistance
4. See also Nutritional Adequacy Policy Brief and Nutritional Adequacy Guidance note (forthcoming)

COs are encouraged to validate the estimated food gap using available food security indicators and to contextualize findings, also by relying on qualitative insights from assessment, market analysis or community feedback. Furthermore, the local context, the interplay with other programmes and actors should be taken into account to ensure that needs are met, that efforts are not duplicated and that the quality of food security and nutrition responses is optimised. Complementary programmes to meet micronutrient needs, especially targeted at the most vulnerable individuals, might be necessary in many contexts. Please refer to the documentation on nutritional adequacy (Nutritional adequacy of Household Food Assistance Policy Brief, Nutritional Adequacy Guidance note (forthcoming)) for further considerations on designing food rations.

While the recommended ranges can inform the appropriate ration size, they are not designed for targeting purposes, which require a broader set of vulnerability and eligibility criteria.

Annex – Methodological

DATA INCLUSION

Recent household datasets were selected for inclusion in the analysis of the indicative ration sizes to:

- represent as many regions as possible;
- represent as many operational realities as possible, such as refugee vs non-refugee populations;

The minimum criteria for including a dataset in the analysis have been the following:

- Standard expenditure module or expenditure module with a comparable level of disaggregation of consumption categories and sources.
- A food Minimum Expenditure Basket of sufficient quality defined for the population of interest of the survey. In particular:
- The food Minimum Expenditure Basket must be established and/or endorsed by WFP, Cash Working Group, Food Cluster or similar.
    - The food Minimum Expenditure Basket must be established to provide at least 2100 kcal per capita per day.
    - Acceptable quality of expenditure data.
- Inclusion of usable food security indicators to compute CARI (FCS, rCSI, LCS-FS, ECMEN and/or FES)

Datasets available that meet the criteria above :

Bangladesh Refugee-Influx Emergency Vulnerability Assessment – Round V 2022, Democratic Republic of Congo Emergency Food Security Assessment 2024, , Egypt Vulnerability Assessment for Refugees 2024, Ethiopia Tigray Emergency Food Security Assessment 2022, Northeast Nigeria Essential Needs Assessment 202, Republic of Congo Comprehensive Food Security and Vulnerability Assessment 2023, Syria Food Security Assessment 2024.

Datasets were then standardized, expenditures outliers where further identified and cleaned using the VAM standard expenditures cleaning syntax[5]. Local Minimum Expenditure Baskets have been identified, and their consistency with the expenditure verified and adjusted as needed, in terms of relevance for the population, time comparability and coverage of food and non-food needs to maximize the consistency of the analysis.

DATA PROCESSING

For each dataset, the estimation of food gaps followed section 6 of the guide on gap analysis for Cash-Based Transfers, as:

$$FoodGap = \frac{Food\ MEB\ -\ Value\ of\ consumed\ food}{Food\ MEB}$$

Where:

Value of consumed food = Expenditures on food + Value of food consumed from own production – Estimated part of received cash assistance from the humanitarian sector used for food consumption

The median food gap per person was calculated for the following population groups based on CARI-ECMEN:

- Moderately food insecure
- Severely food insecure

The ranges for each CARI-based food security category have been derived observing the minimum and maximum food gap across countries.

To control for a possible influence of coping behavior on the calculated food gaps, a sensitivity analysis was performed. The thresholds used in this analysis are derived from observed consumption patterns of food insecure households, which may already reflect the use of coping strategies. As such, the gaps may underestimate the true level of need, since households might be maintaining consumption levels by depleting assets, or engaging in other

5. WFP-VAM Scripts

unsustainable practices. The sensitivity analysis calculated gaps by CARI category, excluding households that apply emergency coping strategies.

RESULTS

Median values for each country and CARI category are reported in the following Table 2. The food gap is not displayed when a category contains less than five percent of the sample for each country. Table 3 shows the distribution of food insecurity in the sample and the sample size.

The sensitivity analysis (Table 4 and 5) generally confirmed these results. Since the food gap for moderately food insecure households was slightly larger among households that did not apply emergency coping strategies, the estimated ranges were slightly adjusted.

Table 2. Median food gaps by country and CARI category

	Food Secure	Marginally Food Secure	Moderately Food Insecure	Severely Food Insecure
Bangladesh (Refugees)	0%	30%	52%	68%
DRC	0%	1%	47%	60%
Egypt (Refugees)		0%	41%	63%
Ethiopia		0%	41%	64%
Nigeria		27%	54%	64%
ROC	0%	24%	55%	66%
Syria	0%	6%	50%	59%

Table 3. Percentage and sample size by country and CARI category

	Food Secure	Marginally Food Secure	Moderately Food Insecure	Severely Food Insecure	Sample Size
Bangladesh (Refugees)	10% (350)	48% (1749)	38% (1390)	4% (160)	3649
DRC	9% (3706)	35% (14437)	38% (15629)	17% (6986)	40758
Egypt (Refugees)	3% (72)	49% (1152)	40% (949)	8% (193)	2366
Ethiopia	1% (18)	18% (477)	38% (1018)	44% (1165)	2678
Nigeria	3% (540)	45% (7117)	43% (6799)	10% (1521)	15977
ROC	11% (814)	46% (3400)	34% (2521)	10% (727)	7462
Syria	15% (1105)	61% (4577)	17% (1243)	8% (580)	7505

Table 4. Sensitivity analysis: Median food gaps by country, full sample and excluding households applying emergency coping strategies

	Moderately Food Insecure	Moderately Food Insecure, Excluding Emergency Coping	Severely Food Insecure	Severely Food Insecure, Excluding Emergency Coping
Bangladesh (Refugees)	52%	63%	68%	72%
DRC	47%	51%	60%	62%
Egypt (Refugees)	41%	51%	63%	60%
Ethiopia	41%	48%	64%	64%
Nigeria	54%	57%	64%	67%
ROC	55%	56%	66%	69%
Syria	50%	49%	59%	61%

Table 5. Sensitivity analysis: Percentage and sample size by country, excluding households applying emergency coping strategies

	Moderately Food Insecure, Excluding Emergency Coping	Severely Food Insecure, Excluding Emergency Coping	Sample Size
Bangladesh (Refugees)	36% (3649)	3% (97)	3649
DRC	33% (40758)	8% (3086)	40758
Egypt (Refugees)	34% (2366)	5% (122)	2366
Ethiopia	34% (2678)	30% (795)	2678
Nigeria	37% (15977)	4% (687)	15977
ROC	30% (7462)	5% (396)	7462
Syria	14% (7505)	4% (310)	7505

LIMITATIONS

1. **Assumptions of energy intake proportional to expenditures:** The estimation of energy gaps is based on the assumption that energy intake is proportional to household food expenditures. This simplification may not always reflect consumption behavior and not always fully capture variations in food consumption patterns across different expenditure levels.
2. **Data and methodological constraints:** The datasets and Minimum Expenditure Baskets used were not originally designed for the purpose of estimating energy gaps for in-kind assistance. The standard WFP expenditure module for example was not derived to estimate precisely food consumption, but rather to estimate overall consumption levels. Minimum Expenditure Baskets might be developed using various approaches and usually aim at establishing an overall threshold of acceptable consumption for food and non-food needs. Consequently, there may be biases in the data and the data might not reflect actual food consumption exactly. The recommended thresholds should therefore be treated as indicative and subject to validation and contextual adaptation before operational use.

Glossary

Humanitarian Food Assistance	Humanitarian food assistance contributes to overall food security by covering the food gap that households are unable to meet through own resources. Food assistance may combine different modalities, including cash transfers, in-kind food ration and value vouchers. (BHA Sector requirements, 2022).
Food gap	The difference between a nutritionally adequate and culturally appropriate diet meeting basic food needs and the diet people are able to access via their own household stocks, dignified income-generating activities, remittances, and government social assistance.
Food ration	Food provided to an individual or household to meet their minimum dietary requirements during emergencies. The full ration amounts to 2100 kilocalories and is composed of foods in quantities and varieties that allow to cover the minimum nutrient requirements as detailed in the Sphere Standard Handbook Appendix 6
Minimum Expenditure Basket	A Minimum Expenditure Basket is defined as what a household requires in order to meet their essential needs, on a regular or seasonal basis, and its cost. It consists of a food and a non-food component.
Food component of a Minimum Expenditure Basket	The food component of a Minimum Expenditure Basket is a monetary threshold that indicates the cost of affording minimum nutrient requirements through the local market, respecting typical consumption patterns of the population. The food Minimum Expenditure Basket might be based on an underlying basket (i.e. composition of food items and their quantities), which are used to estimate this monetary threshold. The food component of Minimum Expenditure Basket is often used as reference to set transfer values for Cash-Based Transfers operations – i.e. to know how much additional money targeted households need to afford essential food needs through the local market.
CARI[6]	A harmonized WFP methodology used to analyze and classify households using individual level food security indicators into different levels of food security groupings (Food Secure, Moderately Food Secure, Marginally Food Insecure and Severely Food Insecure). The indicators to derive the CARI include FCS (food consumption score), rCSI (reduced coping strategy index), LCS (livelihood coping strategies) and ECMEN (Economic Capacity to meet Essential Needs) or FES (food expenditure share) all measured at the household level.

6. The Consolidated Approach for Reporting Indicators of Food Security (CARI)

Acronyms

BHA	United States Bureau of Humanitarian Assistance
CARI	Consolidated Approach for Reporting Indicators of Food Security
CO	Country Office
DRC	Democratic Republic of the Congo
ECMEN	Economic Capacity to Meet Essential Needs
FCS	Food Consumption Score
FES	Food Expenditure Share
GFA	General Food Assistance
IPC	Integrated Food Security Phase Classification
Kcal	Kilocalories
LCS-FS	Livelihood Coping Strategies – Food Security
MEB	Minimum Expenditure Basket
rCSI	Reduced Coping Strategies Index
ROC	Republic of Congo
URT	Republic of the Congo
VAM	Vulnerability Analysis and Mapping
WFP	World Food Programme
WHO	World Health Organization

Photo Credits

Cover Photo : WFP/Ali Jadallah
Photo page 5: WFP/Saleh Hayyan
Photo page 6: WFP/Antoine Vallas
Photo page 7: WFP/Arete/Fredrik Lerneryd
Photo page 9: WFP/Michael Tewelde

World Food Programme
Via Cesare Giulio Viola 68/70, 00148 Rome,
Italy - T +39 06 65131
wfp.org