FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Operational Overview

Needs Assessment and Design Methodology to Guide Large-Scale Food Fortification and Broader Programming to Improve Diets

Tool 1 of 3 in the LSFF Methodology Series

USAID
FROM THE AMERICAN PEOPLE

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About USAID Advancing Nutrition

USAID Advancing Nutrition is the Agency's flagship multi-sectoral nutrition project, led by JSI Research & Training Institute, Inc. (JSI), and a diverse group of experienced partners. Launched in September 2018, USAID Advancing Nutrition implements nutrition interventions across sectors and disciplines for USAID and its partners. The project's multi-sectoral approach draws together global nutrition experience to design, implement, and evaluate programs that address the root causes of malnutrition. Committed to using a systems approach, USAID Advancing Nutrition strives to sustain positive outcomes by building local capacity, supporting behavior change, and strengthening the enabling environment to save lives, improve health, build resilience, increase economic productivity, and advance development. This project contributes to the goals of the U.S. Government's Feed the Future initiative by striving to sustainably reduce hunger and improve nutrition and resilience.

Disclaimer

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Dedication

USAID Advancing Nutrition dedicates this operational overview and the LSFF methodology series to the memory of Dr. Timothy Quick, a passionate champion for nutrition at USAID and lead author and developer of the USAID Large-Scale Food Fortification (LSFF) Programming Guide and Results Framework. Tim was an LSFF expert and an exceptional professional who was committed to excellence in all his work. He was skilled at transforming highly technical concepts into practical, on the ground implementation, and broke down barriers, building bridges across the public and private sector to benefit the nutrition and health of populations vulnerable to malnutrition throughout the world. Tim was also kind, humble, generous, and a great role model for balancing his devotion to family and work. Tim's legacy in many areas of nutrition, including LSFF, will live on for years to come. We are grateful for his contributions and the immeasurable way we have benefited personally and professionally from our interactions with him as a colleague, mentor, and friend.

Abbreviations and Acronyms

AFE	adult female equivalent
AME	adult male equivalent
CotD	Cost of the Diet
EAR	estimated average requirement
FACT	Fortification Assessment Coverage Toolkit
FAO	Food and Agriculture Organization of the United Nations
FBS	food balance sheets
GAIN	Global Alliance for Improved Nutrition
H-AR	harmonized average requirement
H-UL	harmonized tolerable upper intake level
HCES	household consumption and expenditure survey
kcal	kilocalorie
LMIC	low- and middle-income country
LSFF	large-scale food fortification
RDA	recommended dietary allowance
RFP	request for proposal
RFS	[USAID] Bureau for Resilience and Food Security
RNI	recommended nutrient intake
SES	socioeconomic status
SQ-FFQ	semi-quantitative food frequency questionnaire
UL	tolerable upper intake level
USAID	U.S. Agency for International Development
WHO	World Health Organization

Glossary of Terms[1]

Adult female equivalent (AFE): A unit of measure to serve as a reference value based on the Food and Agriculture Organization of the United Nations (FAO) estimate of individual energy requirements for an adult non-pregnant, non-lactating woman. For example, the energy requirement of a 55-kilogram 18- to 29-year-old non-pregnant, non-lactating woman, based on a moderate activity level, would be 2,100 kcal/day, which would then be an AFE of 1. This would then be the reference value and other age and sex groups would be weighted accordingly based on their corresponding estimated energy needs.

Adult male equivalent (AME): A unit of measure to serve as a reference value based on the FAO estimate of individual energy requirements for an adult man. For example, the energy requirement of a 60-kilogram 18- to 29-year-old man, based on a moderate activity level, would be 2,550 kcal/day, which would then be an AME of 1. This would then be the reference value and other age and sex groups would be weighted accordingly based on their corresponding estimated energy needs.

Agri-food information system: For the purpose of this guide agri-food information systems refer to information systems that provide data (either primary or aggregated data) related to the agri-food system. FAO food balance sheets (FBS) fall under this definition, as do other publicly available data bases on food supply.

Apparent intake: The approximated amount of a food (and its nutrients) that a person is assumed to have ingested as estimated using non-direct measures of food intake. It is calculated through secondary analysis of national food balance sheets, household economic surveys, and similar data sources using national or household-level data on food availability, access, acquisition, and/or consumption. The estimates can be expressed as per capita or, if assuming intake proportional to energy requirement, per adult male equivalent or per adult female equivalent (WHO 2021).

Brand/brand products: Refers to a unit defined as a specific food product that can be identified in the market that would typically have a product description (e.g., Supermaize meal or Maize grit) and the brand name (e.g., ACE). Often these can also be connected to their supplier. The product description could also just be the food type, or include additional descriptive words (e.g., triple refined sunflower oil). Different brands/brand products can be categorized by food types.

Commercial monitoring: The process of collecting and analyzing food samples and reviewing product packaging at retail stores and other food distribution sites to confirm that the product follows specifications, such as micronutrient content and labeling requirements, as outlined in the fortification standards. Also referred to as retail or market monitoring (WHO 2021).

Consumption monitoring: Refers to procedures and actions aimed to assess, in individuals and populations, the change in nutrient intake that can be attributed to the consumption of fortified foods and the additional content of nutrients incorporated to them. The objectives are to track fortified food coverage, micronutrient provision, fortified food utilization, and micronutrient intake. Formerly known as household/individual monitoring (WHO 2021).

Coverage: The proportion of the surveyed population that consumes a fortifiable or fortified food during a predetermined period of time. Coverage may be disaggregated by criteria such as age, sex, economic situation, geographical area, ethnic group, and others (WHO 2021).

Critical nutrient density: The critical nutrient density is a reference value that consists of a dietary reference intake for a specific nutrient as the numerator and daily energy requirements as the

[1] Source: Adapted from USAID, 2021, USAID Large-scale Food Fortification Guide, unless otherwise noted.

denominator, considering sex- and age-specific nutrient requirements. It is the amount of a nutrient, typically per 1,000 kcal, that would achieve the nutrient requirement, assuming energy requirements are also being met (Vossenaar et al. 2019).

Dietary reference intake (DRI): A quantitative value of daily nutrient intake that is used as a reference value for planning and assessing nutrient adequacy of diets for apparently healthy people. Examples include estimated average requirements (EARs), recommended nutrient intakes (RNIs), which have been replaced in some countries with recommended daily allowances (RDAs), and tolerable upper intake levels (ULs).

Estimated average requirement (EAR): The median daily nutrient intake level estimated to meet the needs of half the healthy individuals in a particular age and sex group. The EAR is used to derive the recommended nutrient intake (RNI). The EAR is the reference value to determine the adequacy of nutrients in the diet of populations, while the RNI is used to assess at the individual level.

External monitoring: Activities carried out by government inspectors to make sure that the food industry complies with food standards. In the case of fortified foods, that they a) are produced in a manner that should achieve the specifications of the fortification standard and b) conform to the other specifications mentioned in the food standard. The two components of external monitoring include technical audits and factory inspections.

Equitable market supply (in LSFF): The market availability of fortifiable or fortified foods is similar between socioeconomic groups, for example, between urban and rural areas and wealth groups within urban and rural areas.

Food balance sheets (FBS): A source of secondary data used to provide information on the quantity of foods available to consumers in a specified reference period in a country and determine national-level food consumption patterns (adapted from Coates et al. 2012a).

Food type: Refers to a sub-category of food and defines the type of food category such as sunflower oil, palm oil, cottonseed oil OR cake flour, bread flour, whole wheat flour OR fine or coarse salt OR brown or white sugar. Different brands/brand products can be categorized by food types.

Fortifiable food: In this document, refers to foods produced by formal and centralized industries that could be fortified according to national/regional/local legislation and standards, and that meet threshold estimates for what constitutes "large-scale" in low- and high-income countries—see Annex 7 in the USAID LSFF Programming Guide.

Fortified food: Refers to a food that is definitively fortified according to qualitative or quantitative tests (adapted from WHO 2021).

Fortification: The practice of increasing the content of micronutrients (vitamins and minerals) and other minerals required in relatively large amounts such as calcium, as well as essential amino acids and essential fatty acids, in a food so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

Fortification vehicle: A staple food or condiment that is fortifiable and regularly consumed by the target population(s).

Harmonized average requirement (H-AR): Estimated average requirements (EARs) for micronutrients that can be applied on a global scale to assess intakes across populations. The H-AR values were selected from standards set by the European Food Safety Authority (EFSA) and the Institute of Medicine (IOM), giving priority to the EARs published most recently (Allen et al. 2019).

Harmonized tolerable upper intake level (H-UL): Estimated tolerable upper intake levels for micronutrients that can be applied on a global scale to assess intakes across populations. The H-UL

values were selected from standards set by the European Food Safety Authority (EFSA) and the Institute of Medicine (IOM), giving priority to the ULs published most recently (Allen et al. 2019).

Household food consumption module of the household consumption and expenditure survey (HCES): The household food consumption module of the HCES is used to collect data on the amount of food consumed by the household or the amount of food acquired by the household in a specific reference period (Coates et al. 2012a, Imhoff-Kunsch et al. 2012). The HCES usually collects information on the food consumed/acquired by households. Attempts are also ongoing to assess foods consumed by household members outside the household.

Implementing partner: An organization or individual with which/whom USAID collaborates to achieve mutually agreed upon objectives. Partners include host-country governments, private voluntary organizations, indigenous and international nongovernmental organizations, universities, other U.S. Government Agencies and Departments, the United Nations and other multilateral organizations, professional and business associations, and private businesses and individuals (USAID 2021).

Import monitoring: The actions taken by government inspectors and customs personnel at border entry points to ensure that fortified foods entering a country adhere to labeling requirements and are fortified according to the country's fortification and food standard.

Internal monitoring: The actions taken by food processing operators to ensure that a) foods are manufactured in a manner that should comply with the specifications of the fortification standard and b) the final product adheres to all the other requirements mentioned in the food standard. It includes both quality assurance and quality control procedures.

Large-scale food fortification (LSFF): Large-scale food fortification is the addition of vitamins and minerals during processing of commonly consumed staple foods and condiments in formal and centralized industries. It has also been known as industrial food fortification. For the purposes of the USAID LSFF Programming Guide and USAID's initiative, LSFF refers to those food processors that are of sufficient size and sophistication to implement this practice with efficiency and low cost.

Linear programming: A mathematical technique that minimizes or maximizes a linear function of a set of variables to generate optimal solutions while simultaneously satisfying multiple constraints (Van Dooren 2018; Briend et al. 2001). It can be used to identify the lowest cost diet, while fulfilling constraints introduced to ensure it is nutritionally adequate or comes as close as possible to being nutritionally adequate.

Monitoring: The continuous collection and review of data and information on program implementation activities for the purposes of identifying problems (such as non-compliance) and taking corrective actions so that the program fulfills its stated objectives.

Normal distribution: In statistics, a normal distribution means that data points fall symmetrically around the mean in a classic "bell curve;" there is no skew (distortion or asymmetry). Under this condition, the mean (average) equals the median (the middle value of a series of numbers arranged in order of size) and the mode (the most frequent value in a set of values) (Oxford Reference 2023a).

Nutrient adequacy: This refers to a diet that supplies sufficient quantities of nutrients that satisfies the recommended nutrient intakes for humans.

Nutrient deficiency: Insufficient metabolic use of essential nutrients required to support basic physiologic processes necessary for health and which is caused by low intake, impaired absorption, alterations due to diseases or infection/inflammation, parasitism, or metabolic imbalances or a combination of them.

Nutrient density: Nutrient density, as defined and used in this document, is the ratio of the amount of a nutrient in the diet to the energy provided by the same diet. It is frequently expressed as the amount of the nutrient per 1,000 kcal of energy (Vossenaar et al. 2019).

Nutrient inadequacy: This refers to a diet that is unable to supply sufficient quantities of specific nutrients and therefore fails to support good nutrition and health.

Production capacity: The maximum output of fortifiable food that can be produced by a production facility over a given period of time. Production capacity shows the potential output, or theoretical upper limit of fortifiable food able to be produced with installed machines, labor, and resources (adapted from MRPeasy 2023).

Production volume: The reported actual volume of fortifiable food produced per a given time period by a producer.

Quantitative, open 24-hour dietary recall: A structured interview intended to capture detailed information about the quantities of all foods and beverages (and possibly, dietary supplements) consumed by a respondent in the previous 24 hours, most commonly, from midnight to midnight the previous day (National Cancer Institute 2022a; FAO 2018). The term "open" refers to the dietary recall using open-ended questions regarding food consumption, in contrast to closed-ended questions regarding consumption of specific foods or from specific food groups.

Reach: The proportion of households consuming fortifiable foods (either fortified or not) (Omar Dary, personal communication, June 23, 2023).

Recommended dietary allowances (RDAs): Defined by the United States Food and Nutrition Board and conceptually the same as the recommended nutrient intake (RNI) but may have slightly different values for some micronutrients, for example, iron and zinc based on bioavailability in relation to the habitual national diet (Gibson 2005). It is set at the estimated average requirement (EAR) plus two standard deviations (i.e., satisfying the requirements of nearly all [97–98 percent] of healthy individuals). This is the reference value to determine the adequacy of nutrients in the diet of individuals and is the average daily level of intake sufficient to meet nutrient requirements.

Recommended nutrient intake (RNI): Defined by the World Health Organization (WHO), the daily intake that meets the nutrient requirements of almost all apparently healthy individuals in an age- and sex-specific population group. It is set at the estimated average requirement (EAR) plus two standard deviations (i.e., satisfying the requirements of nearly all [97–98 percent] of healthy individuals). This is the reference value to determine the adequacy of nutrients in the diet of individuals.

Regulatory monitoring (in the context of LSFF): Actions taken by government inspectors to ensure that fortified foods comply with the specifications of the food standards. It includes external monitoring at food processors, import monitoring at border entry points, and commercial monitoring at retail and food distribution locations.

Retinol activity equivalent (RAE): A measure of the amount of vitamin A that is available to a person either in the form of vitamin A or precursors (i.e., pro-vitamin A compounds). The RAE takes into consideration more recent data on the bio-efficacy of carotenoids as precursors of vitamin A. Conversion factors for RAE include, e.g., 1 microgram RAE = 1 microgram preformed retinol, 12 micrograms of beta carotene, or 24 micrograms of other pro-vitamin A carotenoids (Oxford Reference 2023b).

Semi-quantitative food frequency: A diet assessment method where respondents report their usual frequency of consumption of foods, from a food list, over a specific time, e.g., seven days, including portion sizes, either a standardized portion size or a range of portion sizes (National Cancer Institute, 2022b).

Stock variation/change in stock (FAO food balance sheets): Refers to the stock held by all levels of production, but in practice data, if available, is usually at government level only. Stock variation refers to amounts sent to (utilization), or withdrawn from (supply) stocks. Thus, e.g., domestic supply = (local production) + (imports) – (exports) – (change in stock) = domestic utilization (adapted from Habimana 2019).

Supplier: Refers to the responsible entity of the product which could be the producer or the distributor/importer/exporter. A supplier can provide multiple brands or brand products.

Tolerable upper intake level (UL): The highest average daily nutrient intake level unlikely to pose risk of adverse health effects to almost all (97.5 percent) of apparently healthy individuals in an age- and sex-specific population group. This value is used to ensure safety of the micronutrient supply to individuals and populations.

Tool: A software program and/or systematically organized set of information and resources, generally designed to be used together to collect, analyze, and/or apply to answer specific questions (Merriam-Webster Dictionary 2023).

Usual intake: The long-run average intake of food, nutrients, or a specific nutrient for an individual (Institute of Medicine 2000).

Operational Overview Purpose and Audience

What is the purpose of this operational overview?

The purpose of this operational overview is to describe the steps for staff from USAID Missions, governments, other local counterparts, and implementing partners to identify and use existing data to conduct an assessment that will inform the design or redesign of large-scale food fortification (LSFF) programs as well as broader programming to improve diets.

The Operational Overview is the first part of a package of three tools for needs assessment and design of LSFF programs for improved diets. For detailed instructions on how to conduct the analyses for the needs assessment and design, read the second tool: *Methods Guide: Needs Assessment and Design Methodology to Guide Large-Scale Food Fortification and Broader Programming to Improve Diets*. The third part —*Case Study Nigeria and Zambia Large-Scale Food Fortification Needs Assessment and Design Pilot: Challenges and Lessons Learned*—provides examples of challenges and lessons learned in applying the methodology.

Who is the audience for this operational overview?

The primary audience for the operational overview includes people seeking to assess and design or possibly redesign an LSFF program, such as USAID Mission staff overseeing the Feed the Future (FTF) initiative and USAID partners, including FTF implementing partners, national offices/bureaus of statistics, universities, and national institutes/centers. Users of the information generated are also an audience. Table 1 describes how various groups may use the overview.

Table 1. How Audiences May Use this Operational Overview for LSFF and Broader Programming Needs Assessment and Program Design/Redesign

Audience	Uses of this Operational Overview				
	Become familiar with the methods	Write RFP or SOW / ToR[1]	Conduct assessments/ analyses	Organize / communicate the results	Apply results for decision-making or use results
USAID Mission staff / donors	✓	✓			✓
USAID FTF implementing partners	✓	✓	✓	✓	✓
National offices / bureaus of statistics	✓		✓	✓	
Universities	✓		✓	✓	
National institutes / centers	✓		✓	✓	✓

Government ministries	✓		✓	✓	✓
Local government					✓
Media				✓	
Civil society					✓
Private sector	✓				✓

[1] RFP=request for proposal; SOW=scope of work; ToR=terms of reference

What skills and experience do you need to use this operational overview?

A familiarity of the country context and some general knowledge regarding LSFF and nutrition would be useful. However, you do not need special skills or expertise in statistics or data analysis to become familiar with the methodology, write an RFP or consultant scope of work, or to apply the findings.

To conduct the specific analyses described in this operational overview, the team should include individuals with the following skills, knowledge, and experience:

- nutrition research, including formulating research questions related to diets
- general knowledge of dietary assessment and application of nutrient reference values for assessing dietary adequacy
- general knowledge of data collection methods, including internet-based research and application of critical evaluation strategies
- working with quantitative dietary data, including:
  - cleaning data
  - coding to analyze data
  - bringing the results of data analyses together to create useful inputs for decision-making.
- working with one or more of the following types of data:
  - quantitative open 24-hour dietary recall
  - semi-quantitative food frequency
  - household consumption module of household consumption and expenditure survey (HCES)
  - food balance sheets (FBS)
  - market availability of fortifiable foods.
- use of linear programming for assessing the cost and affordability of an adequate diet without/with LSFF (optional).

How do you use this operational overview?

This operational overview provides a step-by-step methodology and a decision tree to guide the selection of existing data to analyze diets, markets, and diet cost in the local context. The overview will help you understand how to take the necessary steps to analyze existing diet data to identify micronutrients that may be inadequate in the diet and strategies to fill the micronutrient gaps with LSFF, market data to understand the availability of fortifiable foods in various regions and market types, and data to understand the diet cost and affordability without and with LSFF.

You can find the steps in the methodology and decision tree in the next section of this overview. Systematically approach it in the following way:

1. Read through the decision tree (Figure 1 below).
2. Determine the most suitable existing data that you have available.
3. Read about the data sources and their strengths and limitations in **Annex 1**.
4. Read about the estimated cost, time and technical resources needed to analyze each existing data source in **Annex 2**.
5. Refer to **Annex 3** to find an example scope of work for an RFP or consultant to conduct the analyses described in this overview.
6. Go to the **Methods Guide** to read about the detailed steps for analysis of the most suitable data source that you have available.

Throughout the process, consult with a group of LSFF and nutrition stakeholders that you bring together to provide inputs and feedback on the analysis assumptions, modeling parameters, and results. The criteria for selection of the stakeholder/technical working group members include local experience with and/or knowledge of:

- micronutrient deficiencies, micronutrient intake, and/or government programs to address micronutrient malnutrition in the country
- LSFF programs in the country
- the types and availability of existing data needed for the secondary analysis for the implementation of the methodology
- markets, particularly national and subnational markets related to fortifiable foods.

Examples of the types of stakeholder/technical working group members that may be invited to participate include:

- government staff from the ministry of health; ministry of agriculture; ministry of commerce, trade, and industry; national standards agency; and national laboratories (e.g., micronutrient analysis of food samples and/or biological samples)
- nongovernmental organizations working in LSFF and/or micronutrient nutrition
- academic professionals with expertise in LSFF and/or micronutrient nutrition
- private sector, including representatives from industry groups or companies producing fortifiable foods and micronutrient premix providers
- donors supporting LSFF
- United Nations organizations supporting LSFF (e.g., UNICEF, World Food Programme [WFP], World Health Organization [WHO]).

The estimated time commitment for the stakeholder/technical working group is approximately 10 hours. This may include about 6 hours for technical consultations, as well as time for hour-long one-on-one and/or smaller stakeholder/technical working group meetings to discuss the analysis assumptions and modeling parameters. The analysis team may also send stakeholder/technical working group members short surveys for feedback on various issues. **Annex 4** provides an example terms-of-reference for a stakeholder/technical working group.

If assistance is needed in forming the stakeholder group, consider possible support from UNICEF, WHO, and/or WFP.

How does this overview fit within the stages of LSFF and broader programming?

As you use this operational overview, also refer to the USAID LSFF Programming Guide and its results framework. The USAID LSFF Programming Guide is a tool to help you assess needs and opportunities, design, implement, monitor, evaluate, and adjust LSFF programming in low and middle-income countries (LMICs). This operational overview complements the USAID LSFF Programming Guide by providing a detailed methodology on how to assess diets, markets, and the cost of an adequate diet without and with fortified foods. The methodology contained herein is designed for use in the initial stages of LSFF needs assessment and design, as well as in existing LSFF programs, to re-assess needs and if needed, redesign programs according to changes in the country context. A description of how this operational overview links to the USAID LSFF Programming Guide can be found in **Annex 5**.

What is within the scope of this operational overview?

This operational overview is designed to help you respond to questions and/or provide evidence about—

- micronutrient intake and adequacy of micronutrient intake in populations
- consumption of potential food fortification vehicles
- reach of fortifiable foods in households
- availability of fortifiable and already fortified foods in markets (domestic volume)
- accessibility of potential food fortification vehicles based on their distribution in market types and regions
- the actual and potential contribution of fortified foods to micronutrient adequacy through modeling
- the cost of an adequate diet without and with LSFF.

What is beyond the scope of this operational overview?

The operational overview does not provide information needed for the following:

- analysis methods to determine the prevalence of micronutrient deficiency through biomarkers.
    - However, as part of a needs assessment for LSFF, you should ask, "What are the micronutrient deficiencies and/or inadequacies in the population, and which population groups are more affected?" and "What is the current coverage, performance, and micronutrient contribution of current intervention programs?"
    - Answers to these questions, along with information on adequacy of micronutrient intake, will help determine if a food fortification intervention is warranted.
- methods to estimate the total cost of the LSFF program
- methods for monitoring and evaluation of LSFF programs
- guidance and steps for stakeholder engagement. Please consult the USAID LSFF Programming Guide for the steps in engaging government, the food industry, and civil society as a part of the needs assessment and design/redesign process.

Summary of Steps in the Methodology and Data Decision Tree

Figure 1 depicts the methodology to assess diets, markets, and the cost and affordability of an adequate diet to inform LSFF and broader programming. The figure is organized around the three steps in the methodology:

- Step 1: Needs Assessment
- Step 2: Design / Redesign
- Optional Step: Modeling Diet Cost and Affordability.

For each step, the figure describes the information need(s) and the questions that completion of the step will help you answer. For each, you will find a brief description of the approach and a decision tree for finding the most suitable data source for the analyses.

Annex 1 provides a description of the data sources, with their strengths and limitations.

Annex 2 describes the cost, time, and technical expertise to conduct the analyses.

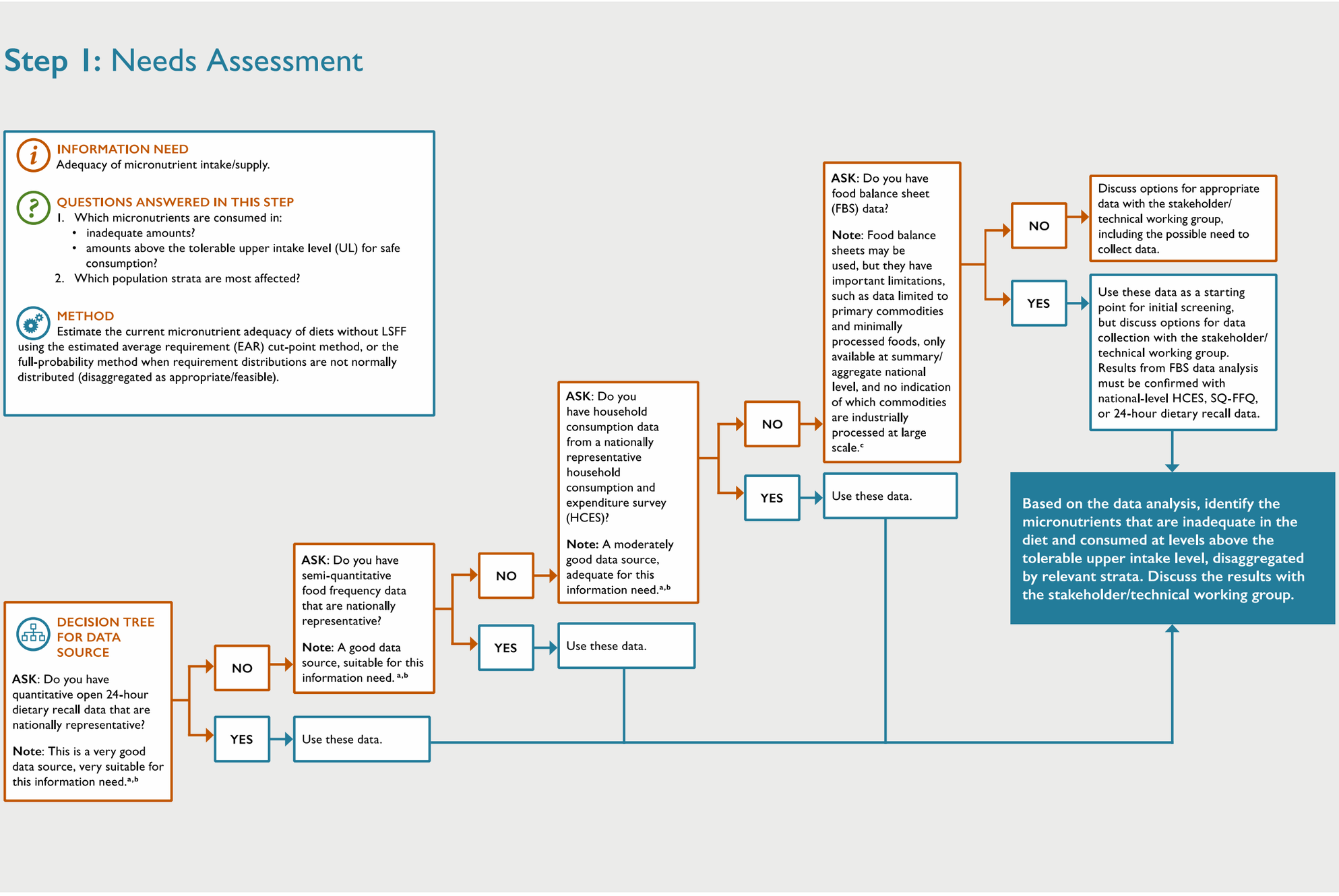
Annex 6 includes an outline of the results report.

Box 1. Icons used in the Operational Overview

For a detailed description of the methods for each step in the decision tree, please see the companion **Methods Guide** (Tool 2 of 3 in the LSFF Methodology series).

For examples of challenges and lessons learned in applying the methodology, please see the companion **Case Study** document (Tool 3 of 3 in the LSFF Methodology series).

Figure 1. Steps in the Methodology and Data Decision Tree



Step 2: Design/Redesign

2.1: INFORMATION NEED
Fortifiable food consumption.

QUESTIONS ANSWERED IN THIS STEP
1. Which fortifiable foods (staples and condiments) have high coverage among target households or individuals, and could serve as a probable food vehicle for fortification with the micronutrients that are inadequate in the current diet?
2. Which population strata may be benefited if the identified foods are fortified?

METHOD
Estimate the amount of the fortifiable foods consumed per individual group (by age and/or sex); or per adult female equivalent (AFE) or per adult male equivalent (AME); or available amount per day per capita in the food supply (disaggregated as appropriate/feasible).

DECISION TREE FOR DATA SOURCE
See the decision tree for Step 1. Needs assessment.

Note: For the semi-quantitative food frequency questionnaire (SQ-FFQ) for this step, either the total diet or a food-specific SQ-FFQ, for example, of fortifiable foods, could meet this information need.

Based on the analysis, identify the probable food vehicles for fortification with the micronutrients that are inadequate in the current diet, considering relevant disaggregation, discussing and consulting with appropriate stakeholders.

2.2: INFORMATION NEED
Availability of fortifiable foods in markets.

QUESTIONS ANSWERED IN THIS STEP
The questions that can be answered in this step will depend on the available data. Examples include:

1. What is the domestic supply of potential LSFF food vehicles?
2. What is the percentage of the potential LSFF food vehicle production volume that:
   a. is imported versus locally produced?
   b. comes from fortifiable sources/ producers suitable for LSFF?

METHOD
Estimate the various indicators of availability of fortifiable and fortified foods based on the existing data, at the national level and disaggregated by geographic area or market type, as feasible.

DECISION TREE FOR DATA SOURCE
ASK: Do you have data from an agri-food information system?

Note: A good data source suitable for this information need, particularly for national-level data. We recommend starting with this data source, given the various kinds of agri-food information system data that are available in almost all countries.[a,d]

NO

ASK: Do you have data from a market assessment?

Note: A very good source of data, very suitable for this information need, particularly if the market assessment collected data on the availability of potential LSFF food vehicles by geographic area and market type. We recommend complementing agri-food information system data with the information from a market assessment, if available.[a,d]

NO

Discuss options for appropriate data with the stakeholder/ technical working group, including the possible need to collect data.

YES

Use these data.

YES

Use these data.

Based on the analysis, estimate the various indicators of availability of fortifiable and fortified foods, at the national level and disaggregated by geographic area or market type, as feasible, and discuss the results with appropriate stakeholders.

Step 2: Design/Redesign (continued)

2.3: INFORMATION NEED

Predicted contribution of LSFF to micronutrient adequacy.

QUESTIONS ANSWERED IN THIS STEP

Considering current consumption patterns, what would be the potential contribution of LSFF (or, if LSFF is already in place, what is the contribution of existing LSFF) to micronutrient adequacy of the diet for different strata of the population?

METHOD

Estimate micronutrient adequacy with LSFF using the EAR cut-point method, or the full-probability method when requirement distributions are not normally distributed, modeling the use of the potential food vehicles to fill micronutrient gaps identified in the steps above.

Potential modeling scenarios:

- mandatory fortification at current fortification levels at households or markets (percent of the fortified food vehicle fortified to any extent and average fortification level, if the data are available).
- mandatory fortification expected at households if industry complies with the standard target micronutrient levels (i.e., with "good compliance" meaning improved yet realistically achievable a) percent of fortifiable foods fortified to any extent and b) average fortification level, estimated from the target content required in the standard minus the expected losses of the micronutrient from factory to households).
- fortification of mandatory or new food vehicles, modifying or varying the formulation of micronutrient addition (plus the expected micronutrient losses from factories to households) with fortification formulations that are compatible with technical and economical limitations and trade practices.

DECISION TREE FOR DATA SOURCE

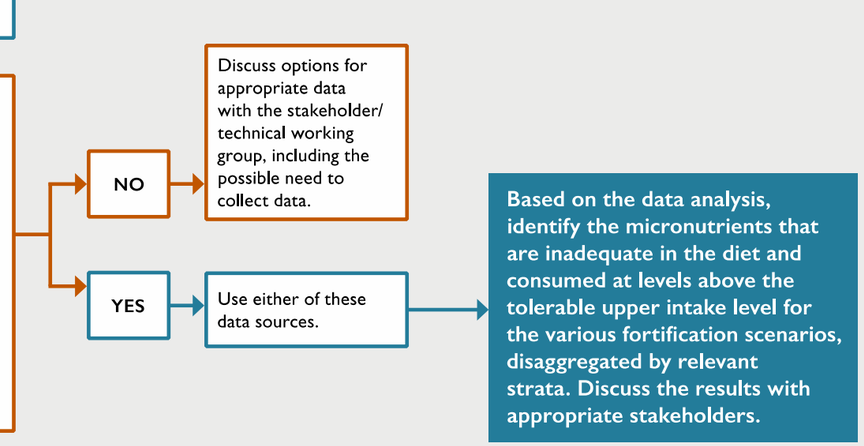
To estimate micronutrient intake:

Use the decision tree for Step 1. Needs Assessment: The data source would be the same as that used for the needs assessment.

For current fortification, ASK:

- Do you have data on the average fortification level (the additional micronutrient content in the fortified food, preferably at the household level, but market level may also be useful) from micronutrient surveys or market assessments, for example the Fortification Assessment Coverage Tool (FACT) that has been used by the Global Alliance for Improved Nutrition (GAIN)?

Note: Both are very good data sources, very suitable for the information need, if food samples are collected and analyzed in a laboratory.[a,e,f]



Optional Step: Modeling Diet Cost and Affordability

INFORMATION NEED

Cost and affordability of an adequate diet without/with LSFF.

QUESTIONS ANSWERED IN THIS STEP

1. What is the cost of an adequate diet without and with LSFF?
2. What percent of the population in different geographic areas and/or socioeconomic strata cannot afford an adequate diet without and with LSFF?

METHOD

Linear programming analysis to identify the lowest-cost nutritionally adequate diet without/with fortified foods, modeling the use of the fortifiable foods identified in the steps above.

DECISION TREE FOR DATA SOURCE

LIST OF FOODS

ASK: Do you have quantitative open 24-hour dietary recall data that are nationally representative?

Note: A very good data source and very suitable for this information need.[a,b]

- **NO** → **ASK**: Do you have semi-quantitative food frequency data that are nationally representative?

  Note: A good data source, suitable for this information need.[a,b]

  - **NO** → **ASK**: Do you have household consumption data from a nationally representative household consumption and expenditure survey (HCES)?

    Note: A moderately good data source, adequate for this information need.[a,b]

    - **NO** → Discuss options for appropriate data with the stakeholder/technical working group, including the possible need to collect data.
    - **YES** → Use these data.

  - **YES** → Use these data.

- **YES** → Use these data.

DECISION TREE FOR DATA SOURCE (continued)

FOOD PRICE DATA[g]

ASK: Do you have data from a:

- Market assessment
- Market price survey
- Household Consumption and Expenditure Survey
- Consumer Price Index

- **NO** → Discuss options for appropriate data with the stakeholder/technical working group, including the possible need to collect data.
- **YES** → Use any of these data sources, selecting the most suitable source based on inputs from the stakeholder/technical working group.

Based on the linear programming analysis, identify the lowest-cost nutritionally adequate diet without fortified foods and with various food fortification scenarios. Estimate the percentage of the population in different geographic areas and/or socioeconomic strata that cannot afford an adequate diet without and with LSFF. Discuss the results with appropriate stakeholders.[h]

Notes for Figure 1

a. Considering strengths and limitations (see Annex 1).
b. Dietary data should be from within the past 10 years. Findings should reflect current food consumption patterns. If older survey data exist, they could be considered if the findings reflect current food consumption patterns, which could possibly be determined through discussions with local stakeholders and triangulating with recent available data, such as smaller surveys or studies. If, for example, both 24-hour dietary recall and HCES data exist, but the HCES data are more recent, discuss and decide with the local stakeholder/technical working group the best data option, considering the dataset that best reflects current consumption patterns.
c. FBS data to assess the micronutrients that are inadequate in the food supply should be used only as an initial source of information for an ad hoc simple assessment if dietary surveys (24-hour dietary recall, SQ-FFQ) or datasets of apparent consumption (HCES) are not available. In the absence of 24-hour dietary recall, SQ-FFQ, or HCES data, data collection should be considered. FBS data that are used should be from within the past 3 to 5 years.
d. Agri-food information system and market data should be from within the past 5 years.
e. Please note that not all national micronutrient surveys may collect data on the micronutrient content of foods fortified at large scale, but for those surveys that do, the data should provide the information necessary for this method. National micronutrient surveys include, e.g., those supported by the U.S. Centers for Disease Control and Prevention International Micronutrient Malnutrition Prevention and Control (CDC/IMMPaCt) and GroundWork. The Global Alliance for Improved Nutrition (GAIN) has conducted household and market assessment of fortified foods.
f. Data on the micronutrient content of food samples should be from within the past 5 years.
g. Food price data should be from within the past 2 years.
h. Please see Annex 8 of the Methods Guide for additional information regarding data and data sources necessary for the Cost of the Diet (CotD) analysis.

Use of the Methodology for Broader Programming to Improve Diets

You can apply the methodology described in this operational overview for needs assessment and design/redesign of broader programming, beyond just LSFF, to improve diets. For example:

- Biofortification. You can use the needs assessment findings to identify micronutrients inadequate in the diet for different sub-population groups you are working with, if that level of detail is available from the data source you use.
    - You can use the food consumption data to estimate the percentage of individuals or households that eat the foods that you are interested in biofortifying with micronutrients that are lacking in the diet.
    - The market data can tell you about the availability of the foods that you are interested in biofortifying in various regions of the country and different types of markets in those regions.
    - You can model the contribution of the biofortified food to micronutrient adequacy, to assess how consumption of the biofortified food or foods may reduce the prevalence of inadequate micronutrient intake and by how much.
    - You can also model whether eating the biofortified food would change the cost of a micronutrient-adequate diet, and by how much, compared to the cost of a diet that did not include the biofortified food.
- Fortified foods for young children, adolescents, or women. The methodology in this operational overview could also be applied for needs assessment and design of programs that provide fortified complementary foods for young children, or fortified foods for adolescent girls or women.
- Micronutrient supplementation. The methodology could also be applied for needs assessment and design of programs that provide micronutrient supplements for young children, adolescent girls, or women, if suitable secondary data exist for the analyses.

In all cases, it will be important to review the specific program needs and if necessary, adapt the methodology accordingly.

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Annex 1 Data Source Descriptions

Annex 1 provides a description of the data sources and their strengths and limitations. Table A1.1 at the end of the annex provides a summary of the data sources, including a brief description, their ranking in terms of suitability, and their strengths and limitations.

Quantitative open 24-hour dietary recall

A quantitative open 24-hour dietary recall is a structured interview intended to capture detailed information about the quantities of all foods and beverages (and possibly, dietary supplements) consumed by a respondent (or a respondent's young child) in the previous 24 hours, most commonly, from midnight to midnight the previous day (National Cancer Institute 2022a; FAO 2018).[2] This method allows for estimation of micronutrient inadequacies and consumption of fortifiable foods at the level of members of the family. The data can be used to estimate consumption of specific foods and intake of specific micronutrients for population groups. The quantitative open 24-hour dietary recall, although laborious and expensive, is the most valid method for dietary data collection, of the methods covered in this operational overview.[3] Best practice is to have a dataset with repeated recalls on nonconsecutive days in at least a subset of the sample, and appropriate statistical methods are needed to estimate usual intake distributions from 24-hour dietary recall data.

When recent[4] nationally representative (and ideally, applied to different population strata) quantitative open 24-hour dietary recall data exist, they should be analyzed/used for LSFF needs assessment and design. Quantitative open 24-hour dietary recall data may be available from smaller studies in the country, which can be analyzed to approximate prevalence of inadequate micronutrient intake and food consumption for the population represented in that survey. The estimates can be used, along with national-level estimates from other data sources that have less specificity than the 24-hour dietary recall, such as semi-quantitative food frequency questionnaires and household consumption and expenditure surveys, as discussed below, to better understand micronutrient intake and food consumption. The results can be discussed with the stakeholder/technical working group formed to support the analyses.

A few examples of potential data sources for 24-hour dietary recall data include

- WHO/FAO Global Individual Food consumption data Tool (GIFT)
- Global Dietary Database (GDD)
- Harvard Dataverse
- National/subnational food consumption surveys.

[2] The term "open" refers to the dietary recall using open-ended questions regarding food consumption, in contrast to closed-ended questions regarding consumption of specific foods or from specific food groups.
[3] See Coates et al. 2012a; Coates et al. 2017; Engle-Stone et al. 2019; Dary and Imhoff-Kunsch 2012; and WHO and FAO 2006.
[4] For this operational overview, we define "recent" as data collected within the past 10 years. Survey data, whether collected within the past 10 years or older survey data, should reflect current food consumption patterns, which could possibly be determined through discussions with local stakeholders and triangulating with recent available data, such as smaller surveys or studies.

Strengths and limitations

The strengths of the use of quantitative, open 24-hour dietary recall data include that these data[5]—

- provide a high degree of accuracy and validity, among the data source options in this operational overview, in assessing micronutrient intake for different population groups, if properly implemented and analyzed
- provide detailed, quantitative estimates of individual food consumption and nutrient intake, capturing total dietary intake from all food sources, as well as dietary supplements if this was included during data collection, and the proportion of the population that consumed a specific food
- can account for food preparation methods and the effect on micronutrient content of foods
- can be used to identify the distribution of usual intake if appropriate data are available and analyzed with appropriate methods (i.e., if a second quantitative open 24-hour dietary recall is collected on a sub-sample of the survey to estimate usual intake; it must account for within-person variation)
- can be used to provide disaggregated data for the purpose of assessing disparities in intake and equity in fortifiable food coverage, if the data were collected with appropriate sampling and sample size, and data collection included measures of vulnerability and fortifiable foods.

The limitations of the use of this data source with the method include the following[6]—

- A high level of expertise is required to clean, prepare, and analyze the data, including technical capacity to estimate "usual intakes," which requires knowledge and understanding of the theoretical basis and the steps in analysis.
- Depending on the original purpose for which the data were collected, this method may or may not provide information on the use of supplements.
- If individuals sampled for the survey are not representative of the population, the data will not represent the distribution of dietary patterns within the population.
- If the data have been collected for only a specific group of individuals, such as non-pregnant women 15-49 years of age, it will not provide information about food consumption and micronutrient intake of other subgroups, such as men, the elderly, young children, or adolescents.
- Accuracy of the micronutrient intake estimates depends in part on good quality food composition tables.
- It may not include adequate detail regarding the source of fortified or fortifiable staple foods (e.g., whether wheat flour or maize flour was home produced or purchased, and if purchased, whether it was processed in formal and centralized industries or small- or medium-sized enterprises, which is useful information for planning LSFF programs).

Semi-quantitative food frequency questionnaire (SQ-FFQ)

The SQ-FFQ is a diet assessment method where respondents report their usual frequency of consumption of foods, from a food list, over a specific time, e.g., 7 days, including portion sizes, either a standardized portion size or a range of portion sizes (National Cancer Institute, 2022b). The SQ-FFQ

[5] See Coates et al. 2012a; Coates et al. 2017; Engle-Stone et al. 2019; Dary and Imhoff-Kunsch 2012; and WHO and FAO 2006.
[6] See Coates et al. 2012a; Engle-Stone et al. 2019; Dary and Imhoff-Kunsch 2012; Mkambula et al. 2020; Huybrechts et al. 2017; Coates et al. 2017; and FAO 2018.

can be used to collect information on the whole diet by asking about consumption of all foods over a specified recall period. To assess the total diet, the number of foods and beverages in the food list usually ranges from 80 to 120. The SQ-FFQ can also be used to collect information about specific foods that have been consumed over a specified period of time. The description here refers to the SQ-FFQ that is used to estimate consumption of the whole diet, rather than a small number of specific foods. This method allows for estimation of micronutrient inadequacies and consumption of fortifiable foods at the level of members of the family. The data can be used to estimate consumption of specific foods and intake of specific micronutrients for population groups. The SQ-FFQ has good validity as a method for collection of dietary data when it is appropriately developed and validated (Coates et al. 2012b). If nationally representative SQ-FFQ data on the full diet are available, including foods relevant for fortification, they can be considered for LSFF needs assessment and design. The SQ-FFQ can be useful in planning the design stage because it can provide information on the frequency of consumption of fortifiable foods, as well as how many people consumed it, when the SQ-FFQ includes details regarding fortifiable food consumption.

Strengths and limitations

The strengths of the use of this data source with the method include that it[7]—

- can provide a good level of accuracy and validity, among the data source options in this operational overview, in assessing micronutrient intake for different population groups, if properly implemented and analyzed
- can provide estimates of quantities of foods consumed, the proportion of the population that consumed the food, and frequency of consumption
- can provide estimates of micronutrient intake
- can be used to provide disaggregated data for the purpose of assessing disparities in intake and equity in fortifiable food coverage, if the data were collected with appropriate sampling and sample size, and data collection included measures of vulnerability and fortifiable foods.

The limitations of the use of this data source with the method include[8]—

- Data are not as accurate and precise as the 24-hour dietary recall for estimating consumption and nutrient adequacy.
- It requires a high level of expertise to clean, prepare, and analyze the data.
- Accuracy of the micronutrient intake estimates depends in part on good quality food composition tables.
- Details on staple food sources may not be included; food source information can be useful to identify staples with potential for LSFF.
- Depending on the original purpose for which the data were collected, this method may or may not provide information on the use of supplements.
- It lacks detailed information about food preparation, specific food and beverages consumed, and contextual information about intake (e.g., which foods and beverages were consumed at the same meal, which can assist in better understanding bioavailability for specific micronutrients).
- The food list and portion sizes cannot be easily transferred to a different population and therefore it must be tested and validated for use in a new population.

[7] See Coates et al. 2012b; Hotz et al. 2017; and Gibson and Ferguson 2008.
[8] See Coates et al. 2012b; Hotz et al. 2017; Gibson and Ferguson 2008; and National Cancer Institute 2022b.

- If the data have been collected for only a specific group of individuals, the data will not provide information about food consumption and micronutrient intake of other subgroups.
- If individuals sampled for the survey are not representative of the population, the data will not represent the distribution of dietary patterns within the population.

Household consumption and expenditure survey (HCES)

The household food consumption module of the HCES is used to collect data on the amount of food consumed or acquired by the household in a specific reference period (Coates et al. 2012a; Imhoff-Kunsch et al. 2012). HCESs are nationally representative surveys, often also representative at the subnational level, that collect data on household socioeconomic conditions. The HCES food consumption module is used to measure "apparent consumption," that is, approximate consumption of foods based on assumptions that each member of the family eats the same foods in proportion to her/his energy expenditure. Nevertheless, researchers can use the data to estimate "apparent intake" of specific foods and, when matched with food composition data, "apparent intake of specific micronutrients" at the household level. This methodology allows predictions at the household level using as the reference the adult female as the individual with the average intake in the family, and with high nutritional requirements, that is, the adult female equivalent, or AFE. The adult male equivalent, AME, could also be used.

The household approximated food consumption or acquisition data from existing HCESs provide moderate validity.[9] The method offers a good balance between validity, usefulness, and cost (Coates et al. 2012b). It is adequate to provide useful information about food consumption and nutrient intake patterns and estimate nutrient density of the diet among population strata to inform LSFF (Dary and Jariseta 2012; Jariseta et al. 2012). Where HCES data exist, you can analyze the data for LSFF needs assessment and design.

Note that the HCES typically includes not only a module on household food consumption or acquisition, but also modules to assess many other household characteristics.[10] For LSFF needs assessment and design you will not use the entire HCES dataset, but just the data on household consumption or acquisition, and other data as needed to conduct the analysis, such as demographic data or data to identify household wealth category. In the household food consumption or acquisition module, there may be some items listed that you will not need to consider, such as "bottled water," but generally all the foods listed in the food consumption or acquisition module are used.

For estimating food consumption, carefully review the food list to determine if it is adequate to provide information about fortifiable foods (Adams et al. 2022). Food lists may include as few as 16 foods or as many as 550 or more (Fiedler et al. 2012). The adequacy of the food list may be determined by looking at the level of disaggregation. For example, check if edible oil is listed separately from other fats and by type of oil, and whether the list distinguishes between fortifiable and non-fortifiable food vehicles and food products made from them, like bread and biscuits from wheat-flour (Adams et al. 2022). HCES also generally do not include questions about whether foods not produced by the household are acquired from large-scale producers or small- or medium-scale producers. This information is useful because the contribution of LSFF to micronutrient adequacy depends on the reach of large-scale producers' products to different population groups. This is because, in general, only foods processed by large-scale producers can be fortified efficiently. The cost of fortification can be prohibitive for small- and medium-

[9] See Coates et al. 2012b; Dary and Jariseta 2012; Imhoff-Kunsch et al. 2012; Jariseta et al. 2012; and Tang et al. 2022.
[10] HCES also include data collection on time use and labor; land use and land rights; non-food expenditures; possession of durable goods; farm implements, machinery, and structures; household businesses; income; gifts given out; social safety nets; credit; shocks and coping strategies; and deaths in the household, among others.

scale producers and government regulation of a large number of small- and medium-scale producers can be financially and logistically infeasible.

Strengths and limitations

The strengths of the use of this data source for LSFF needs assessment and design include the following[11]—

- It provides a good balance between validity, usefulness, and cost.
- Data are collected routinely every 3–5 years in many LMICs.
- It can be used to estimate apparent household (family) food consumption and nutrient intake.
- The longer recall period provides estimates of intake over time (e.g., 7 or 14 days).
- The sample size is usually large enough to provide information by population groups.
- It usually can be stratified by area (e.g., urban, rural, or other relevant geographic area), socioeconomic status, and/or education level.
- It can be used to assess equity of coverage, if the data were collected with appropriate sampling and sample size, and data collection included measures of vulnerability.
- Data are often collected over a one-year period, so can account for seasonality in food consumption and micronutrient intake to some degree.[12]

Limitations of the use of this data source include the following[13]—

- It requires capacity and time to prepare and analyze the data.
- HCESs that collect data on food acquisition do not generally distinguish between food acquired for consumption and food acquired for storage, gifts, animals, charity, and resale.
- It does not usually adequately capture foods consumed away from home or food waste.
- Accuracy of the micronutrient intake estimates depends in part on good quality food composition tables.
- Use assumes that food was distributed within the household in proportion to energy needs, which may not necessarily be true.[14]
- Is not appropriate to estimate individual consumption, especially for young children.
- The length of the food lists can vary from country to country, which can affect the utility of the data set for estimating food consumption and micronutrient intake.
- The food lists may not include adequate detail regarding the source of fortified or fortifiable staple foods (e.g., whether purchased wheat flour or maize flour was centrally processed or processed by a small or medium-sized enterprise, which is useful information for planning LSFF programs).
- The food item list may not include all fortifiable foods of interest.

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[11] See Coates et al. 2012a; Micha et al. 2018; Imhoff-Kunsch et al. 2012; and Tang et al. 2022.
[12] HCES data may be collected over the period of a year, in which case the data can capture seasons, but does not necessarily capture all seasons for all target groups or geographic areas and does not repeat measures of the same household in different seasons.
[13] See Coates et al. 2012a; Micha et al. 2018; Imhoff-Kunsch et al 2012; Fiedler et al. 2012; Berti 2012; and Tang et al. 2022.
[14] A 2012 study found that among 28 studies covering 18 countries in Africa, Asia, and Latin America, ranging from 20 to 3,000 households per study, intrahousehold distribution of food in most countries was relatively equitable, within a 20 percent margin. In the absence of evidence to the contrary, the study's author felt it was reasonable to assume equitable intrahousehold distribution of food when designing food fortification programs, but for program evaluation, individual assessment of intake is still needed (Berti 2012). Harris-Fry et al. (2022) found HCES overestimate household-level quantities and underestimate women's share of household foods, but context- and food-specific quantity and allocation corrections that they derived from a small sample of 24-hour dietary recalls almost eliminated mean bias.

- Quantities of food consumed or acquired are often reported in a wide range of non-standard units that require conversion to a standard unit (e.g., grams, kg) before use. If non-standard unit conversion factors are not available, this can be an important complexity in the use of HCES data.
- It does not currently provide information on the use of micronutrient supplements.
- Household-level data do not provide direct information on target groups defined by age or physiological status, such as children or pregnant women.

Food Balance Sheets (FBS) for Assessment of Micronutrients in the Food Supply

FBSs are a source of secondary data used to provide general information on the amount of food supply available for consumption in a specified reference period in a country and determine national-level food consumption patterns of basic commodities (Coates et al. 2012a). The FBS tracks primary commodities such as wheat, rice, fruit, and vegetables and a limited number of processed commodities like vegetable oils and butter. The FAO develops the FBS, although some countries may calculate the FBS themselves (Coates et al. 2012a).

FBS data can be used to have a general estimate of the availability of specific foods and nutrients contained in them at the national level, which can be expressed as per day per capita. The data can indicate which micronutrients may be inadequate in the national food supply. However, FBS data have low validity in estimating inadequate micronutrient intake (Coates et al. 2012b). FBS report food that is "apparently available" for consumption at the national level and do not directly measure consumption of individual foods per population group or strata, and therefore the data do not support analysis of equity. FBS data do not provide information about which commodities are centrally processed at large scale. FBS data can be used to understand whether any micronutrients are not present in the food supply in sufficient quantities to meet the needs of the population, but adequacy at this level may not reflect the real situation of the different population strata (Coates et al. 2012a).

In the absence of individual food consumption data or household food consumption or acquisition data, FBS data can be used to have a general idea about the micronutrient inadequacies that affect the whole country as well as possible foods to be further analyzed for their possibility of being fortifiable. The FBS data represent the total average food supply at the national level and do not provide information on individual or household consumption. As a result, FBS data cannot be used to estimate a food's reach and fortifiable feasibility (Gibson and Cavalli-Sforza 2012).

Strengths and limitations

The strengths of using FBS as a data source for LSFF needs assessment include the following[15]—

- Data are available for nearly every country worldwide.
- Data are updated annually since 1961.
- Data are nationally representative and can be used to show trends over time.
- Data represent official government figures.
- Data are supplied cost-free and publicly available.

[15] See Del Gobbo et al. 2015; Coates et al. 2012a; and Kuyper et al. 2017.

- Data are developed using comparable methods across countries.
- Data, when used with food composition tables, can identify possible micronutrient inadequacies at the national level.

Limitations of using FBS as a data source for LSFF needs assessment include the following[16]—

- Data are based on input variables for each food item that are prone to error. For example, input variables come from total national production, exports, imports, nonhuman use like livestock feed, waste from farms, distribution, and processing.
  - National production data may be underestimated in countries with high production taxes, due to under reporting.
  - Import and export data may be underestimated in countries where large amounts of trade are unrecorded, or where the focus may be on imports, for tax purposes, more than exports.
  - FBS data do not account for all sources of waste, changes in stored foods (often only changes in government stocks), and home production.
- Certain food items may not be included in the FBS, like flour or processed foods, or they may not be listed as separate food items, for example, "wheat and products" could include wheat flour and the wheat flour equivalents from processed foods.
- Food items may be grouped, e.g., poultry meat may be reported in the aggregate to represent chicken and turkey. Aggregate food groups may be difficult to match to food composition table data, and in some cases, difficult to use to estimate the supply of fortifiable foods, for example, if you want to look at maize flour, only a percent of "maize and products" will be maize flour, but there may be no way to determine the percentage.
- Data tend to overestimate national dietary consumption. For example, Del Gobbo et al. (2015) found that estimated FAO per capita food supply estimates exceeded Global Dietary Database estimates by between 75 to 270 percent for major food groups.
- Data cannot be used to estimate variation in the distribution of food and micronutrient supply at a subnational level, by demographic characteristics, or by season.
- Data are not always consistent in terms of measurement unit or time period. FAO makes data adjustments to overcome these inconsistencies, but if unable to do so, FAO will not produce a FBS until more data are provided.
- There is a lag in data reporting.

Agri-food information system

Agri-food information systems refer to information systems that provide data (either primary or aggregated data) related to the agri-food system. The agri-food system refers to food production, storage, aggregation, post-harvest handling, transportation, processing, distribution, marketing, disposal and consumption. Agri-food information systems often provide data describing the food supply and its utilization, and sometimes also provide disaggregation into domestic food supply and utilization sub-categories as well as food types. For example:

- Data on the domestic food supply could provide information on food commodities in terms of production, imports, and stock changes.

[16] See Beal et al. 2017; Coates et al 2012a; Coates et al. 2012b; and Del Gobbo et al. 2015.

- Data on domestic food utilization could provide disaggregation into feed, seed, processing, waste, export, and other categories.

A variety of data sources within the agri-food system, both publicly available and from the private sector and industry, can be used to provide the market data to inform LSFF, including:

- Food balance sheet data (FAO or country-specific)[17]
- Digital Logistics Capacity Assessment (DLCA) website (Dlcalogcluster.org)
- Industry searches/media articles
- Online data sources
    - Supplier, producer and retailer:
        - websites
        - Facebook pages
        - LinkedIn posts
    - Online store data
- Purchased market research data

These data sources can provide information on food types, production volumes, origin in terms of imports versus local production, brands, and producers and suppliers.

The agri-food information system is a good source of data to obtain a general overview of the availability of fortifiable foods in markets. We recommend starting with a search for information in the broad agri-food system. If data sources are scarce, consultations can be held with industry experts, government or industry associations, and/or individual producers, wholesalers, or supermarkets.

Strengths and limitations

The strengths of agri-food information systems are that—

- data exist in some form in many LMICs
- a broad range of data sources can be used to construct the response to the question "What is the availability of fortifiable foods in markets?"

The limitations of agri-food information systems are that—

- time and effort must be placed in searching many data sources to obtain the various pieces of information necessary to inform LSFF programming
- the type of information, level of detail, and level of feasible data disaggregation will vary from country to country.

[17] To assess markets, in contrast to the potential use of FBS to assess micronutrients in the food supply noted above.

- Data quality depends on the raw data sources used in aggregated form, and should be critically considered during data interpretation.

Market assessment

Market assessments are surveys conducted to respond to a specific set of objectives or questions regarding, for example, market product availability and/or labeling. Market assessments may also include collection of food samples for laboratory analysis of micronutrient content of fortified foods. The assessments look at a key node of the food vehicle supply chain from the production source to the market. They can be used to give information on both upstream and downstream elements of the supply chain:

- Upstream refers to where the product came from i.e., the supplier and producers, which provides information on who has the responsibility for the quality of the product.
- Downstream refers to who has access to the food vehicle, e.g., where is it available and in which market types, for disaggregation to population groups.

Market assessments that have been conducted to collect information on the availability of potential or selected vehicles for fortification are very good sources of information. Representative data by region and market type is useful. Check to see if the market assessment component of the Fortification Assessment Coverage Toolkit (FACT) has been conducted by searching the online dataset. We recommend complementing agri-food information system data with the information from a market assessment, if available.

Strengths and limitations

The strengths of the market assessment are that, if appropriately designed, it can capture the following:

- Available products in the market and the following characteristics:
    - food vehicle type (e.g., palm oil, sunflower oil)
    - origin (locally produced, imported)
    - supplier type (producer, importer/exporter, distributer, packer/re-packer)
    - brands
    - product labeling (e.g., fortification labeling)
- Availability of products in the market across:
    - retail outlet type (e.g., retail shop, supermarket, wholesaler/distributor)
    - market hub/geographic administrative area.
- Information on compliance of fortification of food vehicle products when food samples are collected according to recommended procedures, and analyzed for micronutrient content that is compared to the standards. This would fall under market monitoring (i.e., commercial and retail).
- Estimates of the market proportion of the fortifiable and fortified food products, to rank food types or products according to estimated volume share.

The limitations of the market assessment include the following:

- It may not capture a significant proportion of the market if it only looks at retail-level data and the latter only make up a small portion of the market. This can be overcome by expanding the market assessment design to include other market outlet types such as:
    - bakeries where fortifiable foods are used at an important scale
    - distribution centers / food distribution sites.
- An assessment is not a census, and therefore may not identify every brand available across the country for a given food vehicle.

Consult with market experts in a country to identify the best sources to provide market-level data on fortifiable and fortified foods. If the market data available through the agri-food information system or market assessment are insufficient, consider conducting additional market assessment fieldwork to fill data gaps. The market assessment component of FACT provides a standardized approach to assess availability of fortifiable foods at market level (Friesen et al. 2019).

Table A1.1 Summary Table of Data Sources

Data source	Brief description	Ranking (suitability)[b]	Key strengths	Key limitations
Quantitative open 24-hour dietary recall[a]	Structured interview to collect individual-level, quantitative dietary information on all foods and beverages (and possibly, dietary supplements) consumed by a respondent (or a respondent's young child) in the previous 24 hours		Provides high degree of accuracy and validity	Requires a very high level of expertise to clean, prepare, and analyze the data
SQ-FFQ[a]	Structured interview to collect individual-level information on usual frequency of consumption of foods, from a pre-defined food list, over a specific time, e.g., 7 days, including portion sizes, either a standardized portion size or a range of portion sizes		Provides good level of accuracy and validity Can provide information on frequency of consumption of specific foods	Not as accurate as 24-hour dietary recall for estimating consumption and nutrient adequacy Requires a very high level of expertise to clean, prepare, and analyze the data
HCES[a]	Household food consumption module of the HCES is used to collect data on the amount of food consumed or acquired by the household in a specific reference period (e.g., 7- or 14-days) based on a pre-defined, country-specific food list		Provides a good balance between validity, usefulness, and cost Data are collected routinely every 3–5 years in many LMICs Sample size is usually large enough to provide information by population groups	Requires a relatively high level of technical expertise to clean, prepare and analyze the data Assumes food is distributed within the household in proportion to energy needs, which may not be true Not appropriate to estimate individual consumption, especially for young children Food list may be limited

FBS (to assess diets)	FAO or country-level database that includes the amount of food supply available for consumption in a specified reference period in a country.		Freely available in nearly every country Updated annually Nationally representative Official government figures	Based on input variables prone to error May not include certain foods or foods may be included in food groups Tend to overestimate consumption Cannot disaggregate at subnational level
Agri-food information system (to assess markets)	Information systems that provide data related to the agri-food system, which refers to food production, storage, aggregation, post-harvest handling, transportation, processing, distribution, marketing, disposal, and consumption.		Data exist in some form in many LMICs Broad range of data sources can be used to meet data needs	Time and effort must be placed in searching many data sources Type of information, level of detail, and level of feasible data disaggregation varies by country
Market assessment	Surveys conducted to respond to a specific set of objectives or questions regarding, e.g., market products and/or their quantities.		When appropriately designed, can capture data on availability of fortifiable foods by region and/or market type	If focused only on retail level, may not adequately represent the market Not a census, so may not identify all products/ brands

Source: USAID Advancing Nutrition 2022. Acronym Key: HCES: household consumption and expenditure survey; FBS: food balance sheet. [a]Preferably data are nationally representative and able to be disaggregated by geography and/or socioeconomic status. Note that food balance sheet data are only available at the national level and generally cannot be disaggregated.

[b]**Ranking (Suitability) Color Code Key**:

	Very good data source, very suitable for the information need, given strengths and limitations
	Good data source, suitable for the information need, given strengths and limitations
	Moderately good data source, adequate for the information need, given strengths and limitations
	May be used, but has significant limitations

Annex 2 Table of Costs, Time, and Technical Expertise

Table A2.1 shows the estimated cost, time, and technical expertise needed for the analyses described in this operational overview. The costs and time consider:

- level of effort for technical and managerial personnel
- development of the protocol and desk review; data acquisition, cleaning, preparation and analysis; virtual meetings with a group of local stakeholders; and report writing, technical review, and editing/formatting.

The costs and/or time do not consider:

- overhead costs, Negotiated Indirect Cost Rate Agreement (NICRA), and other organizational fees.
- travel costs—international or local
- Data collection—the methodology presented in this operational overview involves the secondary analysis of existing data and the estimates below do not consider data collection.

Table A2.1. Table of Cost, Time, and Technical Expertise by Type of Data / Analysis[a]

Type of data / analysis	Cost	Time	Technical expertise
24-hour dietary recall			
SQ-FFQ			
HCES			
FBS (to assess diets)[b]			
Agri-food information system (to assess markets)			
Market assessment—food availability			
Cost of the Diet[c]			

Source: Adapted from USAID Advancing Nutrition 2022, and considering USAID Advancing Nutrition's 2023 experience piloting the methodology in Nigeria and Zambia. [b]FBS: For estimating micronutrient inadequacy and contribution of LSFF to micronutrient adequacy, however, note that FBS data can only provide a rough estimate and are not suitable for these purposes. [c]Tool for Optional Step.

Key

Symbol	Meaning
	$40,000 to $59,999 USD
	$60,000 to $79,000 USD
	$80,000 USD to $100,000 USD
	$100,000 USD to $120,000 USD
	1 month
	Required technical expertise—relatively low, e.g., does not require staff with technical expertise in nutrition, public health, agriculture, statistics, etc.
	Required technical expertise—moderate, e.g., requires technical staff with general background in nutrition, public health, agriculture, markets, or related area and some knowledge and experience in statistics, data analysis, and use of the data source.
	Required technical expertise—relatively high, e.g., requires senior and mid-level staff with technical expertise and training, capacity and experience in statistics for analysis, interpretation, and report writing, and use of the data source(s) and tools. At least one team member must have an in-depth knowledge of the context and local foods.
	Required technical expertise—very high, e.g., requires senior level staff with a very high level of technical expertise and specialized training, capacity and experience in statistics for analysis, interpretation, report writing and/or dissemination, understanding of study designs, and extensive experience with the data source(s) and tools. At least one team member must have an in-depth knowledge of the context and local foods.

Annex 3 Example of Scope of Work for a Request for Proposal or Consultant

Micronutrient Adequacy, Fortifiable Food Consumption, and Modeling the Contribution of LSFF to Micronutrient Adequacy

Description of Services:

I. Background

[ADD APPROPRIATE TEXT]

II. Objectives

[ADD APPROPRIATE TEXT]

III. Activities

1. **LSFF needs assessment**: Identify and gather the most suitable data for the LSFF needs assessment. Clean, prepare, and analyze the data. Estimate micronutrient adequacy of the current diet for selected micronutrients (e.g., vitamin A, thiamine, riboflavin, niacin, vitamin B6, folate, vitamin B12, iron, and zinc). Determine micronutrient adequacy using the adult female equivalent (AFE) approach and the nutrient density approach. Hold consultations with stakeholders to discuss key assumptions and modeling parameters.
2. **LSFF design**: Estimate apparent consumption of fortifiable foods. The fortifiable foods will be determined based on the available data (food/nutrient surveys and market assessment) and input from key stakeholders.
3. **LSFF modeling**: Model the contribution of food fortification to micronutrient adequacy in [COUNTRY] using the AFE and micronutrient density approaches. The fortification scenarios will be determined in coordination with key stakeholders, including the food industry, to ensure that the proposals are economically and technologically viable.
4. **LSFF report**: Write a report of the results of the analysis of the data.
5. **LSFF results presentation**: Prepare a PowerPoint presentation of the results and present the results to key stakeholders.

IV. Deliverables and Due Dates

Del. No.	***Deliverable Name***	***Deliverable Description***	***Due Date***
1	Draft findings: Micronutrient inadequacies (prevalence and magnitude) and apparent consumption of fortifiable foods in [COUNTRY]	Tables/figures/maps of results of micronutrient inadequacy using the AFE and nutrient density approaches and apparent consumption of fortifiable foods in [COUNTRY].	
2	Draft findings: Modeling the contribution of fortification to reduce micronutrient inadequacy in [COUNTRY]	Written draft findings and tables/figures/maps of modeling the contribution of fortification to micronutrient adequacy using the AFE and nutrient density approaches in [COUNTRY].	

3	Final LSFF report	Written report of final LSFF needs assessment and design results for [COUNTRY].	
4	Final LSFF PowerPoint presentation	Final LSFF needs assessment and design PowerPoint presentation for [COUNTRY].	

Fortifiable Food Availability in Markets

Description of Services:

I. Background

[ADD APPROPRIATE TEXT]

II. Objectives

[ADD APPROPRIATE TEXT]

III. Activities

1. **LSFF design**: Identify and gather the most suitable data for the LSFF assessment of fortifiable food availability. Clean, prepare, and analyze the data to estimate market availability of fortifiable and fortified foods in [COUNTRY] by region and market type (as feasible). The fortifiable foods (produced by large, formal, and centralized industries) will be determined based on the available data and input from key stakeholders.
2. **LSFF report**: Write a report of the results of the analysis of the market availability data for fortifiable foods.
3. **LSFF results presentation**: Prepare a PowerPoint presentation of the results and present the results to key stakeholders.

IV. Deliverables and Due Dates

Del No.	***Deliverable Name***	***Deliverable Description***	***Due Date***
1	Draft findings: Estimates of market reach of fortifiable and fortified foods.	Tables/figures of results of estimates of market reach of fortifiable and fortified foods in various markets in [COUNTRY], by location and market type (as feasible).	
2	Final LSFF Market Assessment Report	Written report of final LSFF Market Assessment report for LSFF design/redesign in [COUNTRY].	
3	Final LSFF Market Assessment PowerPoint presentation	PowerPoint of final LSFF Market Assessment report for LSFF design/redesign in [COUNTRY].	

Cost of the Diet

Description of Services:

I. Background

[ADD APPROPRIATE TEXT]

II. Objectives

[ADD APPROPRIATE TEXT]

III. Activities

1. **Identify the parameters for the analysis of the cost and affordability of a nutrient-adequate diet, including:**
    a. Hypothetical family size and composition for modeling the cost and affordability of a nutrient-adequate diet, including the specific nutrient requirements selected for each family member, and consulting with local stakeholders to ensure the hypothetical family size and composition and nutrient requirements are acceptable.
    b. Geographic areas for the analysis of the cost and affordability of the nutrient-adequate diet, including at subnational levels, if feasible, to be discussed and agreed upon with the study team and local stakeholders.
    c. Seasons for the analysis of the cost and affordability of a nutrient-adequate diet, including the lean season and non-lean season and specific months for which data will be modeled, to be discussed and agreed upon with the study team and local stakeholders.
    d. A list of foods consumed. This includes indicating any foods in the list that are not usually consumed by specific household members, such as breastfed children 6-23 month of age or pregnant women, through review of secondary data and discussions with stakeholders.
    e. Food consumption patterns (known in the Cost of the Diet software as "constraints"), for example, the maximum acceptable daily portions of individual foods and minimum and maximum servings per week of individual food items.
    f. Price per 100 grams for each food in the food list, including identification of food prices from recent, existing data sources, such as market surveys and/or consumer price index information from official government sources. This will also include price estimates for food vehicles for LSFF that are not currently fortified but that satisfy the conditions of being fortifiable (foods and micronutrients to be determined with the study team and local stakeholders) and estimates of the price of foods currently fortified at large scale in their unfortified form.
    g. Food composition tables to be used in the analysis.
2. **Model the cost of a staple-adjusted diet adequate in energy, protein, and micronutrients.** The consultant/team will use the parameters noted above in the Cost of the Diet (CotD) software (or alternative software) to determine the lowest cost staple-adjusted diet that meets needs for energy, protein, and 9 micronutrients, including vitamin A, vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin), vitamin B6 (pyridoxine), vitamin B9 (folate), vitamin B12 (cobalamin), iron, and zinc, as feasible given data available in food

composition tables.[18] The consultant/team will model the diet without fortified foods and with fortified foods, including various combinations of fortified foods (approximately "[#]" to "[#]" scenarios). The consultant will work closely with the local stakeholders to identify the fortification scenarios that s/he/they will model.

3. **Identify household income or expenditure**. The consultant will determine the average household income or expenditure for food and non-food items, based on the final agreed upon family size and composition, consulting with the local stakeholders to determine the most up-to-date source of information on household income and/or expenditure. The data should be disaggregated as appropriate.
4. **Determine the percentage of the population that cannot afford a nutrient-adequate diet**. The consultant/team will use the results of the cost of a nutrient-adequate diet and the information on either household income or household expenditure to determine the percent of the population in various strata who would not be able to afford the nutrient-adequate diet without and with fortified foods. The strata will be agreed upon with local stakeholders and based on available data.
5. **Write a report of the results.** The consultant/team will write a report of the results from the analysis of the cost and affordability of the nutrient-adequate diet without and with LSFF.
6. **Prepare and present PowerPoint of results.** The consultant/team will prepare a PowerPoint presentation of the results and present the results to key stakeholders.

IV. Deliverables and Due Dates

Del No.	Deliverable Name	Deliverable Description	Due Date
1	Draft parameters for analysis of cost and affordability of the nutrient-adequate diet	Document that describes the draft parameters for the analysis of the cost and affordability of the nutrient-adequate diet without and with LSFF, including, as noted above, family size and composition, geographic areas, seasons, list of foods consumed, food consumption constraints, food prices, and food composition table data to be used, as well as other parameters that may be deemed necessary.	
2	Draft findings from modeling the cost and affordability of the nutrient-adequate diet without and with LSFF	Document that includes the draft findings of the lowest cost staple-adjusted diet that meets energy, protein, and micronutrient needs without fortified foods and with fortified foods, including various fortification scenarios as agreed upon with local stakeholders, and percent of the population in various strata who cannot afford an adequate diet.	

[18] Note that the CotD software assesses fat intake as a percent of calorie intake to ensure that energy intakes are not exceeded from the foods that the software selects to create the modeled diets. However, fat intake is not assessed separately in terms of adequacy.

3	Final CotD Report	Written report of final CotD analysis results without/with LSFF for [COUNTRY].	
4	Final CotD PowerPoint presentation	PowerPoint of final CotD analysis results without/with LSFF for [COUNTRY].	

Annex 4 Description of How this Operational Overview links to the USAID LSFF Programming Guide

The USAID LSFF Programming Guide includes a set of 10 guiding principles (USAID 2022). The guiding principles provide a foundation for the Agency's LSFF investments and programming. This operational overview follows three of the USAID LSFF guiding principles (#4 to #6) below (see the USAID LSFF Programming Guide for the complete list).

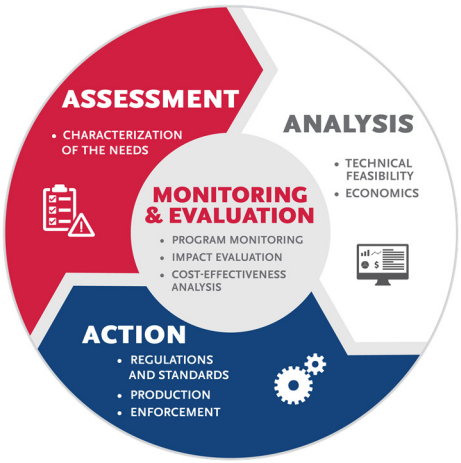
- **Guiding principle 4**: All LSFF programming should be based on local context and data, particularly regarding nutritional need and usual intake of fortifiable vehicles, population coverage, and estimation of the potential contribution of food fortification. Such assessments should be based on the theoretical (and actual, if information exists) average micronutrient content of the fortified foods at household level and their estimated intake by the targeted populations (disaggregated by geography, urban/rural settings, socioeconomic wealth quintiles, and, when possible, age strata, sex, and season).
- **Guiding principle 5**: While fortification programs, as well as other micronutrient interventions, need to be adjusted to account for evolving dietary patterns and consider coverage of LSFF and other complementary interventions to improve micronutrient intake within countries, regional harmonization and mutual recognition ("equivalence") of standards and regulatory control procedures among neighboring countries are commonly promoted to be compatible with and not represent a de facto barrier to intercountry food trade.
- **Guiding principle 6**: There is a need for continual testing, adapting, and scaling-up of evidence-based interventions and innovation to address unmet programmatic needs and maximize coverage, as well as to improve the cost-effectiveness and cost-benefit of LSFF programming.

The USAID LSFF Programming Guide has aligned tasks with the **UNICEF Triple-A Cycle** of nutrition programming (UNICEF 1998):

- continuously **Assess** problems, their causes, and probable solutions
- **Analyze** viability and local viability of the proposed solutions
- take **Action** under a systematic approach.

The USAID LSFF Programming Guide has also aligned tasks with the **Food Systems Dashboard 3-D Describe, Diagnose and Decide** Decision-Making Tool from Johns Hopkins University, the Global Alliance for Improved Nutrition (GAIN), and the Food and Agriculture Organization of the United Nations (FAO).

Figure A4.1 UNICEF Triple-A



Source: UNICEF 1998

Table A4.1 shows the tasks in the USAID LSFF Programming Guide aligned with the UNICEF Triple A Cycle of Nutrition Programming and the Food Systems Dashboard Decision-Making Tool. The methodology in this operational overview supports the bolded tasks.

Table A4.1 Stage of UNICEF Triple-A Cycle and Food Systems Dashboard and Tasks Under Each Stage (Bolded Tasks Are Supported by the Methodology in This Overview)

Assess/Describe

Task 1: Identify country professionals, technical working groups, and institutions with knowledge, credibility, and experience in public health nutrition who are recognized as or who have the potential to become leaders or influencers for an LSFF initiative.

Task 2: Support a collaborative review among stakeholders of past LSFF experiences in the country and region to understand positive and negative experiences and potential perceptions regarding LSFF.

Task 3: With relevant professionals and institutions, identify and analyze the available reports and data around food consumption and micronutrient inadequacy or deficiency and trends. Such data should be disaggregated by different strata as allowable, such as geographic areas, urban and rural settings, wealth strata, and, if possible, age strata, sex, and by season. Find information to identify potential vehicles. Data sources include:

- micronutrient biomarker surveys
- **food/nutrient intake surveys**
- **HCESs and/or other national household surveys**
- **market data**
- **FAO FBS (for initial screening if the above sources are not available).**

Also assess what other interventions are currently in place, their coverage and performance, and contribution to dietary intakes.

Task 4: Determine the availability and reach of potential fortifiable staple and condiment foods in the country based on an estimation of their household consumption profile (see 3 above), market availability, and analysis of current and potential processing capacity/market share by large-scale food industry companies. Data sources include:

- **food consumption surveys**
- **fortification assessment studies (e.g., Fortification Assessment Coverage Toolkit (FACT) surveys**
- **HCESs**
- **food industry records and trend analyses**
- **direct market research**
- **Global Fortification Data Exchange**
- **Food Systems Dashboard.**

Task 5. Review regional and national LSFF policies, standards, and regulations, as well as regulatory control authorities and procedures related to food fortification and as it relates to compliance with food quality and safety standards broadly, including associated government costing and budgeting.

Task 6. Review records of compliance with food fortification standards and regulations at production sites, as well as **confirming reach of the fortified foods at retail stores/markets,** focusing on the mean content of the added micronutrients.

Task 7. Assess Mission capacity to support LSFF programming and potential for complementarity, collaboration, and synergies with existing activities.

Analyze/Diagnose

Task 1: Analyze initial assessments of household and market dietary data, food industry, and the policy enabling environment for LSFF, **including specific supply-side and demand-side constraints to advancing LSFF within the country.**

Task 2: Model contributions of fortified foods relative to their intake to reducing dietary micronutrient inadequacies under three scenarios: (1) current situation of coverage and compliance; (2) with good coverage and compliance[19] of micronutrient supply at the household level estimated under current fortification standards or regulations; and (3) with adjusting the current standards and/or including fortification of other fortifiable vehicles, based on proposals that are technically and economically feasible.

Task 3: Present data, analyses, and recommendations commissioned by relevant national agencies and other entities mandated to advance food fortification, as they exist, to key prospective representatives of government, food industry, civil society organizations, and development partners who will be engaged in LSFF.

Task 4: Support the creation, integration, and operations of specific working groups to analyze the technological, business, economic, and political-social implications of possible LSFF solutions to address identified needs.

Task 5: Promote and engage in multi-sectoral and multidisciplinary discussions to identify LSFF challenges and constraints to be addressed collaboratively and in coordination.

Task 6: Support follow-up discussions aimed to establish realistic LSFF workplans, responsibilities, and budgets.

Action/Decide

Task 1: Review the LSFF Results Framework and identify Sub-Intermediate Results (IRs) and associated activities under each IR that will be most strategic for Mission investment in LSFF, applying the suggested LSFF Results Framework Strategic Criteria for Activity Selection, informed by the above assessments and analyses of national context, and by considerations of how LSFF investments and activities can contribute to the Mission's Country Development Cooperation Strategy, Global Food Security Strategy Plan, and its multi-sectoral nutrition strategy, if it has one.

Task 2: Given that USAID will not have the resources necessary to bring the entire LSFF Results Framework to completion, USAID should attempt to promote an LSFF funding coalition and joint investment plan among stakeholders to garner commitments as to who is bringing what to the table, what their commitment is, and where or how they will be accountable.

Task 3: Identify existing USAID bilateral or central mechanisms or the need for additional procurement(s) that can have the capacity and comparative advantage to implement IR/Sub-IR activities based on LSFF Result Framework Strategic Criteria for Activity Selection.

Task 4: Fund activities and develop specific scopes of work and work plans, including Performance Monitoring Plans and specific indicators/targets for tracking and evaluating implementation of LSFF activities.

Task 5: Meet with and share planned support and progress with the national LSFF coordinating body and relevant stakeholders.

[19] Note that there are no strict definitions for "good compliance," but when around 80 percent or more of fortified foods are confirmed as fortified and with an average content near to the target content mentioned in the standard, this can be considered "good". The values of micronutrient losses from factories to homes vary from micronutrient to micronutrient, as minerals are very stable but vitamins are not, and for the latter the rate of decay also varies from vitamin to vitamin (Omar Dary, personal communication, June 23, 2023).

Task 6: Promote exchange of LSFF implementation experience among countries with similar conditions, especially within regions.

Annex 5 Example Terms of Reference for a Stakeholder/Technical Working Group for Feedback and Inputs on the Analysis Process

Background

[ADD APPROPRIATE TEXT]

Purpose of the stakeholder/technical working group

Support the LSFF analysis team by providing feedback and inputs on the analysis assumptions, modeling parameters, results, and their application.

Duration of stakeholder/technical working group

The stakeholder/technical working group is anticipated to function and meet from about [MONTH, YEAR] through [MONTH/YEAR].

Roles and responsibilities

- Stakeholder/technical working group lead/facilitator: [NAME, TITLE, ORGANIZATION] [20]

  Co-lead/facilitation/support: [NAME, TITLE, ORGANIZATION]
  - Lead the overall work of the group.
  - Develop the agenda for the meetings.
  - Facilitate calls/meetings/discussion.
  - Field questions and requests and ensure their completion in a timely manner.
  - Support the manager.
- Manager: [NAME, TITLE, ORGANIZATION]
  - Support the operational needs of the working group including the call/meeting logistics and notes.
  - Support the leads and facilitators with the action items, e.g., following up on requests to ensure they are being addressed.
- Stakeholder/technical working group members:
  - Actively participate in working group calls and meetings.
  - Respond to requests for technical feedback and inputs by the deadlines requested by the group lead/facilitator.
  - Where/when possible, provide access and links to documents such as technical reports, minutes of meetings, and other resources that may assist to better understand the analysis and results.

[20] Note that the lead and co-lead facilitators and managers are part of the analysis team. It is not expected that the stakeholder/technical working group members would lead or manage the group.

- Facilitate contact with key stakeholders whose perspectives and expertise may be relevant to the analysis.

Frequency and anticipated focus of calls/meetings

1. Up to three calls/meetings:
    a. 1st call/meeting: Introduce the activity and address technical questions/discussion with the group, and obtain feedback and inputs on the activity and process.
    b. 2nd call/meeting: Share preliminary results, obtain feedback on the results, and present and discuss plans and parameters, for example, for modeling the contribution of LSFF to micronutrient adequacy and cost and affordability of the diet.
    c. 3rd call/meeting: Share the final results and obtain feedback on their usefulness as well as the process (pause and reflect session).
2. Ad hoc communication and calls to address specific technical questions with specific members or a sub-group of the stakeholder/technical working group.

Decision-making

The stakeholder/technical working group is advisory only and has no decision-making authority.

Administrative issues and logistics

The stakeholder/technical working group participants will not be paid consultancy or sitting fees.

Members may discuss with the analysis team the possibility of reimbursement of costs to attend virtual meetings (e.g., internet access) or in-person meetings (e.g., transport reimbursement).

The analysis team will prepare and circulate the agenda and notes for all calls/meetings.

Location

The stakeholder/technical working group will meet virtually (note that meetings could also be in person).

Group norms

- The norms agreed by the stakeholder/technical working group members shall guide the operation of the consultation process.
- To encourage openness and the sharing of information, stakeholder/technical working group members are free to use the information discussed.

Amendment or modification

These Terms of Reference may be amended or modified in writing after consultation and agreement by the stakeholder/technical working group members.

Annex 1 List of Stakeholder/Technical Working Group Members

[LIST OF GROUP MEMBERS WITH NAME, TITLE, ORGANIZATION, EMAIL, PHONE NUMBER]

Annex 6 Example Outline for Report on Methodology Findings

Acknowledgements

Include acknowledgments for donors/funders, reviewers, and contributors to the report, including but not limited to analysts, statisticians, and writers.

Abbreviations and Acronyms

Include a list of abbreviations and acronyms used in the report.

Executive Summary

Briefly summarize the report in about two to three pages. Include a brief introduction, background, methods, findings, recommendations, and next steps.

Introduction

The introduction to the main body of the report describes the purpose of the report, some basic information about the report and how the findings will be used, the audience for the report, and a brief overview of the sections covered in the report.

Background

The background describes the main problem(s) or issue(s) that the report is addressing and information to better understand the problem or issue and why it is important globally and for the country. The background can also provide the country context. The country context can include information on micronutrient deficiencies and inadequate micronutrient intake. If relevant, the country context can also include information on plans and/or the current situation with LSFF in the country, such as the policy environment, foods currently fortified at large scale and micronutrients included in the fortified foods, and information available from monitoring and evaluation of the LSFF program.

Objectives

Describe the main objective in the use of the methodology and any sub-objectives.

Methods

Describe the methods, including the specific types of analyses and the data sources and tools used in the analyses, as well as any statistical tests that were conducted. Include information about the review of the study summary or protocol by an ethics review committee and the ethics committee determination regarding the study. Describe the assumptions for the analysis, e.g., if palm oil is consumed, the percent that is refined versus unrefined, and the vitamin A retention factor for red palm oil; strata for which the information is applicable; and bases for the estimation of household or individual intakes.

Findings

Present the findings from the use of the methodology in the operational overview, including the findings from the needs assessment and the findings to inform the design or redesign of the LSFF program or broader programming to improve diets.

Discussion

Discuss the findings and implications of the findings for LSFF and broader programming in the country. Discuss the limitations of the secondary analysis and use of existing data.

Recommendations

Provide a list of the recommendations that were developed as a result of analyzing the data as a part of the methodology described in this operational overview. Consider developing and/or finalizing the recommendations as part of a stakeholder workshop where the findings are presented and discussed, and then including the final recommendations in the report.

References

Include a list of all references used in the report.

Annexes

Annexes may include additional findings not included in the main body of the report and any supporting information that may assist the reader to better understand the findings or be able to replicate the study in his/her own context. If a stakeholder workshop was held to share and discuss the findings, an annex could also include a brief summary of the stakeholder workshop.

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

USAID ADVANCING NUTRITION

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