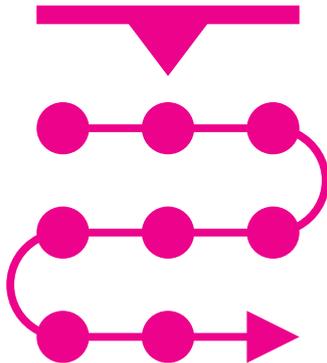


link nca

NUTRITION CAUSAL ANALYSIS

GUIDELINES

JANUARY
2015



This document presents the field-tested Link NCA method for conducting a Nutrition Causal Analysis. It is intended to provide clear and practical step by step guidance to NCA Analysts.

GUIDELINES



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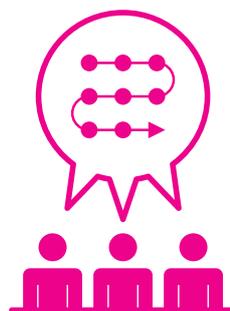
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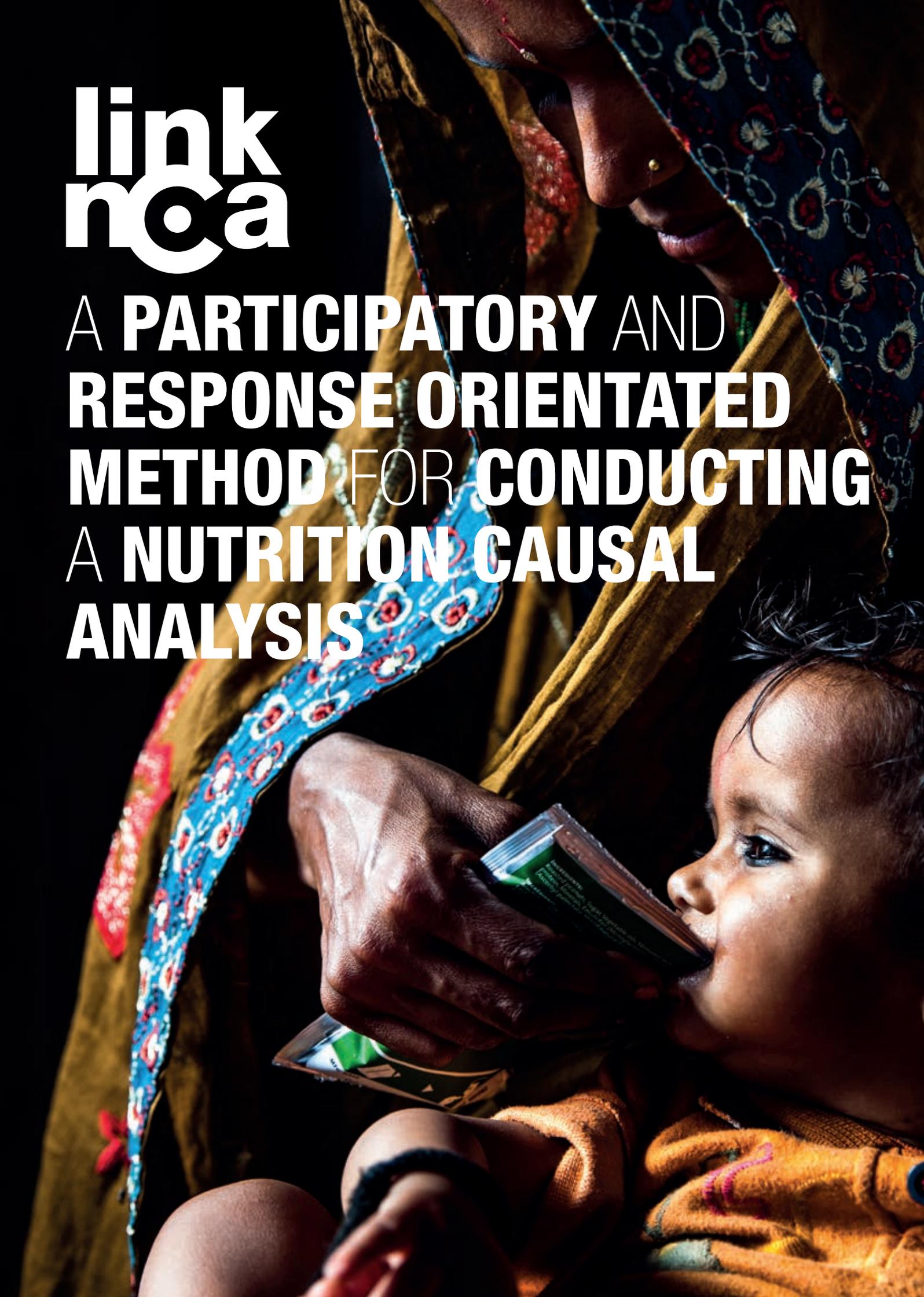
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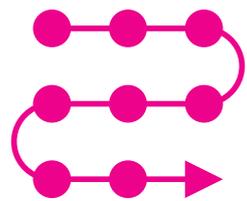
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A close-up photograph of a woman in a blue and red patterned sari feeding a young child with a spoon. The woman is looking down at the child with a focused expression. The child is wearing a brown sweater and is looking up at the spoon. The background is dark, making the subjects stand out.

**link
nca**

**A PARTICIPATORY AND
RESPONSE ORIENTATED
METHOD FOR CONDUCTING
A NUTRITION CAUSAL
ANALYSIS**



GUIDELINES

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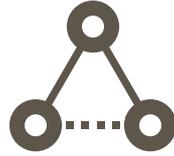
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OVERVIEW OF THE LINK NCA GUIDELINES

This chapter presents a general overview of the Link method for conducting a Nutrition Causal Analysis (NCA). It is intended to provide a global vision of the method before going through the detailed step by step guidelines.

1.1 WHAT IS A NUTRITION CAUSAL ANALYSIS (NCA)?

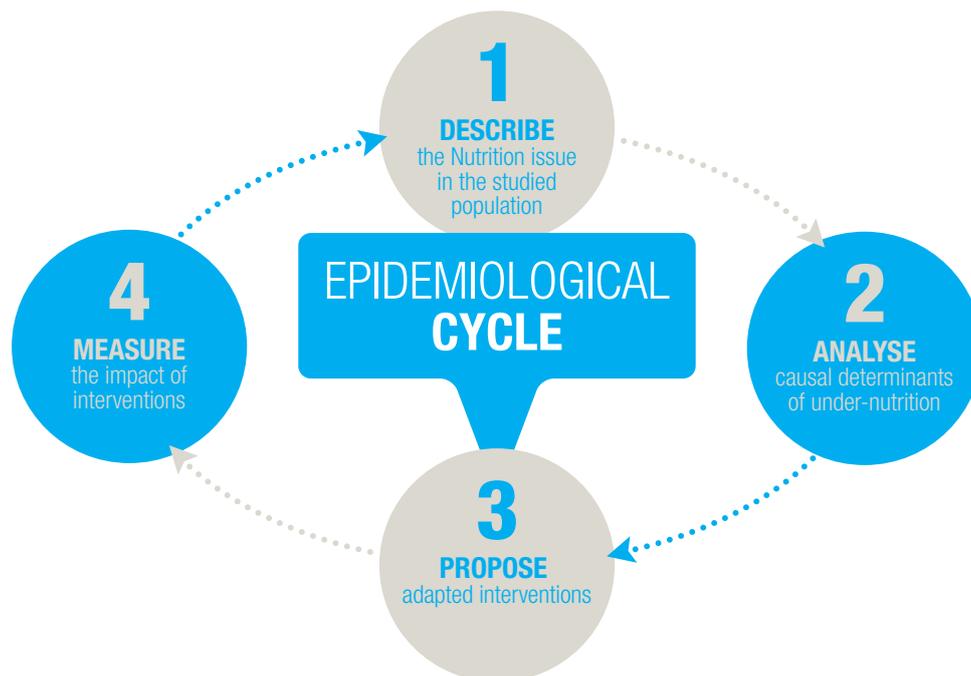
A nutrition causal analysis (NCA) is a method for analysing the multi-causality of under-nutrition, as a starting point for improving the relevance and effectiveness of multi-sectoral nutrition security programming in a given context.

Though there is an increasing global convergence around a well-defined package of ‘essential’ nutrition actions, implementing ‘off-the-shelf’ solutions without attention to the barriers and opportunities inherent to a specific context will often hinder the uptake and impact of any standard intervention.

The UNICEF conceptual framework on the causes of under-nutrition was developed in 1990 to identify and clarify the causes of under-nutrition. Though it was an essential contribution to highlighting the multi-factorial nature of under-nutrition, it was not intended to be prescriptive of a set of universal causes of under-nutrition relevant to every population, nor was it a method of assessment. Rather, it provides a useful starting point for understanding the risk factors of under-nutrition in a given context, their interrelationships, and their relation to under-nutrition. As stated in the 1990 policy review:

“It is important not to interpret this framework as a predictive model. Its deliberate lack of rigid limits or boundaries leaves room for different models to be developed in different contexts. The framework primarily helps in asking relevant questions in the development of such models.”

FIGURE 1.1: NUTRITION SECURITY PROGRAMME CYCLE¹



1) By “nutrition security programmes”, we refer to the treatment and prevention of under-nutrition through nutrition specific and nutrition sensitive interventions. The scope of the NCA promoted within these guidelines is limited to the study of causes of under-nutrition (wasting, stunting and/or micro-nutrient deficiencies) in children under 5 years old



Methods and practices for estimating the prevalence of under-nutrition and its public health significance are quite well established (*see figure 1.1, step 1*). While many different types of analyses of the causes of under-nutrition have been implemented using a wide array of methods, routine assessment of under-nutrition causality has been fairly limited among operational agencies working in nutrition. In chapter because under-nutrition causality is multi-factorial, complex to capture, and specific to a local context, no standard Nutrition Causal Analysis (NCA) method has emerged. The lack of a structured method has further constrained operational agencies from carrying out this type of assessment as chapter of a typical programme cycle, and has led to results of varying quality. According to Levine and Chastre, the “quality of situational analysis can be very diverse. It is almost as if the UNICEF conceptual framework is used for programming as an actual causal chain for every situation”. As a result, causal analysis at a local level is often weak, relying more on assumptions rather than evidence.

Studies that have attempted to ascertain the causes of under-nutrition are also typically constrained in their usefulness due to some of the following reasons:

- They often yield only a static picture of the causes of under-nutrition. In reality, the causes of under-nutrition are influenced by a number of dynamic factors and therefore change as these factors evolve.
- They often fail to prioritise causes, rendering the results less actionable and operationally useful.
- Analyses using national level secondary data, such as Demographic and Health Survey data, focus on the average result, often overlooking the specific challenges of vulnerable and marginalized groups and the unique factors that contribute to their under-nutrition vulnerability.
- The results are not always relevant for programming. As mentioned by FAO and ECHO, “if problem analysis is not done adequately, then the decision on an appropriate response cannot be taken in the most appropriate way”. For too long, programmes for the prevention of under-nutrition have been designed as if improving underlying causes would automatically reduce the risk of under-nutrition, neglecting 1) the potential negative impacts of certain interventions, and 2) the importance of interdependent risk factors. A review of response practices showed that response orientation is often based less on actual needs identified than on other factors such as context, the organization’s ethos, funding opportunities, and capacity. Efforts to tackle under-nutrition require a holistic diagnosis and an integrated response across sectors.

1.2 ACF DEVELOPS A NEW METHOD FOR CONDUCTING A NUTRITION CAUSAL ANALYSIS: THE LINK NCA

Action Contre la Faim (Action Against Hunger), is a humanitarian NGO that has been working for the treatment and the prevention of under-nutrition for more than 30 years. In order to strengthen the analytical foundation on which its programs are built, ACF invested in the development of a structured method for conducting a nutrition causal analysis, which it has called the “Link NCA”.

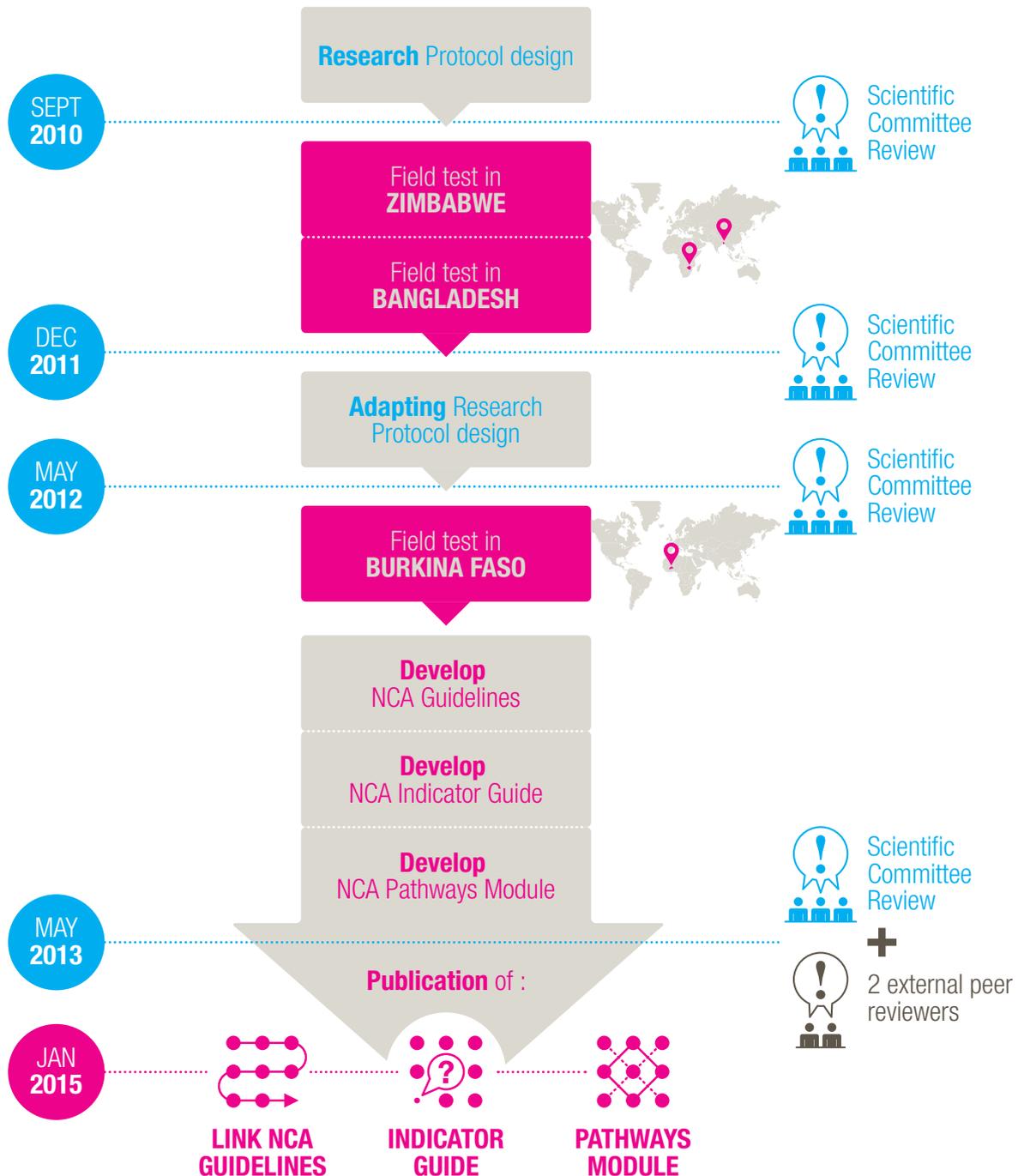
To be actionable by operational stakeholders, the Link NCA needed to be:

- **Structured**, in order to make the process more efficient and to help ensure the quality and usefulness of the results
- **Local**, to inform programmes adapted to specific local communities, livelihoods, and agro-ecological zones.
- **Operationally feasible**, to balance scientific rigour with field time, expertise, and resource realities.



Figure 1.2 outlines the key steps taken by ACF and partners to develop and refine the Link NCA method. The draft protocol for the method was designed by a small group of researchers and technical experts. ACF then formed a multidisciplinary scientific committee of researchers and technical experts to provide feedback on the draft protocol. This protocol was then field tested within ACF operational settings in Zimbabwe and Bangladesh, where it was assessed for its ability to yield plausible results, using accepted scientific research methods, while also being operationally feasible and relevant for ACF's programming decisions. Based on the results of these initial field tests, the method was overhauled, reviewed again by the scientific committee, and field-tested in Burkina Faso. After the field test in Burkina Faso produced results in line with the method's objectives and criteria, guidelines for conducting a Link NCA were devised and published in late 2014.

FIGURE 1.2: KEY STEPS FOR THE DEVELOPMENT OF THE LINK NCA METHOD



1.3 OVERVIEW OF THE LINK NCA

1.3.1 THE LINK NCA: ANALYTICAL AND OPERATIONAL OBJECTIVES

To fulfil the above-mentioned criteria, all Link NCAs aim to answer the following 6 study questions:

- 1. What is the prevalence and severity of wasting and/or stunting in the study population?**
- 2. What is the prevalence of known risk factors¹ for under-nutrition among the population and key “nutrition vulnerable groups”?**
- 3. What are the causal pathways of under-nutrition² by which certain children in this population have become stunted and/or wasted?**
- 4. How have the stunting and/or wasting in this population and its causes changed** a) over time due to historical trends, b) seasonally due to cyclical trends, c) due to recent shocks?
- 5. Which causal pathways are likely to explain most cases of under-nutrition?** Which sets of risk factors and pathways are likely to be the most modifiable by stakeholders within a given context and within a given period?
- 6. Based on the causal analysis results, what recommendations can be made for improving nutrition security programming?** How can the analysis be linked to a programmatic response?

To answer the 6 study questions, the Link NCA employs a mixed-methods approach, combining both qualitative and quantitative research methods, and draws conclusions from a synthesis of results.

While quantitative methods are well-suited to answering questions of “how many”, “which” and “what”, qualitative methods are comparatively better suited to exploring the ‘how’ and ‘why’ of under-nutrition causality.

The Link NCA relies on quantitative surveys (from secondary data and/or from a SMART nutrition survey and Risk Factor Survey conducted during the NCA) to assess under-nutrition status and the prevalence of known risk factors (*study questions 1 and 2*). Qualitative methods are incorporated throughout the protocol to address questions regarding how or why under-nutrition or good nutrition occurs, and to consider the interactions between causes, common feedback loops, and the evolution of the causes through time and seasons (*study questions 3 and 4*).

The information generated from multiple data sources are then triangulated and reviewed through a participatory process to generate consensus on under-nutrition causality (*study question 5*) and to better inform programs (*study question 6*).

1) A risk factor is an aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or inherited characteristic that is associated with an increased occurrence of disease or other health-related event or condition. See glossary for more details.

2) A causal pathway to under-nutrition is a mechanism describing how a risk factor is linked to under-nutrition in a local context.



1.3.2 WHAT IS THE LINK NCA: DEFINITION AND KEY PRINCIPLES

In order for the Link NCA to be structured, implemented at a local level, operationally feasible, and responsive to the six study questions outlined above, the scientific committee determined that the Link NCA should adhere to the following principles:

Definition: A Link NCA is a structured, participatory, holistic study, based on the UNICEF causal framework, intended to build evidence-based consensus around the plausible causes of under-nutrition in a local context.

The Link NCA:

- Links stakeholders across sectors
- Links risk factors and under-nutrition to identify pathways
- Links different sources of information to build a case for nutrition causality
- Links the causal analysis to a programmatic response

These principles are further explained below:

Structured

The steps of the method are precisely defined and have all been tested in the field. Guidance and tools are available for every step of the method. Field experience has suggested what can be realistically achieved or not. Though the content of the outputs will differ for each Link NCA, the structure of the study outputs should be consistent from one to the next.

Participatory

The study offers an opportunity to participants (key informants, technical experts as well as a range of other individuals from local communities) to express their opinions and perceptions of the causes of under-nutrition. Participants are given the opportunity to discuss, review and finally validate the conclusions of the study. The Link NCA places value on “perceived causes” as well as on ‘evidence-based causes’, for the various perspectives that they provide.

Holistic

Under-nutrition is examined globally, avoiding a vertical, sectoral approach, with the aim of understanding interrelationships among causal pathways. It is also holistic in terms of the methods used to answer the study questions, and the number and types of individuals that are engaged in the process.

Based on the UNICEF causal framework

The Link NCA method uses the UNICEF causal framework as the starting point for identifying potential locally-relevant risk factors of under-nutrition. ACF’s “Pathways to Under-nutrition Module” is a literature review that complements the Link NCA Guidelines. Using the UNICEF causal framework as a starting point, the module summarises the existing evidence base supporting causal associations between and among many common risk factors identified and different types of under-nutrition outcomes.

To build evidence-based consensus around the plausible causes of under-nutrition

The Link NCA links different verified sources of information to build consensus around the plausible causes of under-nutrition based on:

- Secondary peer-reviewed and grey literature
- Results from the SMART nutrition survey, Risk Factor Survey, and qualitative enquiry
- Inputs of a range of key informants, from technical experts, to officials, to community members and other stakeholders.

The NCA Analyst leads a structured, consensus-building process to review and interpret these data and to agree on the strength of evidence supporting a range of plausible causes of under-nutrition.

In a local context

Causes of under-nutrition are often different from one location to another. The purpose of the method is to go beyond generic interventions by identifying context specific as well as general causes in order to propose adequate solutions. Seasonality of under-nutrition can, for example, be very different from one livelihood zone to another.

BOX 1.1: THE LINK NCA PRINCIPLES AT WORK: AN EXAMPLE FROM BURKINA FASO

A Link NCA in Burkina Faso significantly increased nutrition stakeholders' (MoH at local and national level, NGOs, communities) understanding of nutrition causality in Tapoa Province.

While technical experts would focus their attention on the hunger gap period, the Link NCA identified that the peak of diarrhoeal diseases before the hunger gap was a more important contributor to the seasonality of wasting in the province. The Link NCA indicated that this finding was especially true for households with livelihoods relying on livestock who have different seasonal constraints and are more vulnerable during the diarrhoeal peak.

Furthermore, the Link NCA showed that the hunger gap was indeed impacting the food availability at household level but was not significantly impacting the nutritional status of children under 5 (coping mechanisms, availability of wild food, less diseases).

Low birth spacing was also identified as a major concern as it impacts directly children's food diversity, breastfeeding practices, autonomy of women, access to health care and the child's health and especially nutrition. Mothers can generally take care of one young children; taking care of two becomes quickly problematic.

Beyond technical results, the Link NCA study was a unique occasion for local communities to reflect on, formulate, learn and realise what the causes of under-nutrition are in their villages. This was also true for technical experts who did not have a full understanding of the reality of the problems faced by local community and their aspirations. The Link NCA is therefore a powerful tool for building a coordinated and contextualized response.

The results of this Link NCA have been used to focus efforts on the peak of diarrhoeal diseases before the hunger gap and also to design and implement a cash transfer programme in the area.

1.3.3 LINK NCA: WHAT THE METHOD IS NOT

- The Link NCA is not a “quick and dirty” or “rapid” method: the Link NCA process requires approximately four to five months to complete. Planning for the method must take realistic account of the time required.
- The qualitative portions of the Link NCA are designed to provide an in-depth picture of the nutrition situation in a relatively small geographic area. It is not always possible to generalize the results of this enquiry to other parts of the country.
- The Link NCA is not an emergency assessment tool: it is not well suited for application in rapid



onset crises due to the time required to conduct the study. Furthermore, in acute emergencies the immediate causes of under-nutrition will likely be overt and prioritised over underlying and basic causes. The Link NCA can provide an excellent baseline (pre-emergency point of comparison) that can aid in interpreting the extent and significance of deterioration that has occurred after an acute shock.

- The Link NCA method does not seek to statistically demonstrate nutrition causality but instead creates consensus around the plausible causes of under-nutrition in a localized context. Initially, the Link NCA was designed to rely primarily on statistical tests of causality to inform conclusions; after testing, this approach was rejected by the scientific committee for the following reasons:
 - ▶ The ideal study design for determining causality at the level of known probability is rarely achievable in field settings: a single cross-sectional survey cannot indicate causality¹. A case-control design is not always appropriate for understanding risk factors of low height-for-age and weight-for-height along a spectrum of severity. Most operational contexts cannot afford to implement a longitudinal panel study. Evaluations can provide evidence of causality when observed changes in risk factors are attributed to an intervention, however most NCAs will be performed prior to designing a program.
 - ▶ Limited variability in certain risk factors, such as education levels, means that bivariate and multivariate analysis have inadequate power to detect associations with under-nutrition unless an unfeasibly large sample is included in the study
 - ▶ Certain important risk factors are difficult for field practitioners to measure quantitatively (e.g., maternal depression, low birth weights).
 - ▶ Some risk factors might play a minor role at the time of the survey but may be important the next season (e.g., malaria; diet diversity) or may have been important to child growth a couple years prior to the survey.
 - ▶ In order to quantitatively analyse the relationships implied by the global UNICEF causal framework, a statistically complex “path analysis” is appropriate, but too advanced, for most field practitioners.
 - ▶ Results can even be misleading: experience suggests that stakeholders tend to over-focus on statistical results, even if limitations are stated, and under-appreciate other sources of information that can provide a more holistic picture of the local situation.

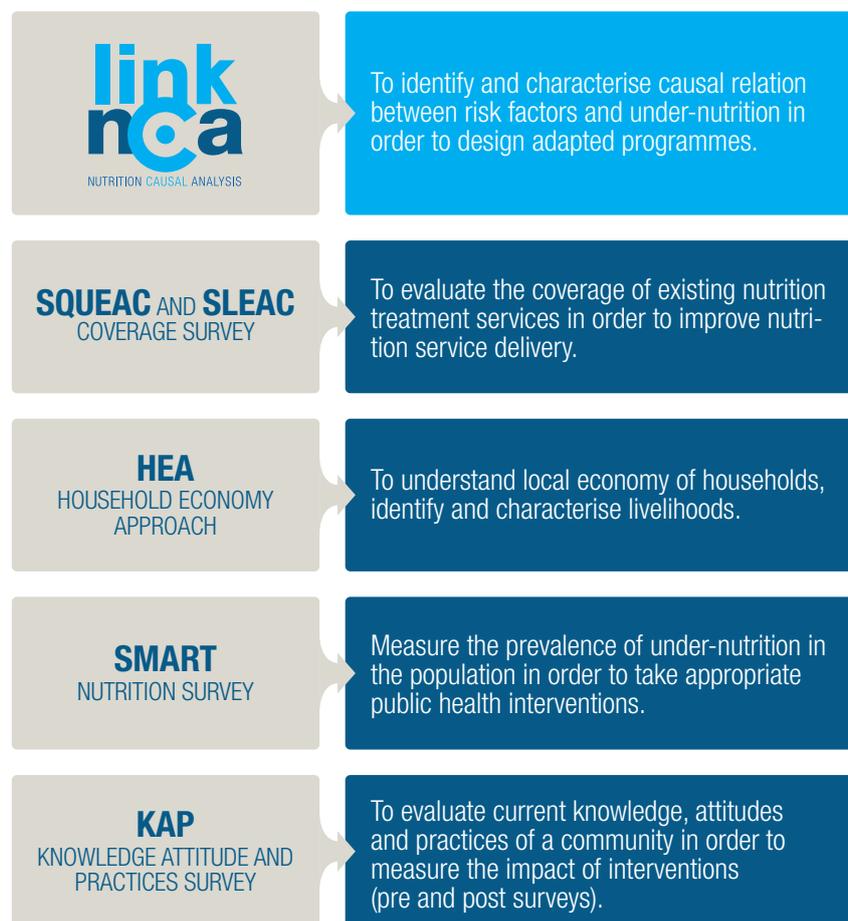
1) Hill described the 9 criteria for establishing a causal relation in “The environment and disease: association or causation?” Hill BA. Proc R soc Med 1965;58;295-300.



1.3.4 HOW DOES THE LINK NCA COMPARE TO OTHER TYPES OF FOOD SECURITY OR NUTRITION ASSESSMENT METHODS?

Figure 1.3 compares the objectives of common food security and nutrition assessment methods to those of the Link NCA. Of those in this list, the Link NCA is the only method that primarily aims to identify and understand the causal relationships of a range of risk factors with under-nutrition. The Link NCA can be used to complement other methods by providing essential information for designing programmes to improve nutrition security.

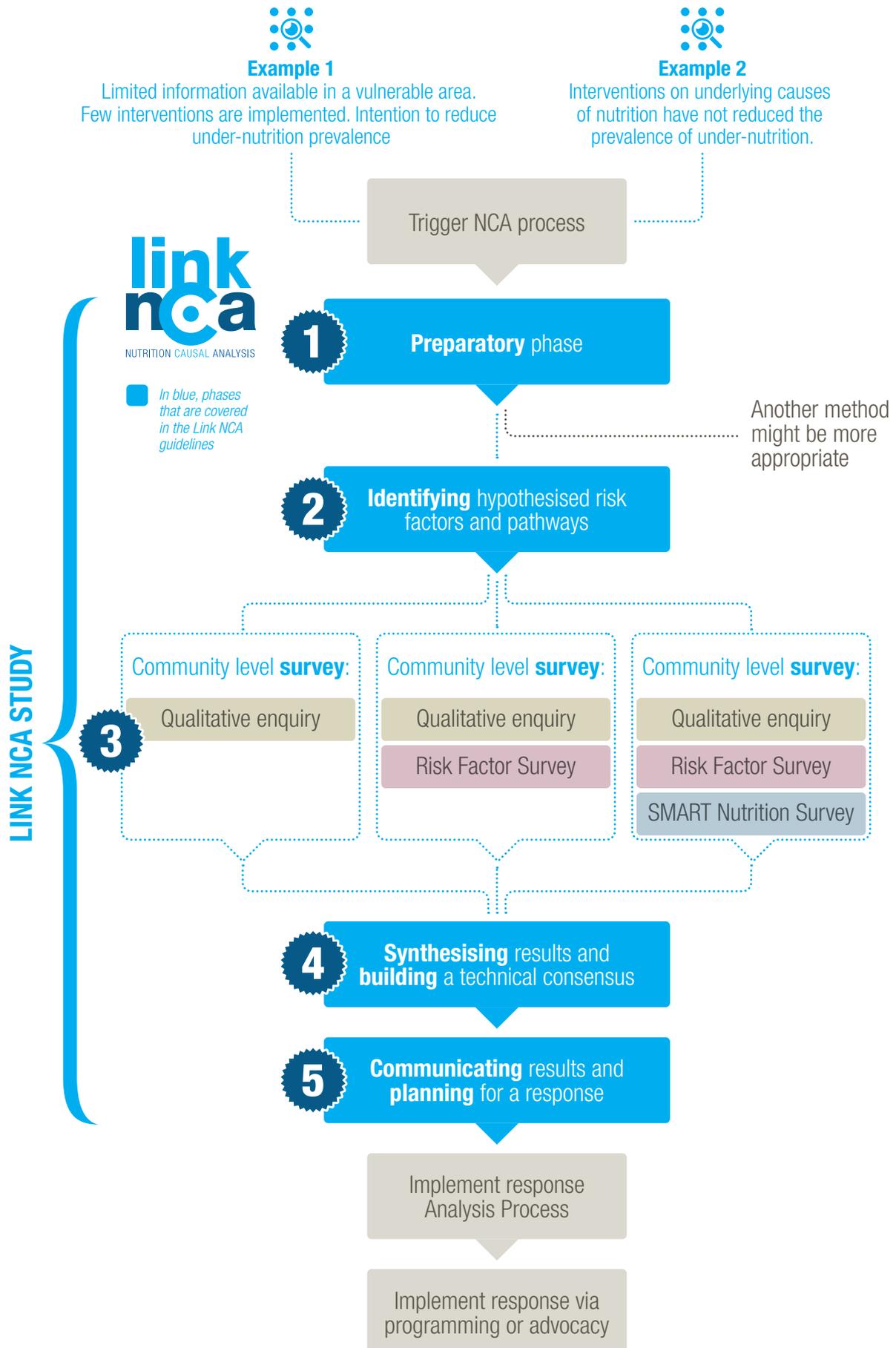
FIGURE 1.3 COMPARISON OF ASSESSMENT METHODS



1.3.5 STEPS IN THE LINK NCA PROCESS

Figure 1.4 provides an overview of the “Link NCA process”, from the initial preparatory work to the stage of linking results to operational programming. The “Link NCA process” encompasses the point from which a Link NCA study is first considered to the point at which the results are used to programme nutrition security interventions or to advocate for changes in policies that affect the condition of under-nutrition. The “Link NCA study” refers to the point from which the NCA Analyst begins work in the field through to the time that a plan is made to use the results for informing a response. The “Link NCA Guidelines” cover the entire Link NCA study.

FIGURE 1.4: STEPS IN THE LINK NCA PROCESS





Below is a brief description of the 5 main steps of the Link NCA study:

1

Preparatory phase

At the inception of the preparatory phase of the Link NCA process, technical experts from the organisation contemplating a Link NCA meet to assess whether the benefits of undertaking this type of study are likely to outweigh the costs and how the results are likely to be used. Assuming that there is sufficient justification for a study and the decision to conduct is made, these experts will then determine other key parameters such as the specific objectives, geographic coverage and feasibility of carrying out the study. At this stage they will also determine whether the study should include a SMART nutrition survey and a Risk Factor survey or rely on secondary and qualitative data. For this, they have to estimate if information on under-nutrition prevalence and the magnitude and severity of key risk factors is available and sufficient for their purposes. This phase also involves the type of preparation and planning required for any study, including developing terms of reference, identifying and securing resources, hiring an NCA Analyst to conduct the study, and determining timelines. The “preparatory phase” chapter of the guidelines details these requirements in a format that is accessible to those who will be making these initial decisions but who may not be trained in the details of conducting a Link NCA.

2

Identifying hypothesised risk factors and pathways

One of the NCA Analyst’s first tasks will be to identify a preliminary, hypothesised set of risk factors and pathways that may explain the under-nutrition situation in the local context. This is done through a systematic literature review (using the module “pathways to under-nutrition” and locally available grey literature) and initial key informant interviews. The hypotheses are reviewed, discussed, and honed during a technical expert workshop held at national or sub-national level.

3

Community level data collection

All data collection at the community level will include a qualitative enquiry; depending on the availability of existing secondary data, it may also involve a Risk Factor Survey and/or a SMART nutrition survey.

- The community-level qualitative enquiry aims to
 - ▶ Understand how communities perceive under-nutrition
 - ▶ Explore respondent perceptions of the causes and consequences of poor food security, health, and care in relation to under-nutrition
 - ▶ Understand the practices of caregivers of positive deviant children;
 - ▶ Identify seasonal and historical trends in under-nutrition and risk factors and
 - ▶ Understand how the community prioritises these factors
- The SMART nutrition survey follows a standard protocol to assess the anthropometric status of children under 5 years old in order to estimate the prevalence of under-nutrition
- The Risk Factor survey is a classic cross sectional survey to estimate the magnitude and severity of key nutrition risk factors (based on a contextual adaption of the UNICEF causal framework and locally-relevant hypotheses).

4

Synthesising results and building technical consensus

Once data collection is complete, the NCA Analyst will synthesise the data to produce a range of outputs, and will use this evidence to rate risk factors based on their relative contribution to under-nutrition and to qualitatively describe the dynamic interrelationships among risk factors and under-nutrition outcomes. The Analyst’s rating triangulates all sources of evidence gathered during the study. During a final workshop, the Analyst will present these results and will use a sequential, participatory process to build consensus around the plausible causes of under-nutrition. As chapter of that process, technical experts are asked to provide confidence notes on each result of the Link NCA which indicate the degree to which consensus has been achieved and document any remaining disagreement.

5

Communicating results and planning for a response

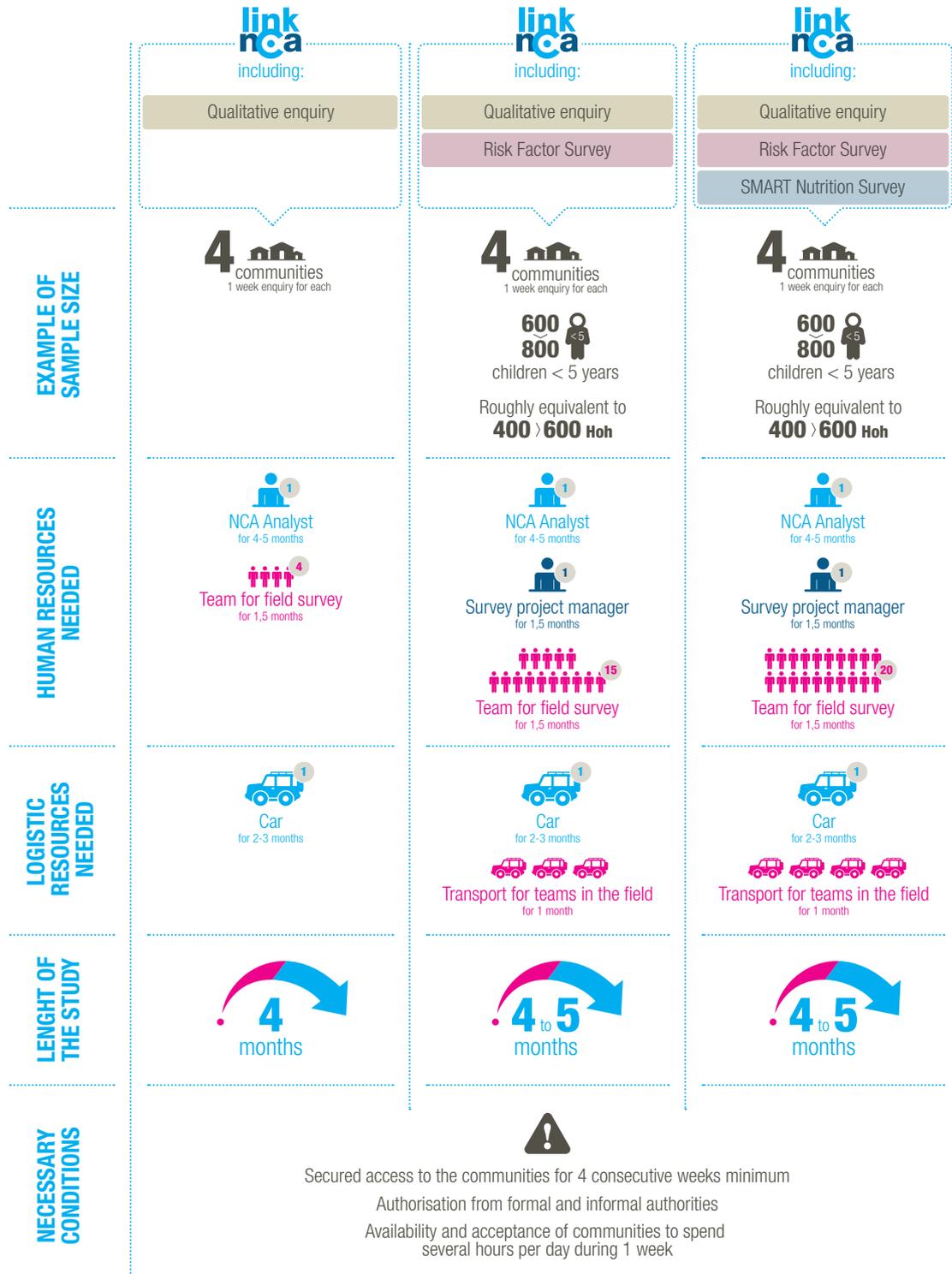
Following this meeting, the Link NCA results will be presented to operational stakeholders and to the communities that participated in the study. The NCA Analyst must link with operational teams to create a plan for transforming Link NCA results into better programming for nutrition security interventions. After this step, the Link NCA study is finished. Subsequently, the operational team might also implement a response analysis to decide which recommendations to implement and how to implement them.



1.3.6 LINK NCA RESOURCE REQUIREMENTS

Figure 1.5 details rough estimates of the human and logistic resources needed for the Link NCA, based on past experience implementing such studies. The resource requirements depend on certain key study parameters, including whether or not the SMART nutrition survey and/or Risk Factor survey will be included in the process. Actual resource needs can of course vary greatly from one context to another.

FIGURE 1.5: ESTIMATED LOGISTIC AND HUMAN RESOURCES NEEDED FOR A LINK NCA





1.4 OUTPUTS OF A LINK NCA

The Link NCA seeks to generate consensus, among multi-disciplinary stakeholders, of plausible causes of under-nutrition in a local context. The Link NCA concludes with a set of agreed upon recommendations and steps forward to improve nutrition security programmes.

The Link NCA outputs, in the form of a report, include:

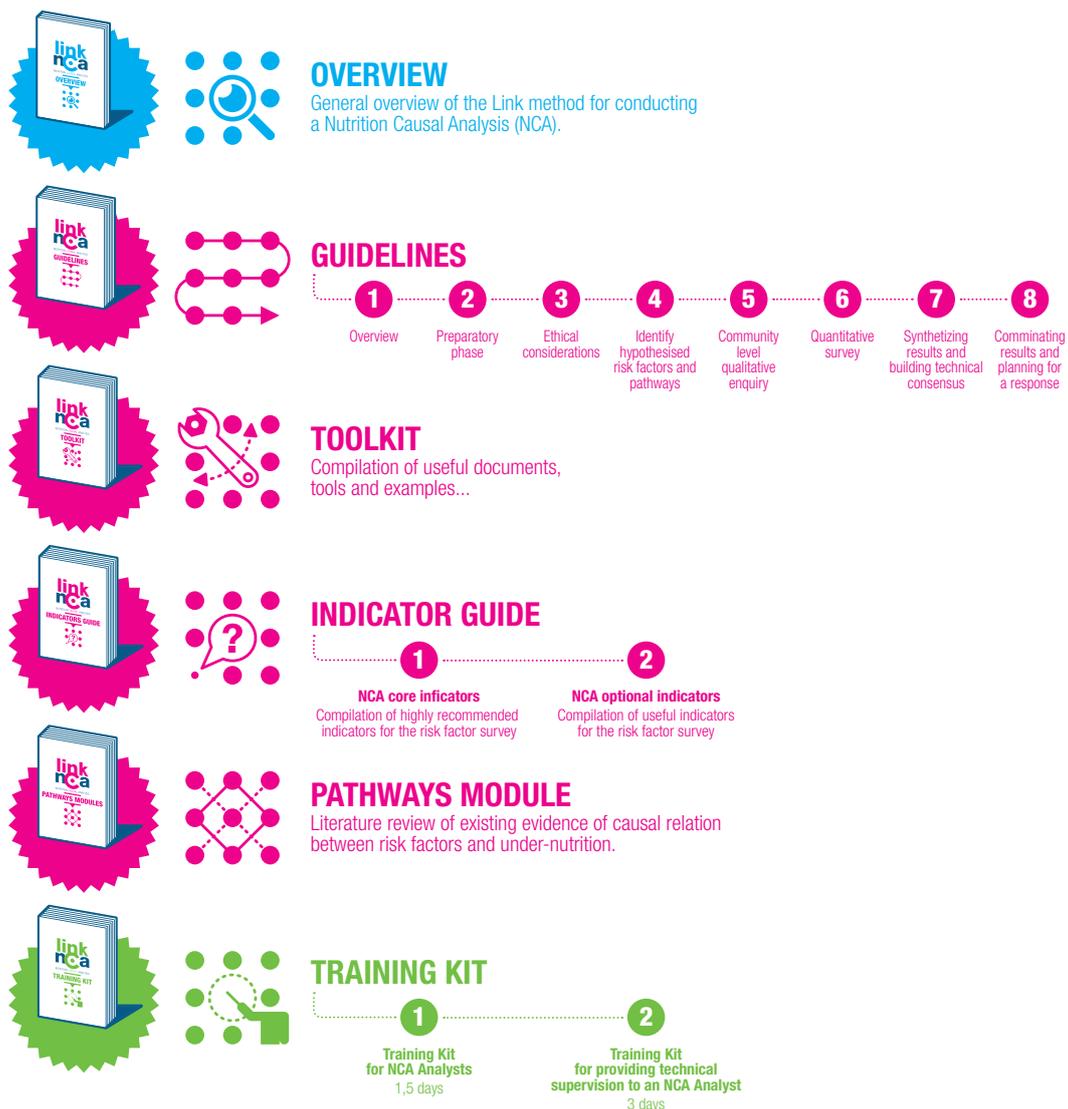
- **Information on the context:** a qualitative description of the factors that communities and other stakeholders perceive to be key causes of under-nutrition; an analysis of the temporal dynamics of under-nutrition; a summary of relevant secondary data (from nutrition surveys over several years, admissions data, SQUEAC surveys, DHS surveys, etc.)
- **A set of agreed upon risk factors and pathways to under-nutrition. Each risk factor and pathway is described in detail, including:** a pathway diagram, results from the risk factor survey, a seasonal calendar; and description of linkages with other risk factors.
- **An evidence-based consensus statement around the most plausible causes of under-nutrition.** The risk factors and pathways are rated as “major”; “important” or “minor” contributors to the under-nutrition problem. They can also be “rejected” or deemed “untested” (when not enough information was gathered to reach a conclusion). The Analyst is required to provide a description of the level of consensus reached for each result.

1.5 LINK NCA GUIDELINES, TOOLS AND OTHER RESOURCES

1.5.1 DESCRIPTION OF GUIDELINES, TOOLS AND OTHER RESOURCES

Four main documents and two training packages have been produced to guide and support the use of the Link NCA Method (see Figure 1.6 for a list of these resources). All the documents are freely accessible on the dedicated website www.linknca.org.

FIGURE 1.6: LINK NCA METHODOLOGICAL RESOURCES





1.5.2 HOW TO USE THE LINK NCA GUIDELINES, TOOLS, AND OTHER RESOURCES

Each of these documents has been designed to respond to specific information requirements related to understanding and implementing an NCA process. [Table 1.1](#) can be used to determine which documents should be consulted for which purposes.

TABLE 1.1 HOW TO USE THE LINK NCA GUIDELINES

<p><i>I just want to know what a Link NCA is and what resources are required to conduct one</i></p>	 <p>OVERVIEW The <i>Overview</i> provides a global vision of the Link NCA method.</p>
<p><i>I want to plan a Link NCA</i></p>	 <p>GUIDELINES Review <i>chapter 1</i> and <i>2</i> of the <i>Guidelines</i>.</p>
<p><i>I want to thoroughly understand the different steps involved in conducting a Link NCA</i></p>	 <p>GUIDELINES Review <i>Chapter 1</i> and <i>2</i> of the <i>Guidelines</i>. Each chapter starts with an “objectives and overview” section that may provide enough information for you to gain a high level understanding of the process.</p>
<p><i>I will be conducting a Link NCA</i></p>	 <p>GUIDELINES Read the entire <i>Link NCA Guidelines document</i> before you begin the process of conducting your NCA.</p>  <p>TOOLKIT The <i>Link NCA Toolkit</i> contains numerous supplementary documents to save you time.</p>  <p>INDICATORS GUIDE The <i>Link NCA Indicator Guide</i> is complementary resource and will help you during the Link NCA study.</p>  <p>PATHWAYS MODULE The <i>Pathways Module</i> is complementary resource and will help you during the Link NCA study.</p>
<p><i>I would like to know more about under-nutrition causality</i></p>	 <p>PATHWAYS MODULE The <i>Pathways Module</i> summarises existing scientific knowledge on key risk factors of under-nutrition.</p>
<p><i>I would like to undertake a multi-sectoral assessment or add indicators to a nutrition survey.</i></p>	 <p>INDICATOR GUIDE The <i>Link NCA Indicator Guide</i> compiles commonly used indicators for each sector implied in the UNICEF causal framework.</p>  <p>TOOLKIT <i>Chapter 6</i> and <i>Toolkit</i> detail sampling methods for measuring complementary indicators during a nutrition survey.</p>

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PREPARATORY PHASE

The description of the Preparatory Phase is targeted to professionals who are planning to coordinate and conduct a Link NCA. The work during the Preparatory Phase is conducted at the mission-level and can be completed over a 1 or 2 months period ¹. The tool *Example of a Link NCA Timeline* accompanies the material in this part. This chapter covers the following objectives and steps of the Preparatory Phase.

1) The work is spread over a one to two-month period but requires approximately one week full time work for the focal person in charge.



Objectives of chapter 2

Decide if a Link NCA is needed

.....

Decide whether the Link NCA will focus
on wasting or stunting or both

.....

Define the objectives of the Link NCA and which
components of the method will be implemented

.....

Determine the resources and time necessary
to meet these objectives

.....

2.1 STEPS OF THE PREPARATORY PHASE

Table 2.1 presents an overview of the five steps of the Preparatory Phase as well as the time required and personnel involved.

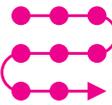
TABLE 2.1 STEPS OF THE PREPARATORY PHASE

STEP	TIME NECESSARY	WHO IS INVOLVED
<p>1</p> <p>Hold a technical meeting to define the nutrition problem at stake – is it a problem of wasting or stunting or both?</p>	Max 1hr	Technical team meeting
<p>2</p> <p>Conduct a landscape assessment. Determine if a Link NCA is needed.</p>	3-4 days	NCA Focal point with input from technical experts
<p>3</p> <p>Define the Link NCA's objectives. Determine the population, timing, and appropriate method for the Link NCA.</p>	½ day	Technical team meeting
<p>4</p> <p>Specify resources needed for the Link NCA</p>	½ day	NCA Focal point
<p>5</p> <p>Define roles and responsibilities</p>	Max 1 hr	Technical Advisory Group (TAG)

2.2 STEP 1: HOLD A TECHNICAL MEETING TO DEFINE THE NUTRITION PROBLEM – IS IT A PROBLEM OF WASTING OR STUNTING OR BOTH?

Step 1 has the following objectives:

- Ensure that key stakeholders internal to the organisation(s) who are considering conducting an



NCA have a clear understanding of the Link NCA method

- Assess the relevance and feasibility of a potential NCA for a given context
- Define the nutrition problem: is it a problem of wasting or stunting or both?
- Identify a focal point at mission level for a potential Link NCA study
- Enquire about the proper procedure to attain ethical approval for a potential Link NCA in the country

Step 1 can be accomplished during a short internal technical meeting that is planned at least one week in advance so that participants have time to consider the issues. Ideally, the technical meeting will include experts from the nutrition all technical sectors, including health, food security, care practices, and water, sanitation and hygiene (WASH) sectors. For the purposes of the technical meeting, there is no need to consult experts external to the mission, provided that each of the key technical areas is represented by at least one technical expert. Mission-level experts often have a wealth of information on the local context and can supply names of other experts that may provide useful information for the Link NCA. Do not overlook this source of information. In the event that it is necessary to invite external experts to the technical meeting the following organisations can be consulted: research institutes, government departments, non-governmental organisations (NGO), and advocacy groups.

N.B.: in some cases, this discussion will have happened during strategy meetings, so no need to repeat.

Before the technical meeting, ensure all participants have read Parts 1 and 2 of the Link NCA guidelines.

2.2.1 POINTS TO DISCUSS DURING THE TECHNICAL MEETING

Is a Link NCA relevant and feasible?

It is important that all participants have a clear idea of the Link NCA method in order to be able to debate whether a Link NCA is relevant in the given context. Participants should have a clear sense of what objectives can and cannot be achieved using the Link NCA method by reading the chapter 1 (overview of the Link NCA). Table 2.2 summarises a number of objectives and their feasibility within the proposed Link NCA method. The Tool *Limitations of the Link NCA method* is another useful reference for this discussion. Based on an understanding of the achievable objectives of the Link NCA method and its pros and cons, the participants should debate whether a Link NCA study is relevant in the context.

The participants should also debate whether a Link NCA is feasible given the organisation's budgetary constraints. Though the cost of a Link NCA is highly dependent on context, the Link NCA in Burkina Faso can be used as a frame of reference for costing purposes. The Link NCA in Burkina Faso took four months to complete and cost a total of 45 000€ in 2012. An *Example budget for an NCA* in the Tool kit details the typical resources needed for a Link NCA.

TABLE 2.2 OBJECTIVES AND THEIR FEASIBILITY WITHIN THE PROPOSED LINK NCA METHOD

OBJECTIVES	FEASIBLE WITH THE LINK NCA METHOD
Identify and rate plausible causes of under-nutrition in order to plan technical programmes and strategic orientations for the prevention of under-nutrition at a local level	 Yes
Prove statistical causality of under-nutrition	 No
Inform the design of nutrition security programmes by helping to define programme goals	 Yes
Measure the impact of an intervention on under-nutrition	 No
Set up an appropriate nutrition surveillance system	 To be tested
Understand local pathways to under-nutrition in order to design more contextually appropriate interventions	 Yes
Understand why under-nutrition is not decreasing despite current and past interventions	 Yes
Support technical advocacy on under-nutrition	 Yes

Use the following questions to guide the discussion with technical experts during the meeting:

- What has motivated this organisation's interest in doing a Link NCA?
- What is the nature of the nutrition problem (in terms of type of under-nutrition, severity, scale, duration, and the livelihood, socio-political or age groups that tend to be more affected)?
- What are the hypotheses about the causes of under-nutrition in the area and population groups affected?
- What is the level of evidence showing the link between certain causes and under-nutrition? How weak or strong is this evidence? Is there evidence available at the local level or just regionally/nationally? Are the hypotheses about causes of under-nutrition in the area well supported by this evidence?
- Have the most common causes of under-nutrition been explored in the context and very few ignored? Use the Tool *List of Link NCA Core Indicators* to guide this chapter of the discussion.
- Is this evidence sufficient for the objectives of a Link NCA?
- Are there other methods available that would meet the organisation's objectives better than a

Link NCA?

- Is the method proposed in these guidelines applicable in the context and feasible given available resources? When thinking of resource availability, consider project costs, personnel, opportunity costs, the availability of stakeholders, and secured access to local communities.
- What actions will be taken after the Link NCA is completed? How will the results of the Link NCA be used?

The debate should not last hours but long enough to decide whether it is worth continuing the process, once participants are well informed about strengths and limitations of a Link NCA study. The final decision regarding whether a Link NCA is needed will be made at the end of Step 2 once the landscape assessment has been completed.

Choose an NCA Focal Point

The decision as to whether to conduct a Link NCA is not made until the end of Step 2. Even if the organisation ultimately decides not to conduct a Link NCA, it is necessary to select an NCA Focal Point to carry out tasks in the Preparatory Phase. The NCA Focal Point will generally be selected from among the participants at the technical meeting. If it is decided that no Link NCA will be conducted, the role of the NCA Focal Point will not continue past Step 2 of the Preparatory Phase. Table 2.3 describes the role and suggested profile of an NCA Focal Point. It is recommended that an internal technical staff member be selected to serve as NCA Focal Point.

TABLE 2.3 ROLE AND PROFILE OF THE NCA FOCAL POINT

ROLE OF THE NCA FOCAL POINT	PROFILE OF THE NCA FOCAL POINT
<ul style="list-style-type: none"> • Technical support and supervision of the NCA Analyst • Focal point at mission level for all NCA communication • Coordinate with other technical advisors 	<ul style="list-style-type: none"> • Proficient in at least one of the technical areas of nutrition security (i.e., food security; health; care practices; nutrition; and water, sanitation, and hygiene) • Able to dedicate a significant amount of time to overseeing the study • Motivated by the study • Experienced in research methods and study design

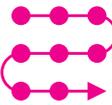
Enquire about obtaining ethical approval for the Link NCA

During the process of determining whether or not to do a Link NCA (i.e., Steps 1 and 2), the NCA Focal Point should enquire about the proper procedure for obtaining ethical approval for the Link NCA fieldwork under consideration. Though the criteria and process for obtaining ethical approval differ by country, the process can be time-consuming in some countries. The time needed to apply for and obtain ethical approval for the study must therefore be taken into account in both the planning for a potential Link NCA and the decision of whether or not to do one.

Plan for the next technical meeting

Upon completion of the meeting, the minutes should be written up by the NCA Focal Point and promptly circulated to the participants. If the organisation decides to conduct a Link NCA, the minutes from the initial technical meeting should be treated as an important source of information, to be triangulated with other outputs from the Link NCA during the analysis stage.

The next technical meeting should be scheduled to occur within two to four weeks of the first meeting. During the next meeting, the participants will debate whether a Link NCA is necessary and, if it is, determine the study objectives, timing, and methods of the Link NCA. This work comprises Step 3 of the Preparatory Phase.



2.3

STEP 2: LANDSCAPE ASSESSMENT

The purpose of the landscape assessment is: 1) to generate enough information to determine whether a Link NCA is needed, 2) to inform the objectives and needs of the Link NCA, and 3) to begin compiling sources of information for a more comprehensive secondary data review by the NCA Analyst at a later stage of the Link NCA (see Chapter 4 for more information). The landscape assessment should not be a lengthy process. It is recommended that the NCA Focal Point devote three to four days to the landscape assessment. The information reviewed during the landscape assessment will serve as a starting point to give definition and shape to the problem that is to be explained by a potential Link NCA. An assessment of the range of information available will help determine if it is necessary to conduct a Link NCA and, if it is, whether the Link NCA should include a SMART nutrition survey and/or a Risk Factor survey (see Step 3 for more information on this point). Areas of information that should be reviewed during the landscape assessment are listed below.

TYPES OF INFORMATION TO CONSIDER IN THE LANDSCAPE ASSESSMENT

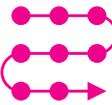
- *Type and severity of under-nutrition in the study area*
- *Information on common causes of under-nutrition in the context, including their magnitude and severity. The NCA Focal Point should review the Pathways to Under-nutrition module and the Tool *From concepts to measurement* to familiarise himself/herself with common causes of under-nutrition.*
- *Who is particularly affected by under-nutrition?*
- *What is the level of diversity in the area, in terms of livelihood groups or other key factor by which causes of under-nutrition might vary?*
- *Trends in under-nutrition in the population under study*

Only nutrition surveys (i.e., such as those done using the SMART methodology) conducted in the same geographic area as the one being studied by the Link NCA are likely to offer a representative picture of the prevalence of under-nutrition in that area. However, absent such survey information, it should be possible at the outset of the Link NCA to have at least a general qualitative sense of the nature of the under-nutrition problem and which population groups are most likely to be affected (i.e., population and age groups) by triangulating a variety of different sources of information.

Secondary data sources that might provide such information include: official (i.e., government or United Nations) national statistics, recent nutrition surveys conducted by operational agencies, academic studies of under-nutrition in the Link NCA area, nutrition surveillance data from sentinel sites, growth monitoring data from health centre records, nutrition data from community therapeutic feeding centres, Demographic and Health Survey data, scientific/academic/technical publications, unpublished reports, and information from key informants. Unpublished reports or information from staff in close contact with communities are also valuable sources of information. The NCA Focal Point should consult members of the technical team and ask them to suggest pertinent resources for the landscape assessment.

Thorough preparatory work will increase the efficiency of later stages of the Link NCA work. More detailed guidance on sources of secondary information is provided in Chapter 4 of the guidelines. The Tool *From concepts to measurements* also provides useful information.

The output for this stage is a description of the type and quality of information found and the major gaps that exist (refer to “Areas of information to consider in the landscape assessment” above). When doing



the write-up of the landscape assessment, the NCA Focal Point should use the following questions to guide his or her description of the information:

- Which information is available for the local community that the Link NCA is planning to study?
- How recent, valid, and representative is the available information?
- What are the technical areas with insufficient information? Which organisations are interested in the results of the Link NCA?
- Is the available information sufficient to meet the objectives of the Link NCA method? If not, why?

2.3.1 IS A LINK NCA NEEDED?

Remember that one objective of the landscape assessment is to compile sources of available information in order to be able to determine if a Link NCA study is needed. The decision regarding whether or not to do a Link NCA should be made jointly between the NCA Focal Point and members of the technical team. The NCA Focal Point should lead this discussion.

The organisation should consider conducting a Link NCA in the following cases:

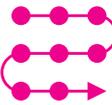
- There is not a broad agreement on what the most significant causes of under-nutrition are in the context and/or which population groups are most affected.
- Supporting evidence is weak, not applicable, or not available.
- There are hypothesised causes of under-nutrition in the context that have not been explored in the literature or empirically in the context.

After producing the description of the quality and quantity of information found and deciding that the organisation should conduct a Link NCA, the NCA Focal Point and technical team must decide whether the Link NCA will focus on wasting, stunting or both.

2.3.2 DECIDE WHETHER THE LINK NCA WILL FOCUS ON WASTING, STUNTING, OR BOTH

The decision as to whether the Link NCA should focus on stunting or wasting or both should depend on the magnitude and severity of each condition ¹⁾, the strategic interests of the organisation planning the Link NCA, and the intended use of the results of the Link NCA. The organisation's preferred responses to the Link NCA results may relate to one form of under-nutrition rather than the other (e.g., stunting instead of wasting). Consideration of the possible responses to the Link NCA can therefore assist organisations in determining whether the Link NCA should focus primarily on stunting or wasting or both. Points to consider when deciding how to use the results of the Link NCA are discussed further in Step 3. Chapter 8 discusses this topic in depth.

1) Refer to recent nutrition surveys available for nutrition statistics.



Stunting and wasting are inter-related.

It is not recommended to study wasting without looking at stunting and vice-versa. Stunting and wasting are presumed to stem from the same causes, but they may differ in terms of temporality of risk exposure¹. If the capacity exists to study both outcomes in depth then the organisation conducting the Link NCA should feel free to do so. Often, resource limitations will constrain organisations from exploring both stunting and wasting in depth during the Link NCA. If this is the case, it is therefore important to determine which outcome will be the primary focus the Link NCA.

1) Martorell, R. and M. F. Young. (2012). Patterns of stunting and wasting: Potential explanatory factors. *Advances in Nutrition*, Vol. 3, 227-233.

2.4

STEP 3:

DEFINE THE LINK NCA'S OBJECTIVES. DETERMINE THE POPULATION, TIMING AND APPROPRIATE METHOD FOR THE LINK NCA

2.4.1

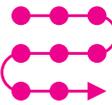
DEFINITION OF THE LINK NCA OBJECTIVES

The Preparatory Phase should consider how the Link NCA results are likely to be used. The significant time and resources dedicated to the Link NCA, including the time contributed by multiple and diverse stakeholders, compel the organisation to produce actionable results.

When thinking about the ways in which the Link NCA results will inform programme design, consider the information that all NCAs are designed to produce. All Link NCAs should answer the following six study questions by the end of the study; however, they will take different approaches depending on what information is already available and what they are going to do with the information at the end of the study.

- 1. WHAT IS THE PREVALENCE AND SEVERITY OF WASTING AND/OR STUNTING IN THE STUDY POPULATION?**
Does this prevalence and severity vary geographically or by characteristics such as livelihood, social, religious or ethnic group membership? What are the inter- and intra-annual trends? Are there differences in age and gender?
- 2. WHAT IS THE PREVALENCE OF KEY RISK FACTORS** for under-nutrition among the population and key “nutrition vulnerable groups”?
- 3. WHAT ARE THE CAUSAL “PATHWAYS OF UNDER-NUTRITION”** by which certain children in this population have become stunted and/or wasted? *Pathways to under-nutrition are inherently dynamic processes. A pathway can change according to the place in time at which under-nutrition out-*

1) See definition in Glossary



comes are examined; they can vary due to historical or seasonal trends and also in response to shocks of differing severity and duration. The Link NCA will try to capture the various dynamics of the pathways identified in Question 3.

4. **HOW HAVE THE PREVALENCE AND CAUSES OF STUNTING AND/OR WASTING IN THIS POPULATION CHANGED** a) over time due to historical trends, b) seasonally due to cyclical trends, c) due to recent shocks?
5. **WHICH CAUSAL PATHWAYS ARE LIKELY TO EXPLAIN MOST CASES OF UNDER-NUTRITION?** Which sets of risk factors and pathways are likely to be the most modifiable by stakeholders within a given context and within a given period?
6. **BASED ON THE CAUSAL ANALYSIS RESULTS, WHAT RECOMMENDATIONS CAN BE MADE FOR IMPROVING NUTRITION SECURITY PROGRAMMING?** How can the analysis be linked to a programmatic response?

Nutrition security programmes require answers to the above questions in order to be effective. The design of such programmes must be based upon an understanding of the range of intervention options available to minimise constraints to achieving good nutrition. Guidance on how to proceed during the “response analysis” stage is provided in Chapter 8 of these guidelines. The Link NCA results should quickly lead to an action plan by pointing to the technical areas where any additional assessments are required for programme design.

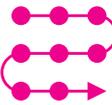
One point to discuss regarding the objective of the Link NCA is how the results are going to be used: are the results going to be discussed only within the organization that implemented the Link NCA or is there an intention to develop a coordinated response with several complementary organizations? This is an important discussion to hold right from the preparatory phase.

2.4.2 SELECTION OF GEOGRAPHIC AREA AND SAMPLE STRATIFICATION

The selection of the geographic area for the study will depend on the nutritional problem, as well as where and amongst whom it is found. Organisations should be cautious about including a vast geographic area in the Link NCA. Coverage of a large geographic area is often expensive and can be especially challenging if the population is very heterogeneous. “Heterogeneous”, in the context of the Link NCA, implies a population in which there are different groups distinguished by the type of under-nutrition and/or the likely causes of the problem. Such groups are referred to as “nutrition vulnerable groups”. Examples of variables that may significantly differentiate the causes of under-nutrition include rural/urban location, ethnicity, religious affiliation, livelihood groups, and socio-economic status. When it appears that there is a high degree of heterogeneity within a particular geographic area, the following options can be considered:

- a. Narrow the Link NCA scope to focus exclusively on one of these nutrition vulnerable groups.
- b. Focus on two or more of these groups and stratify the sample for the qualitative enquiry and the quantitative survey accordingly (the sample size for the quantitative component of the Link NCA would then have to be multiplied by the number of strata).
- c. Include all groups within a given geographic area without intentionally stratifying the sample. The implication is that these aggregate level data may be “washed out” if group-specific causes and/or outcomes vary widely. Also, certain groups of interest may not be sufficiently represented in the sample.

If there are clearly different groups in the population with causes of under-nutrition that are strongly suspected to relate to group characteristics, then choice a) or b) is highly recommended. If the evidence from secondary data does not strongly suggest that the problem or causes differ significantly by group, then option c) is recommended.



2.4.3 DEFINITION OF AGE GROUPS TO BE STUDIED WITHIN THE LINK NCA

Children under five years of age and pregnant and lactating women are often the focus of nutrition surveys due to their vulnerability to under-nutrition. The 2008 Lancet series on maternal and child under-nutrition emphasised the importance of focusing on the critical first one thousand days of life; that is, the window between conception and a child's second birthday. Poor health and nutrition during this period can lead to irreversible outcomes later in life such as shorter adult height, lower attained schooling, reduced adult income, and decreased offspring birth weight ¹.

These guidelines recommend that Link NCAs that include a SMART nutrition survey use 6-59 months as the survey's age group (the decision regarding whether to include a SMART nutrition survey and/or Risk Factor Survey in the Link NCA is discussed in greater detail in Section 2.4.5.1). Focusing on this age group allows for comparison of the results of the Link NCA with other SMART nutrition surveys. If the organisation commissioning the Link NCA wishes to compare differences in under-nutrition causes among age groups, it should consider stratifying the sample by age groups (i.e., 6-23 months, 24-59 months). This option is more demanding since it requires an increase in the sample size to account for multiple strata.

It is important to note that the Link NCA's community-level qualitative enquiry (discussed in Chapter 5) always considers children aged 0 to 6 months, along with children 6-59 months. In quantitative nutrition surveys, the exploration of causes of under-nutrition in this younger age group tends to be limited to measuring the initiation of breastfeeding and the duration of exclusive breastfeeding (EBF). Since children in this age range are a small percentage of the population a very large sample size is usually required to obtain precise estimates of the prevalence of EBF in the population. For this reason, it may be preferable to seek EBF prevalence estimates from secondary data (if possible) rather than including this indicator in the Risk Factor Survey of the Link NCA.

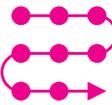
2.4.4 DETERMINE THE TIMING OF THE LINK NCA

Though the time needed to complete a Link NCA varies from one context to another, on average, the organisation should be prepared to take approximately four to five months to complete study. Time required for the Link NCA's primary data collection depends on community members' availability to participate. The data collection phase must be planned to respect community members' seasonal workloads, public holidays, and important social and religious events. If finding an uninterrupted stretch of time when participants are available proves difficult, the length or timing of the study may need to be adjusted in order to adapt to these constraints.

There are a number of additional factors to consider when determining the most appropriate time to conduct the Link NCA.

- NCAs should be timed so that the results can feed into upcoming nutrition security programmes or advocacy opportunities. The NCA Focal Point should consult with his or her colleagues and partners to determine a mutually beneficial time to conduct the Link NCA. Chapter 8 provides more detail on operationalising the results of the Link NCA.
- A Link NCA study conducted during seasonal peaks in under-nutrition will reflect a higher prevalence of risk factors related to seasonal food access or seasonal diseases (i.e., malaria and diarrhoea). **A Link NCA study conducted outside of seasonal peaks in under-nutrition will be more reflective of chronic causes of under-nutrition** (e.g., breastfeeding practices, care practices, and quality of the diet). If the seasonal factors that exacerbate under-nutrition are well understood, it may be beneficial to implement the Link NCA outside of peak periods in order to focus on the causes of chronic under-nutrition.

1) Vitora, C.G., Adair, L. Fall, C., Hallal, P.C., Martorell, R., Richter, L., Sachdev, H.S. (2008). Maternal and Child Under-nutrition: consequences for adult health and human capital. *The Lancet*, 371(9609), 340-357. 26 January 2008.



- **A Link NCA study during an acute crisis of under-nutrition may not be appropriate if the causes of under-nutrition are obvious or if the study is logistically infeasible due to the situation.** However, if the acute phase of the crisis has ended and under-nutrition levels have not declined, it may be useful to implement a Link NCA. An example of where this might occur could be a refugee or internally displaced persons context.
- Factors that may affect the timing of the Link NCA include access to transport and, if the Link NCA is located in an insecure environment ¹, access to security management. The availability of these services must be known in order to plan the appropriate timing for the Link NCA.

The final Link NCA report should note the time period in which the Link NCA was implemented (e.g., peak or off-peak season, refugee context, period following an acute under-nutrition crisis) and the reasons for this choice.

2.4.5 DETERMINE WHICH COMPONENTS OF THE LINK NCA METHOD MUST BE IMPLEMENTED

Determine whether the Link NCA should contain a SMART nutrition survey, a Risk Factor Survey, or both

Every Link NCA will contain a secondary data analysis phase and a community-level qualitative enquiry as well as other forms of qualitative data collection such as key informant interviews. The decision of whether to also conduct a SMART nutrition survey and/or a Risk Factor Survey should be based on: the intended use of the Link NCA results; the availability, comparability, and quality of secondary data; and available time and other resources. This decision should be made during the Preparatory Phase in order to be able to budget and plan accordingly.

There are thus four possible forms the Link NCA may take in any given context:

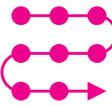
1. NCA Study comprised of qualitative methods of primary data collection
2. NCA Study comprised of qualitative methods and a SMART nutrition survey
3. NCA Study comprised of qualitative methods and a Risk Factor Survey
4. NCA Study comprised of qualitative data collection methods, a SMART nutrition survey, and a Risk Factor Survey

It should be pointed out that if the Link NCA contains both a SMART nutrition survey and a Risk Factor Survey these two surveys can be conducted together. There is no need to budget for two separate surveys.

Below is a list of factors to consider when determining whether a) available secondary data on prevalence of under-nutrition and under-nutrition risk factors will suffice or b) a SMART nutrition or Risk Factor Survey must be implemented. The types of risk factors that the NCA Focal Point should consider during this exercise include those that are contained in the in the Tool kit *List of Link NCA Core Indicators*

- Are the secondary data more than two years old? It is recommended that organisations not use data that were collected more than two years prior to the Link NCA.
- Are the data representative of the nutrition vulnerable groups of interest to the Link NCA?
- Is the age group analysed in the available secondary data the same age group of interest to the Link NCA?

¹ The Link NCA community-level qualitative enquiry necessitates travel to and from the same community over the course of one week. If the context is not considered secure, security services are needed while travelling to and from these communities.



- Are the secondary data representative at the same geographic level as the Link NCA? The Link NCA seeks to understand local causes of under-nutrition. Secondary data that can only be disaggregated to the national or regional level are likely not appropriate for inclusion in the Link NCA.
- Do the secondary data provide sufficient anthropometric data to assess prevalence of under-nutrition in the Link NCA context?
- Does the secondary data source indicate the season that the survey was implemented? Some indicators can vary greatly with seasons. The NCA Focal Point should check the period of measurement, compare it with the period when the Link NCA will be implemented, and decide if the secondary data will be sufficiently comparable.
- Does the secondary data source report the level of precision for the given indicator? Data with very low levels of precision are less useful for the Link NCA.

The output for this exercise is a list of the indicators for which secondary data were found to suffice. Specifically the output should include the following:

- A list of indicators for which secondary data was deemed sufficient. The list should include the source for the secondary data.
- A narrative accompanying each indicator that justifies why the secondary data source can be used instead of collecting original data. The narrative should reference the points discussed above (e.g., “The secondary data were collected less than two years ago.”)

This exercise will reveal whether or not it will be necessary to include a SMART nutrition survey and/or a Risk Factor Survey in the Link NCA. If a Risk Factor Survey is found to be necessary, the indicators listed as already informed by secondary data will not be included during the field data collection (see Chapter 6). Note that if the Link NCA will contain both surveys they will be implemented together as chapter of one household survey.

Unless otherwise specified, the Risk Factor Survey and SMART nutrition survey are collectively referred to as the “quantitative survey”. This short form is used when information presented applies equally to both types of surveys.

2.5

STEP 4:

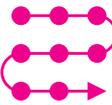
SPECIFY RESOURCES NEEDED FOR THE LINK NCA

The NCA Focal Point is in charge of specifying the timeline, budget, and human resources needed for the Link NCA. When carrying out these tasks he or she should closely coordinate with the logistics, finance and human resources departments of his or her organisation.

2.5.1

DEVELOP A TIMELINE FOR THE LINK NCA

The NCA Focal Point should draft a timeline for the Link NCA study, referring to the Tool *Example of a Link NCA timeline*. The timeline should include a buffer for any delays in human resource recruitment, inaccessibility to communities due to poor weather or road conditions, and delayed administrative authorisation.



The recruitment process for key positions within the Link NCA study begins during the Preparatory Phase. Advertisement, selection of CVs, and first interviews have to be done before the NCA Analyst arrives in-country.

The NCA Analyst position represents the person who is largely responsible for carrying out the Link NCA. The terms of references and job description for an NCA Analyst can be used to launch the recruitment process (refer to *Description of the NCA Analyst position* in the Tool kit.)

ADVANCE PLANNING IS NEEDED FOR THE RECRUITMENT OF THE NCA TEAMS:

The recruitment process for the Link NCA can be quite long especially in certain contexts human resources are scarce. Recruitment must begin before the Link NCA study starts so that the NCA Analyst can finalise the recruitment at the beginning of the Link NCA study.

2.5.2 DEVELOP A BUDGET FOR THE LINK NCA

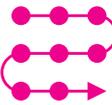
The Tool *Example budget for a Link NCA* compiles a list of items typically needed to implement a Link NCA. This example must be adapted to the context. In particular, the estimation of human and logistic resources needed for the data collection needs to be adapted to the local context. Chapter 1 describes a rough estimate of a typical sample size needed for the SMART nutrition survey and Risk Factor Survey. Typically, such surveys are spread over **3-4 weeks of intense fieldwork with a team of 15 to 20 people moving every day in the field**. This estimate can vary greatly with local context, especially with the type of transport available, how far the households are from one another, and more importantly, security constraints. If the security situation is tenuous or unpredictable, sufficient time should be allocated to the field work to account for days with restricted movements. If the security situation is totally unpredictable, one should balance the added value of the Link NCA with the risks to the field staff, knowing that the outputs of a Link NCA with limited field work will be greatly reduced.

The Risk Factor Survey and SMART nutrition surveys are typical surveys, in that they require good logistic coordination and, most importantly, excellent preparation and planning (e.g. contracting for transports, lodging, equipment, recruitment). Depending on local capacity, extra funding for logistics might be necessary. Refer to chapter 6, section 5 of the Link NCA guidelines for a detailed description of how to plan for these surveys.

2.5.3 COMPLETE OTHER PREPARATORY WORK FOR THE LINK NCA

Once the NCA timeline is established, the study is financed, and the NCA Analyst recruited, the following tasks should be prioritised:

- Prepare the ethical committee submission (if one is necessary). Consult the appropriate authorities in order to decide whether or not and when the Link NCA protocol must be submitted for ethical review.
- Start the recruitment process for the NCA team. The NCA Analyst will recruit the rest of the team but job announcements can be posted in advance of the NCA Analyst's start date.
- Identify partners for the technical expert workshop and inform them of the study (refer to chapter 4).



2.6 STEP 5: DEFINE ROLES AND RESPONSIBILITIES

A LINK NCA REQUIRES A TEAM EFFORT

A Link NCA requires teamwork and active involvement from a number of different actors. The Link NCA approach does not rest solely on the shoulders of the NCA Analyst. The quality of the study depends on the investment of all technical experts from the beginning to the end of the study. Ideally, any organisation that intends to use the Link NCA results once the study is completed should be involved in the process of planning and conducting of the Link NCA. In order to increase efficiency, the organisation commissioning the Link NCA may wish to have a cluster working group or the country's Ministry of Health lead the NCA process and coordinate among the different actors.

One key to the success of a Link NCA study is to ensure that all technical sectors are represented and involved in the study. Below is an overview of the key positions involved in conducted a Link NCA and their relationship.

COUNTRY DIRECTOR: Refers to the Country Director of the organisation commissioning the Link NCA. The Country Director's role is to manage the NCA Focal Point.

NCA FOCAL POINT: The NCA Focal Point is a technical staff person responsible for the work conducted during the Preparatory Phase. He or she manages the NCA Analyst and coordinates the Technical Advisory Group.

NCA ANALYST: The NCA Analyst is responsible for carrying out the Link NCA. The specific responsibilities of this position are described in the Tool *Description of the NCA Analyst position* in the Tool kit.

TECHNICAL ADVISOR: The Technical Advisor is a position internal to organisation commissioning the Link NCA. He or she should be available to the NCA Focal Point to offer technical advice during the Preparatory Phase of the NCA and beyond.

OTHER TECHNICAL ADVISOR: The Other Technical Advisor is also technical advisor internal to the organisation commissioning the NCA. The Other Technical Advisor acts in a supportive role to the Technical Advisor.

TECHNICAL ADVISORY GROUP (TAG): The TAG is selected by the NCA Analyst and comprised of one expert from each technical field relevant to the NCA (i.e., food security, health, care practices, nutrition, and WASH). The NCA Analyst should seek input from country-level staff and partner organisations on which technical experts should be invited to join the TAG. The members of the TAG can be internal or external to the organisation financing the Link NCA and are usually the members of the initial meeting (i.e., Step 1 of Preparatory Phase). The TAG members should be prepared to provide technical input when solicited by the NCA Analyst at any point during the NCA.

3

ETHICAL CONSIDERATIONS

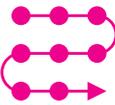
The ethical considerations discussed in this chapter must be respected in every Link NCA and are non-negotiable.



Objective of chapter **3**

To review the ethical considerations that must be respected throughout the Link NCA process.

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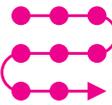
3.1 OBTAIN PERMISSION TO CONDUCT THE SURVEY FROM APPROPRIATE LOCAL/NATIONAL AUTHORITIES

During the Preparatory Phase of the Link NCA, enquire about the requirements and procedures for obtaining ethical approval for the study in the country where the Link NCA will be implemented. Whether official approval is required or not, determining the appropriate procedure may be time-consuming so plan accordingly. As of the publication date of these guidelines, in all countries where approval by an official Ethical Committee was sought for a Link NCA, (Bangladesh in 2010, Burkina Faso in 2012, and Kenya in 2013), it was granted once the application explaining the method and safeguards for protecting human subjects was submitted. Whether official approval is required by an Ethical Committee or not, the ethical standards discussed below must be respected.

3.2 OBTAIN INFORMED CONSENT AND RESPECT CONFIDENTIALITY

Before any interview or focus group discussion (FGD) begins, the enumerator must formally request the consent of the potential interviewee to participate. The enumerator must explain clearly, using language and expressions that the potential participant can easily understand:

- Which organisation the NCA Analyst, additional investigators, and enumerators represent
- What the objectives of the study are
- What is expected from the participant (e.g., answering questions in an interview or FGD and any other procedures involved such as taking anthropometric measurements of the children)
- The approximate duration of their participation
- How the information collected will be used
- Whether their responses will be kept confidential (they should be confidential). The SMART nutrition survey and Risk Factor Survey are conducted within the household. To ensure confidentiality starts from the moment the survey begins the enumerator should request that the survey be conducted in a quiet and private place in the household.
- That their participation is voluntary and that they can choose not to answer any question that they don't want to answer. They can also choose to cease their participation at any time, no justification required, and without consequence to themselves or their families.
- That choosing not to participate does not affect their eligibility to receive any type of programme benefits in the future (where applicable).
- The potential risks of participation (even minor risks, such as potential discomfort from sensitive questions) and the potential benefits to the individual and to the wider society.
- How a representative of the research team can be contacted. Contact information for a representative of the research team must be offered to potential participants.



An example of an informed consent form is provided in the Tool kit (see *Example of consent form*). Note that requirements for informed consent can differ from one context to another; the tool is just a useful example. This is not a mere formality. Interviewees should have a chance to consider all the above information as it is shared with them and to ask questions before providing their consent to participate (or not). In the case of the SMART nutrition and Risk Factor Surveys, it is natural for the enumerators to feel fatigued after a long day of surveying and be tempted to go through the consent form rapidly. The NCA Analyst should ensure that:

- The time required to obtain informed consent is calculated into the time required to administer the questionnaire
- Enumerators are aware of the importance of the consent process
- Enumerators are thoroughly trained on the consent process, and practise delivering the consent statement during training
- The supervisor checks that the consent process is being conducted, and collects and retains consent forms.

Additional information on informed consent and specifically how to obtain informed consent in situations common to developing countries (such as when the study population is largely illiterate) can be found in the document “ACF Ethics and Research: Principles and Guidelines¹.”

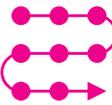
The information on the raw questionnaires as well as the notes taken during the community-level qualitative enquiry must remain strictly confidential and accessible only by the team members. Once the quantitative data are entered into an electronic database, ID codes should replace any and all identifying information that could be used to trace a set of data back to an individual, family, or household. Only when all the data have been de-identified with ID codes can the database be shared with external partners. Hard copies of the questionnaires should be kept safely in a secure location for 3 to 5 years after the survey. Notes taken during the qualitative interviews may be de-identified (i.e., no names used) but the data should nonetheless remain confidential. When seeking informed consent of participants, the enumerator must notify them of any intention to use direct quotes from the focus group discussions in the Link NCA report (even if anonymous quotations are used). Participants must be given the opportunity to consent or deny their consent to be quoted directly.

3.3 MINIMISE EMBARRASSMENT AND STIGMATISATION

Respondents may be sensitive to certain subjects broached by the questionnaire or focus group discussion. As chapter of the obligation to reduce risks to participants, members of the Link NCA research team (NCA Analyst, additional investigators, and enumerators) must minimise psychological discomfort from potentially sensitive questions. Consider the following:

- Carefully choose language and words in the questions posed to participants in the focus groups or the Risk Factor Survey. Remove or adapt questions that are taboo or too political. Avoid questions that may make respondents uncomfortable to the extent that they may refuse to answer or answer dishonestly.
- If translation is needed, make sure the translator has a high degree of facility in both languages so that the integrity of the question remains the same in its translated form.
- Be mindful of the effect of the interviewer’s gender on the respondent.

1) ACF International, (2012) ACF Ethics and Research: Principles and Guidelines. Retrieved from http://www.actioncontrelafaim.org/sites/default/files/publications/fichiers/ethics_guidelines.pdf

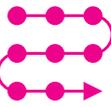


- Be aware that women may not wish to discuss certain topics while they are within earshot of their husbands or other members of the households. For this reason, the SMART nutrition survey and Risk Factor Survey interviews should be conducted in a quiet and private area within the household. In some cases, certain sensitive questions may be better asked during a careful focus group discussion held in a private area rather than during a household survey.
- During the community-level qualitative enquiry, participants may be categorised by a variable deemed as relevant for studying the causes of under-nutrition (e.g., socio-economic status). Measures must be taken to prevent embarrassment to the participants stemming from this categorisation. Suggested measures for minimizing embarrassment of participants include the following:
 - ▶ Not informing participants of the basis on which groups were comprised
 - ▶ Mixing participants from one group to another from time to time

3.4 BE AWARE OF OPPORTUNITY COSTS TO PARTICIPANTS

The proposed community-level qualitative enquiry requires working with the same members of a community (especially women) for several days. Many participants will have numerous daily responsibilities and may not be able to dedicate several hours at a time to participate in the qualitative enquiry. The time required for the qualitative enquiry also has the potential to create selection bias if only individuals with few daily demands on their time can participate in the study. Participation in the SMART nutrition survey and Risk Factor Survey is not as time-consuming as the community-level qualitative enquiry but respect for the value of the respondent's time should nonetheless be shown. The following considerations are important for ensuring that the Link NCA takes place at a time when the maximum number of participants (mainly women) are available:

- Careful selection of season for the enquiry.
- Careful selection of the month and day within the selected season.
- Careful scheduling of the enquiry during the day.
- Conduct the enquiry in a location as close as possible to all participants (they should be able to come by foot).
- If possible, make an appointment in advance of the interview for the SMART nutrition or Risk Factor Surveys.
- The choice as to whether or not to provide financial compensation for participation in the NCA should be made on a case-by-case basis. The NCA Analyst should speak with senior advisors at his/her organisation to see what the policy is regarding compensating participants for participation.
- Since the focus groups take place over many hours, adequate shelter, water, healthy food and drinks must be provided for respondents.



3.5 PROVIDE AN ADEQUATE ENVIRONMENT FOR THE COMMUNITY-LEVEL QUALITATIVE ENQUIRY

The community-level qualitative enquiry should take place in a location that is

- Within walking distance of the participants' homes
- Accessible to sanitation facilities
- Safe, quiet, and private
- Provides seating for all participants as well as healthy food and drinks

3.6 PRESENT THE RESULTS OF THE LINK NCA SURVEY TO PARTICIPATING COMMUNITIES

The Link NCA method calls for presentation of the study results to communities that have participated in the community-level qualitative enquiries. Beyond the technical added value of such a presentation, this practice is strongly encouraged for ethical reasons. After donating time to participate in enquiry, communities should have access to the results. The findings should be shared in a format that will be understood by all the members of the community (e.g., an adaptation of the official oral presentation).

3.7 ENSURE THERE IS A PROTOCOL FOR SEVERELY UNDER-NOURISHED OR SEVERELY ILL CHILDREN IDENTIFIED DURING THE SMART NUTRITION SURVEY

If the Link NCA contains a SMART nutrition survey, there may be instances when the enumerators encounter severely under-nourished or severely ill children. A severely under-nourished or severely ill child is at risk of death and must be referred to health services for treatment. As for any SMART nutrition survey, there must be a clear and systematic protocol for identification of a severely under-nourished child or severely ill child. There must be a protocol in place prior to the start of the data collection for the SMART nutrition survey. As a first step, the NCA Analyst should investigate whether the country has its own national nutrition standards for identification of severely under-nourished children. The country's own protocol, if it exists, should be the main point of reference. If there is no national protocol, refer to the following standards provided in Table 3.1. The protocol should be chapter of the training session for the enumerators.

TABLE 3.1 PROTOCOL FOR IDENTIFICATION AND TREATMENT OF UNDER-NOURISHED CHILDREN

CRITERIA	TYPE OF MALNUTRITION	TREATMENT
W/H Z score < -3 or MUAC < 115 mm or Nutritional oedema grade + or ++	Severe Acute Malnutrition (SAM) without medical complication	SAM ambulatory treatment
-3 ≤ W/H Z score ≤ -2 or 115 mm ≤ MUAC < 125 mm and No nutritional oedema	Moderate Acute Malnutrition (MAM)	Supplementary feeding centre
W/H Z score < -3 or MUAC < 115 mm and/or Nutritional oedema grade +++	Severe Acute Malnutrition (SAM) with medical complications	In-patient treatment at a stabilization centre

Ideally, health services that provide under-nutrition treatment will be active in the Link NCA area, in which case the child can be referred there. This is not always the case. The Analyst should investigate how this has been handled in previous nutrition surveys or consult nutrition specialists (i.e., from the organisation commissioning the Link NCA, the Ministry of Health, or UNICEF). The SMART guidelines¹ provide additional information on the identification and referral of malnourished children.

1) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>

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IDENTIFY HYPOTHESISED RISK FACTORS AND PATHWAYS

At this point, all of the steps of the Preparatory Phase should have been completed and the NCA Analyst recruited and operational. The entirety of the Link NCA guidelines should be read before implementing the work described in Chapter 4. It is important to understand the entire process as well as the work that lies ahead since preparatory work for the quantitative and qualitative data collection phases described in Chapter 5 and 6 have to be done in parallel with work described in Chapter 4 (e.g., recruitment, sampling, and training). The Tool “Example of a Link NCA timeline” is a useful reference for the work performed at this stage of the Link NCA.

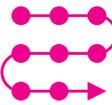


Objectives of chapter 4

Compile existing information relevant
to all aspects of the UNICEF causal framework
.....

Generate a good understanding of the local context,
based on the UNICEF causal framework
and the information compiled
.....

Identify and discuss hypothesised risk factors and
hypothesised pathways of under-nutrition
during a technical expert workshop
.....



The work described in Chapter 4 lays the groundwork for the data collection phases of the community-level qualitative enquiry and, if deemed necessary to include in the Link NCA, the SMART nutrition and Risk Factor Surveys. There are three core activities in Chapter 4: the first is to develop an understanding of the immediate, underlying and basic causes of under-nutrition. Based on this understanding and information presented in the Pathways to Under-nutrition module, the NCA Analyst identifies hypothesised risk factors and pathways to under-nutrition as the second activity.

DEFINITION OF HYPOTHESISED RISK FACTORS AND PATHWAYS

A hypothesised risk factor refers to a specific risk factor that is believed to relate to under-nutrition in the Link NCA context. Hypothesized risk factors may come from the UNICEF causal framework or be informed by locally relevant information. The mechanism by which the hypothesised risk factor is believed to affect under-nutrition is referred to as a “hypothesised pathway”. A hypothesised pathway typically connects several risk factors, and represents the mechanism by which risk factors together result in under-nutrition. Once all hypothesised risk factors and pathways have been assessed and validated through the Link NCA process, the results are no longer referred to using the term “hypothesised”. Note that the Link NCA guidelines occasionally use the term “hypothesis” as an umbrella term to represent a hypothesised risk factor and its related hypothesised pathways to under-nutrition.

The third activity is a technical expert workshop to agree upon the hypothesised risk factors and develop a local causal model. Figure 4.1 details the process of generating hypothesised risk factors and a local causal model. The process is necessarily iterative and will be further refined during the data collection phases (e.g., Parts 5 and 6). The work described in Chapter 4 represents the initial phase of this process.

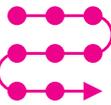
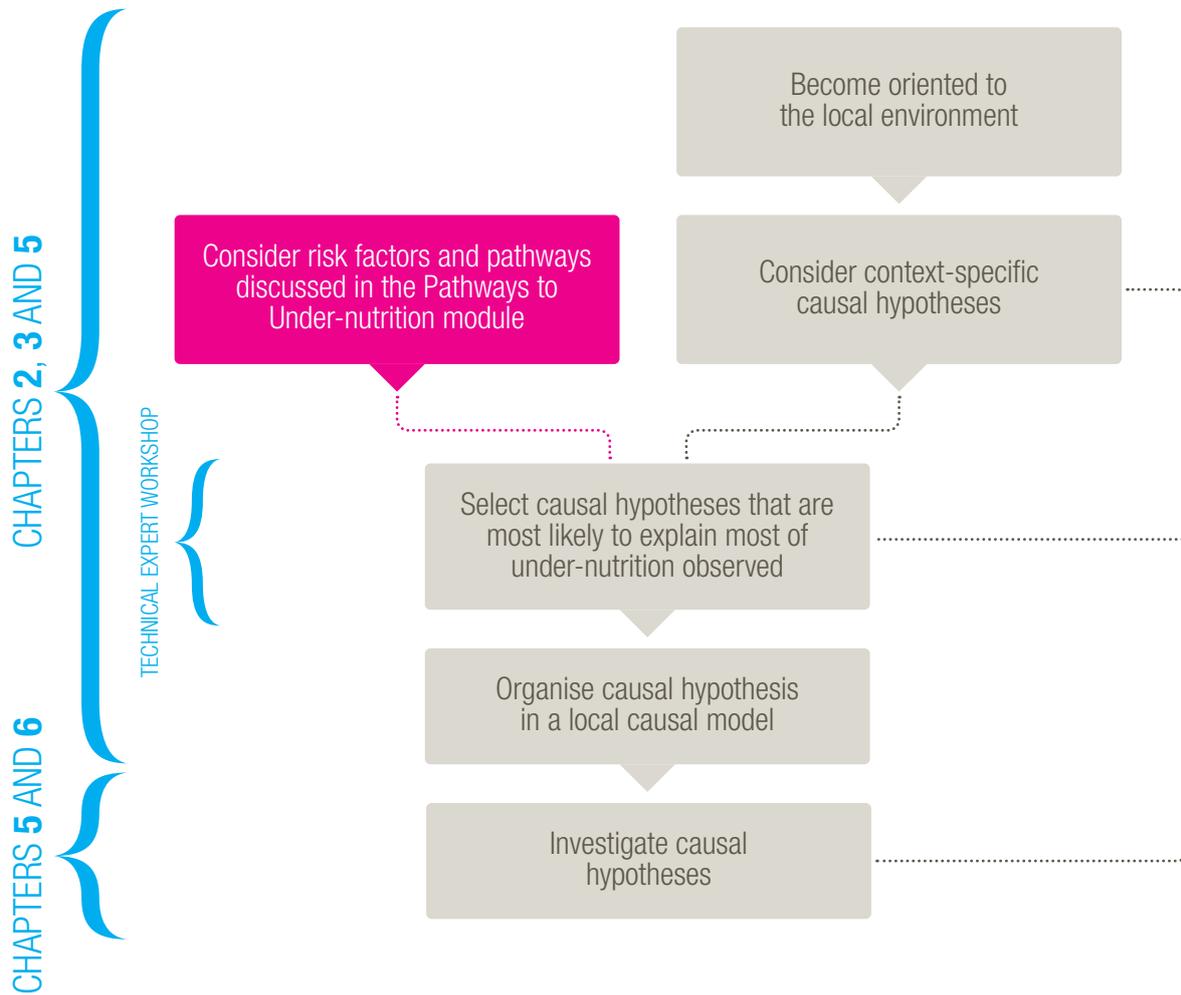
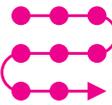


FIGURE 4.1 PROCESS FOR GENERATING AND INVESTIGATING HYPOTHESISED RISK FACTORS OF UNDER-NUTRITION



4.1 BECOME ORIENTED TO THE LOCAL ENVIRONMENT IN ORDER TO GENERATE HYPOTHESES ABOUT THE CAUSES OF UNDER-NUTRITION

The first major task ahead of the NCA Analyst is to acquire an in-depth understanding of the local environment in order to generate hypotheses about the causes of under-nutrition. This objective is critically important and is met by carrying out an in-depth review of secondary information, discussions with key informants, and, on occasion, a field visit. During Step 2 of the Preparatory Phase (Chapter 2) the NCA Focal Point should have conducted a landscape assessment. This landscape assessment was intended to highlight gaps in information in the study area in order to determine the need for a Link NCA. The level of information gathered during the preparatory landscape assessment will not likely be



sufficient to answer the core research questions of the Link NCA. The secondary information review described in the present chapter and the primary data collection described in Parts 5 and 6 are intended to generate the bulk of the Link NCA results. Nonetheless, the landscape assessment conducted during the Preparatory Phase provides a good starting point for the NCA Analyst to begin the review of secondary information, which is intended to be considerably more in-depth.

CONSIDERATION OF A PRELIMINARY FIELD VISIT

If the NCA Analyst is not familiar with the context under study, it can be useful to organise an initial field visit for several purposes.

- *To introduce oneself to local authorities and get official approval for implementing the study (if needed)*
- *To orient oneself to the communities and interview a selection of key informants. If the sampling plan is already completed, this field visit can even include Day 1 (i.e., the meetings with community leaders and key informant interviews) of the qualitative enquiry itinerary (discussed in greater detail in Chapter 5).*
- *To prepare the field survey logistics and human resources (refer to Parts 5 and 6)*

During the review of secondary information, the NCA Analyst should use the UNICEF framework on the causes of under-nutrition (hereafter referred to as the UNICEF causal framework) as a guide to thinking about under-nutrition causality. A diagram of the UNICEF causal framework is available in the Tool kit (see Tool *Nutrition Causal Framework*). The Tool *From concepts to measurements* contains a list of risk factors important to consider in a Link NCA. Although the list is most applicable to the Risk Factor Survey, it can be a useful reference for the secondary data review. The NCA Analyst should also refer back to the Link NCA 6 study questions presented in Chapter 2 as he or she reviews secondary information.

In addition to uncovering the obvious causes of under-nutrition in the area, the NCA Analyst should use the secondary information review to understand, to the extent possible, why these causes exist. The community-level qualitative enquiry (Chapter 5) will provide an opportunity to explore the question of why in greater detail. Nonetheless, the NCA Analyst should use the secondary information review to develop preliminary hypotheses regarding possible pathways to under-nutrition.

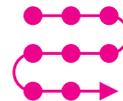
Sources of information on nutrition data and immediate, underlying, and basic causes of under-nutrition should be examined during the secondary information review. When reviewing the information, the NCA Analyst should consider the associations between risk factors and under-nutrition outcomes. These information needs and sources are described in greater detail below.

When reviewing secondary information sources, the NCA Analyst should use snowball sampling. According to this method, the NCA Analyst would use the citations in the preliminary reports gathered to identify other reports or studies that are relevant to the secondary information review.

4.1.1 NUTRITION DATA

Objectives

The objective of the review of nutrition data is to assess the a) type of under-nutrition, b) severity of under-nutrition, and c) seasonality and trends in under-nutrition in the population under study. This information will serve as a starting point to give definition and shape to the problem that is to be explained



by the Link NCA. Sources of information on immediate, underlying, and basic causes of under-nutrition are discussed in subsequent sections.

Sources of information

Nutrition information at the national level

- The Demographic and Health Surveys (DHS)¹ are regularly implemented in more than ninety countries and include information on nutrition indicators. The data are often regionally representative.
- The UNICEF report “Improving Child Nutrition: The achievable imperative for global progress”² provides country profiles of under-nutrition for twenty-four priority countries.
- The World Health Organisation (WHO) Nutrition Landscape Information System (NLIS)³ is “a web-based tool which provides nutrition and nutrition-related health and development data in the form of automated country profiles and user-defined downloadable data. [...] [It presents a] snapshot of a country’s nutrition, health, and development at the national level.”

Nutrition information at local level

- The Complex Emergency Database (CEDAT) website (<http://www.cedat.be/>) collects humanitarian surveys, including nutrition surveys.
- SMART nutrition survey data can be accessed via the country’s national nutrition department (or, if none exists, the Ministry of Health) or from organisations that commonly conduct nutrition surveys (e.g., UNICEF, ACF, Save the Children, Concern, Valid International, Médecins Sans Frontières).
- The Humanitarian Practice Network has developed an excellent guide to interpreting anthropometric data.⁴ Topics covered in the guide include understanding the relationship between mortality and under-nutrition, as well as interpreting seasonal trends in under-nutrition. Chapter 5 of the guide, “Interpretation and decision-making” is a particularly useful resource.

Nutrition surveillance programmes

- Data from any existing nutrition surveillance programmes in the area provide an interesting source of information on long-term trends in under-nutrition. Ministry of Health officials and colleagues at the mission-level organisation and partner nutrition organisations should be aware of any nutrition surveillance programmes operating in the Link NCA area.

Admissions to nutrition treatment centres: seasonal and historical trends

- If acute under-nutrition treatment centres are active in the area under study, the NCA Analyst could request permission from the centres to review aggregate (not patient-level) data on patient admissions. Trends in admissions are a proxy indication of the incidence (i.e., number of new cases) of wasting, both intra and inter-annual, provided that programme coverage is sufficient to detect and treat new cases of wasting. This is rarely the case. To understand the extent of coverage in the Link NCA area, the NCA Analyst can consult coverage surveys following the Semi-quantitative Evaluation of Access and Coverage (SQUEAC) methodology^{5,6}.

1) DHS website: <http://www.measuredhs.com>

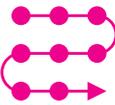
2) UNICEF, (2013). Improving Child Nutrition: The achievable imperative for global progress Retrieved from http://www.unicef.org/media/files/nutrition_report_2013.pdf

3) Nutrition Landscape Information System. WHO. Accessed 2 May 2014. <http://www.who.int/nutrition/nlis/en/index.html>

4) Young, H. and Jaspars, S. The meaning and measurement of acute malnutrition in emergencies. Humanitarian Practice Network, 56. November 2006. Retrieved from

5) Myatt, M., Jones, D., Emru, E., Guerrero, S., Fieschi, L., SQUEAC & SLEAC: Low resource methods for evaluating access and coverage in selective feeding programs. Valid International. Retrieved from <http://www.validinternational.org/demo/reports/SQUEAC.Article.pdf>

6) Also see resources available on the Coverage Monitoring Network’s website: <http://www.coverage-monitoring.org/>



Community perceptions of under-nutrition and its causes

- If available, data on how nutrition is perceived by local communities will be helpful for later stages of the study. Consult an anthropologist in the area to determine if any such research has been collected in the past. This type of information is of interest for many reasons, including for insights into how the community copes with under-nutrition and the most appropriate way to communicate with community members on the subject.

Outputs

Note that the outputs below depend on the extent of available nutrition data in the Link NCA context. The NCA Analyst should present as much of the data for the outputs below as possible.

- Medium term trends and seasonality of wasting and stunting graphics.
- Recent prevalence levels of wasting and stunting by age groups and sex. A comparison of locally relevant data with national and regional data will give an overview of the specificities of the local situation.
- An overview of where the gaps are in these data and the reliability of the data.

4.1.2 DATA ON IMMEDIATE AND UNDERLYING CAUSES OF UNDER-NUTRITION

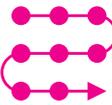
Objective

The objective of this stage in the secondary data review is to review information on each of the clusters of underlying causes of under-nutrition presented in the UNICEF causal framework (i.e., food security, health, care practices, and WASH). The tool *From concepts to measurements* provides definition and precision on the underlying causes mentioned in the UNICEF causal framework. The NCA Analyst should seek to understand what is known about these causes in the NCA area, including information on seasonal trends and how these factors might be different in different population groups.

Sources of information

Information on immediate and underlying causes of under-nutrition is usually readily available. The different types of information are presented below. Suggested sources of information are presented in parentheses.

- Disease: presence and prevalence of key diseases (diarrhoea, malaria, measles, acute respiratory infection, HIV/AIDS) in the affected population and seasonal patterns. Any recent epidemics (health centre records, health statistics, UN/NGO surveys).
- Food intake: mean daily protein and energy intake, micronutrient intake, dietary diversity (World Food Programme/NGO surveys)
- Food security: rainfall data, crop assessments, pasture and livestock conditions, market price data, income data, household economy, coping strategies, food distribution data, food and income strategies by type of livelihood and changes over time (Ministry of Agriculture, Famine Early Warning System, Save the Children-UK, WFP, local NGOs working on food security issues).
- Social factors and caring behaviours: division of responsibilities within the household (i.e., women's workload), prevalence of female headed households, presence of caregivers and/or extended family, migration of family members or whole family, orphans, changes in leadership, breastfeeding and weaning practices (Ministry of Health, Health NGOs, UNICEF, protection report, social



services reports).

- Health environment: type of shelter, population density, access to health services, access to water, sanitation (e.g., number of latrines/population)

Here is a non-exhaustive list of useful international resources on underlying and immediate causes of under-nutrition:

- Famine Early Warning System Network (FEWSNET) is a multi-sectoral surveillance web resource: <http://www.fews.net>
- Integrated Food Security Phase Classification (IPC) compiles monitoring assessments of food security: <http://www.ipcinfo.org/>
- World Food Programme's Vulnerability Assessment Mapping website compiles assessments and surveys on food security and vulnerability analyses: <http://vam.wfp.org/>
- "Indicators for assessing infant and young child feeding practices" is a jointly prepared report that contains country profiles on key infant and young child feeding (IYCF) indicators: http://whqlibdoc.who.int/publications/2010/9789241599757_eng.pdf
- The World Health Organisation compiles country-level information on health indicators: <http://www.who.int/countries/en/>
- The WHO Nutrition Landscape Information System (NLIS), mentioned above as a good source for nutrition data, can also be used as a source of information on immediate and underlying causes of under-nutrition¹.
- The Humanitarian Data Exchange (HDX) is a new data sharing platform coordinated by OCHA that encompasses the best standards in data collection, offering access to useful and accurate data. All datasets are accessible through the dedicated website: <https://data.hdx.rwlab.org/>

Where data are available on under-nutrition trends over time, risk factors should be considered according to the temporal spaces in which the greatest changes appear to have taken place. For example, where there are dramatic seasonal differences in under-nutrition rates there should be a separate and comparative consideration of the factors that explain both mild levels in nutritional deficiency in certain seasons as well as the aggravating factors that explain seasonal spikes.

Outputs

- A narrative on food security, care, and health factors affecting nutrition at the national and local levels. The narrative should include preliminary analysis of seasonality of under-nutrition and related causes (i.e., it should contain a compilation of existing seasonal calendars).
- Table detailing any existing and recent data (i.e., data collected in the last two years) at the national and local levels on Link NCA core indicators (refer to "List of the NCA core indicators" in the Tool kit). Table 4.1 below gives an example of how the NCA Analyst may wish to present this information.

1) Nutrition Landscape Information System. WHO. Accessed 2 May 2014. <http://www.who.int/nutrition/nlis/en/index.html>

TABLE 4.1 EXAMPLE OF TABLE ON CORE LINK NCA INDICATORS AT NATIONAL AND REGIONAL LEVEL

INDICATOR	NATIONAL LEVEL	PROVINCIAL LEVEL	NCA REGION
Wasting	10.5% (DHS, Nov 2009)	12.8% (DHS, Nov 2009)	Not available
Stunting	35% (DHS, Nov 2009)	44% (DHS, Nov 2009)	Not available
% of Women with no education	65% (National Pop. census, 2005)	68% (National Pop. census, 2005)	65% (National Pop. census, 2005)
Access to potable water	32% (MICS, 2012)	25% (MICS, 2012)	25% (KPC survey, 2008)
Early initiation of breastfeeding	25% (MICS, 2012)	Not available	Not available

4.1.3 DATA ON BASIC CAUSES OF UNDER-NUTRITION

Objective

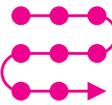
The objective of this stage in the secondary data review is to review information on basic causes of under-nutrition. At the level of basic causes, there are a number of possible types of information the NCA Analyst might consider. One could argue that some of the basic causes listed below fit the definition of an underlying cause. The NCA Analyst should not become overly concerned with ensuring that each cause is appropriately categorised as immediate, underlying, and basic. The most important aim of the secondary data review is to ensure that information on all potential causes of under-nutrition (whatever their categorisation may be) in the NCA area is considered.

Sources of information

Examples of basic causes of under-nutrition the NCA Analyst may wish to research are listed below. The sources of information on basic causes of under-nutrition are largely the same as those listed for the underlying and immediate causes. Where applicable, sources of information on basic causes are presented in parentheses.

Formal and informal institutions

- Social organisation and social networks (anthropological studies)
- Natural resource management systems – land, water, wood (Ministry of Agriculture, Ministry of Environment/water, studies in traditional systems)
- Information on basic services such as education, water and sanitation, and health (technical ministries as well as the judiciary)
- Markets (market and trade studies)
- Banks, micro-finance and other credit institutions (Ministry of Finance)
- Communication and remittance services (Government statistics, food security studies and research)



- Accountability and effectiveness of any of these institutions (state, civil society, traditional institutions)

Natural resources

- Climate change, water availability, animal and agriculture resources, wild food resources, land access, soil quality, soil erosion (Ministries of Environment and Agriculture, NGOs).

Risk of natural disasters

- The NCA Analyst should seek information on the primary natural disaster risks (e.g., drought, floods, hurricane, earthquake) as well as the capacities of communities to cope with these risks (government executive and Ministries of Environment, Agriculture, Public Works and Infrastructure; NGOs)

Health environment

- Risk of epidemic diseases, the strength of the health system in terms of its quality, coverage, and costs (Ministry of Health, NGOs)

Economic environment

- Food crises, price volatility, collapse in terms of trade (cereals and livestock or labour), employment rate (farming and non-farming labour), inflation, economic migration, labour laws and regulation (Ministries of Statistics, Labour, and Finance)

Demographic trends

- Forced migration, urbanisation, the effect of conflict on the demographics of population, seasonal migration, labour migration (Ministry of Labour, NGOs)

Governance factors

- Strength of governance and state systems of service delivery – health, education, transportation, agriculture and economic services (e.g., policies, resources allocated, inequities)

Social and gender factors

- Marginalisation/exclusion of groups within the population, importance of social capital, social obligations, strength of the social network and solidarity, decision power of women, domestic violence, representation of civil society

Conflict

- Natural resource competition, inter-tribal conflict, civil conflict, conflict with neighbouring countries

Traditions and beliefs

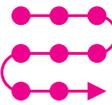
- Religion, traditional practices, food and social taboos

Land

- Land rights, land ownership and access to land

Outputs

- A narrative on basic causes of under-nutrition at the national and local levels.
- A brief write-up that identifies gaps in information on immediate, underlying, and basic causes of under-nutrition.



4.1.4 ADDITIONAL SOURCES OF INFORMATION APPLICABLE TO THE SECONDARY INFORMATION REVIEW

In addition to the above sources of information, the NCA Analyst should also consult the following:

Grey literature

Reports published by in-country organisations can be a rich source of grey literature. The NCA Analyst should consult partner organisations in the area to see if they have recently published any reports (i.e., in the last two years) that may contain information on causes of under-nutrition.

Key informants

A non-exhaustive list of relevant key informants may include: local leaders, anthropologists, health workers, traditional birth attendants, teachers, academics, business professionals, staff from relevant government ministries (e.g., agriculture, health, nutrition), and any NGO or UN staff operating in the target communities.

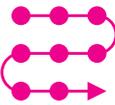
Scientific literature

The Analyst should consult available scientific literature on causes of under-nutrition in the Link NCA context. Full text articles are sometimes accessible free-of-charge. Even if the full text of the article is not available, a good summary of the research can usually be obtained from the article's abstract, which is nearly always accessible. The libraries of research centres in the Link NCA area may provide access to journal databases. Pubmed¹ is a free search engine and database of medical literature that is accessible to anyone with an internet connection. It is a useful search engine for literature on causes of under-nutrition in the particular Link NCA context. Pubmed provides free access to journal abstracts. Occasionally full-text versions of articles are also available free-of-charge.

Pathways to Under-nutrition module

The module *Pathways to Under-nutrition* associated with these guidelines, contains summaries of global scientific evidence on the causes of under-nutrition. It should be read in full prior to beginning the process of secondary information review. It is an important reference and will help the Analyst ensure that the most commonly cited risk factors of under-nutrition are considered in the Link NCA. The Analyst may find that some of the research cited in the module is related to the country of study. It should be noted, however, that the module does not contain an exhaustive discussion of all causes of under-nutrition. There will be a number of potential causes of under-nutrition that will be relevant in the Link NCA context that will not appear in the module.

1) Pubmed website. Accessed November 2014. <http://www.ncbi.nlm.nih.gov/pubmed>



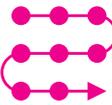
4.2 IDENTIFY HYPOTHESED RISK FACTORS AND PATHWAYS, AND CREATE A LOCAL CAUSAL MODEL

4.2.1 OBJECTIVES

Once the secondary information review is complete and the NCA Analyst has achieved a good understanding of the possible causes of under-nutrition and the overarching environment, the next objective is to begin the iterative process of generating a set of hypotheses. These hypotheses generated will concern the risk factors that are believed to explain under-nutrition in the study context (termed “hypothesised risk factors”) and the mechanisms, or pathways, through which these risk factors may operate (termed “hypothesised pathways”). The Analyst should refer to *Examples of hypothesized risk factors and hypothesized pathways to under-nutrition* in the Tool kit and the *Glossary* for examples and definitions. These selected hypothesised risk factors will guide the remainder of the Link NCA process. While a preliminary set of hypothesised risk factors and pathways should be generated from the secondary information review, the process is iterative. The hypotheses developed at this stage are a starting point for helping to focus the assessment. New hypotheses (or new evidence of risk factors or pathways) may emerge at any point during the Link NCA process. Hypothesised risk factors and pathways will be debated and discussed during the technical expert workshop (see Section 4.3). During the community-level qualitative enquiry (Chapter 5) and SMART nutrition survey and/or Risk Factor Survey (Chapter 6), the hypotheses will be reviewed and explored. At the end of the Link NCA study, the hypothesised risk factors are rated by relevance. “Relevance” is defined according to the prevalence of the risk factor and degree to which it plausibly contributes to under-nutrition cases in the Link NCA area. Once hypothesised risk factors and hypothesised pathways are explored through the collection of qualitative and quantitative data they can be referred to simply as plausible risk factors and pathways.

As new information emerges throughout the Link NCA process, the NCA Analyst may continuously develop, modify, add, or remove hypothesised risk factors and hypothesised pathways.

Note that although one of the main objectives of Chapter 4 is to identify hypothesised risk factors and hypothesised pathways in order to assess them at later stages of the Link NCA, this is not the same process as statistical “hypothesis testing”. During statistical hypothesis testing, tests of significance are used to determine the probability that sampling error accounts for an observed relationship between an independent and dependent variable. The relationship is deemed statistically significant when the probability is low enough to reject the null hypothesis. The hypothesised risk factors and hypothesised pathways generated during the technical expert workshop are not subject to tests of significance nor is their validity predicated upon rejection of null hypotheses. Instead the hypothesised risk factors and pathways will be used during the community-level qualitative enquiry (Chapter 5) to suggest a line of questioning that may reveal information that can be triangulated with other information sources for drawing conclusions about the priority and relevance of these hypothesised risk factors and pathways.



Hypothesised risk factors and pathways have to be sufficiently specific to be analysed. “Limited food access” is too broad and covers too many risk factors. “Limited diversity of complementary feeding for young children during the hunger season” is more specific. As a general rule, each hypothesis should specify:

- *What is the problem: which risk factor(s) are at stake?*
- *Who is affected: Younger children? Men? Women? Population groups?*
- *When is the problem striking: all year round or at specific seasons? Is it a structural or time-bound issue?*

4.2.2 PROCESS FOR ELABORATING PRELIMINARY HYPOTHESED RISK FACTORS

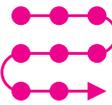
In elaborating the preliminary hypothesised risk factors, the NCA Analyst should begin with the first study question of the Link NCA: What is the prevalence and severity of wasting and/or stunting in the study population? Then, using the Pathways to Under-nutrition module, the NCA Analyst should consider which risk factors relate to each component of the UNICEF causal framework (e.g. basic causes, underlying causes, immediate causes) and which are most prevalent in the area under study. The NCA Analyst should probe what the potential immediate or underlying causes may be and then think about what pathways from basic causes are likely to be most relevant (as opposed to thinking about all basic causes first, then underlying, and then immediate). The scientific literature summarised in the Pathways to Under-nutrition module can be useful for suggesting possible mechanisms of association between risk factors and under-nutrition in the local context.

4.2.3 PROCESS FOR ELABORATING LOCAL NUTRITION CAUSAL MODEL

Once hypothesised risk factors and pathways are drafted, the NCA Analyst should organise them in a local nutrition causal model. A local causal model shows the pathways by which different risk factors are hypothesised to be related to under-nutrition and to each other. See *Examples of local causal models* in the Tool kit.

4.2.4 OUTPUTS

- List of preliminary hypothesised risk factors and accompanying narrative. Each hypothesised risk factor generated by the review of secondary information should be supported by a description of the evidence (and sources, including technical experts' input) that informed the hypothesis in the first place. The preliminary list of hypothesised risk factors will be presented and debated during the technical expert workshop.
- Draft of local causal model that outlines the pathways through which the hypothesised risk factors may affect under-nutrition.



4.3 HOLD A TECHNICAL EXPERT WORKSHOP TO AGREE ON HYPOTHESISED RISK FACTORS AND PATHWAYS

The next step in the Link NCA process is to present and debate the preliminary hypotheses developed by the NCA Analyst in a one-day workshop with technical experts. The Analyst solicits input on the list of preliminary hypothesised risk factors and pathways and, based on this input, refines, validates, and potentially rejects the hypotheses. The workshop also provides an opportunity to formulate new hypotheses on risk factors and pathways of under-nutrition that the Analyst might have missed in his or her initial list of hypotheses. The NCA Analyst should refer to the Tool entitled *Organising the NCA Technical Expert Workshop* for more information on the content and organisation of such an event.

The workshop has to be planned well in advance since the Link NCA fieldwork cannot start until the workshop is completed. Delays in holding the workshop will hinder progress on the rest of the Link NCA.

4.3.1 OBJECTIVES

The objectives of the technical expert workshop are as follows:

- To validate a set of hypotheses about the risk factors that may explain under-nutrition in the study context and the mechanisms, or pathways, through which these risk factors may operate. The hypothesised risk factors are generated via a local causal model-building exercise based on propositions made by the NCA Analyst (based on his or her secondary data review and interviews).
- To reach consensus around the hypothesised risk factors to be field-tested.
- To generate a shared understanding of what types of pathways and dynamics will be explored through the qualitative enquiry.
- To reach a consensus regarding which nutrition vulnerable groups will be studied through the Link NCA.
- To use the discussions with technical experts to generate buy in from key partners. The discussions are also intended to provide a source of qualitative data.

4.3.2 CHOOSE THE WORKSHOP PARTICIPANTS

Ideally participants should represent the following:

- Experts in the main technical domains of the UNICEF causal framework: nutrition, health, care practices, food security, water and sanitation, and relevant fields within the social sciences (e.g., anthropology, economics, political science, social protection, etc.).
- Different types of organisations that work with the target population in the areas listed above: academic institutions (e.g., universities, university research centres), operational organisations (local NGOs, large international NGOs), and government agencies (e.g., Ministries of Health,

Agriculture, Nutrition, and Labour).

- Both the national and local level.

It is important that the NCA Analyst treat technical experts as one source of data – ultimately to be triangulated with data from other experts from the field and community level. The following table (Table 4.2) provides a tool for ensuring balanced coverage of participants invited to the technical workshop.

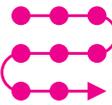
TABLE 4.2 MATRIX FOR SELECTING PARTICIPANTS TO ATTEND THE TECHNICAL EXPERT WORKSHOP (BASED ON THE IPC TECHNICAL MANUAL¹⁾)

TECHNICAL DOMAIN	TYPE OF ORGANISATION				# OF LOCAL LEVEL EXPERTS	# OF NATIONAL LEVEL EXPERTS
	ADMINISTRATION	ACADEMIC INSTITUTION	OPERATIONAL ORGANISATION	TECHNICAL AGENCIES		
 Nutrition						
 Health						
 Food Security (e.g. agriculture, social protection, food prices)						
 Wash						
 Social sciences						

The following recommendations should be kept in mind when completing the table:

- Include the name and organisation of each participant
- Each technical domain should be represented by at least two participants
- Each type of organisation should be represented by at least two participants.

1) "Diagram 3: Technical working group matrix", p. 24. IPC Global Partners. 2012. Integrated Food Security Phase Classification Technical Manual Version 2.0. Evidence and Standards for Better Food Security Decisions. FAO. Rome. http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC-Manual-2-Interactive.pdf



It would also be useful to have members invite some participants who are well versed in cross-sectoral interrelationships among causes of under-nutrition.

The Analyst should plan to accommodate approximately fifteen to twenty-five participants. A larger group is difficult to shepherd through the process.

The perspectives of political stakeholders are a useful source of data to the Link NCA. Political stakeholders who are champions of nutrition can help promote the NCA and ensure sustained focus on its results after the Link NCA study has concluded. Nonetheless, it is recommended that political stakeholders not be invited to the technical expert workshop due to the potential for their perspectives to bias the process of hypothesis generation. Though they are not included in the technical expert workshop, the NCA Analyst should notify political stakeholders of the NCA early on in the process so that they are aware of the study. He or she should not wait until the final workshop to bring the Link NCA to the attention of political stakeholders.

4.3.3 LOCATION OF THE WORKSHOP

The workshop can take place at national level in the capital city, or at a local level (district or region). There are pros and cons to each option, which should be weighed against the objectives of each individual Link NCA. Experts at the national level are likely to have wide-ranging experience and a comprehensive knowledge of previous national level studies related to under-nutrition causality. A national-level workshop is also likely to improve the visibility of the study among other organisations. At the local level, experts are likely to have a much more detailed understanding of local issues and of focus communities. A local-level workshop provides a good opportunity to gain the support of local authorities. It is generally recommended that the workshop be held at the national level since it is often easier to bring local experts to a national level meeting than vice versa. The one exception to this rule would be if governance in the country is highly decentralised, with strong governance and technical expertise existing at local levels.

The important point is to ensure that the technical expert workshop, wherever it is held, contains a balanced mixture of technical experts from the different fields of expertise required.

4.3.4 CONTENT OF THE WORKSHOP

The Tool *Organising NCA Technical Expert Workshop* mentioned above, presents an example of how to approach the organisation and implementation of such an event.

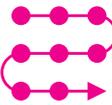
Though published in 1988, the WHO guide to nutritional assessment¹ remains a relevant guide for building local causal models. The FAO guide² “Joint planning for nutrition, food security and livelihoods” is also helpful.

4.3.5 OUTPUTS OF THE WORKSHOP

The outputs of the technical expert workshop should be as follows:

1) Beghin, I., Cap, M., & Dujardin, B., (1988). A guide to nutritional assessment. WHO 1988. Retrieved from <http://apps.who.int/iris/bitstream/10665/37419/1/9241542217.pdf?ua=1>

2) FAO, (2010). Joint planning for nutrition, food security and livelihoods, agreeing on causes of malnutrition for joint action. Retrieved from <http://www.fao.org/3/a-i3516e.pdf> http://www.fsnnetwork.org/sites/default/files/joint_planning_for_nutrition_fao_may2011.pdf



- A list of carefully formulated hypothesised risk factors and hypothesised pathways. These will be further explored during the community level qualitative enquiry and (if deemed necessary) a SMART nutrition survey and/or Risk Factor Survey.
- The identification of nutrition vulnerable groups.
- A preliminary rating of hypotheses by experts.

4.3.6 POSSIBLE CHALLENGES PRESENTED BY THE WORKSHOP

The NCA Analyst should be aware of the participants present at the workshop but also take note of those perspectives that were absent. For example, too often women are a minority in these meetings. Gender specialists and informal institutions (e.g., credit institutions, traditional healers, and birth attendants) are also often neglected or difficult to include in this kind of workshop. These limits should be recognised and compensated for during the field work.

It is also important that participants understand and adhere to the Link NCA method. The Link NCA method for conducting a causal analysis should be clarified at the onset of the survey to avoid frustrations during the stakeholder workshop. Refer to *Limits of the Link NCA methodology* in the Tool kit for a more detailed description.

Now that the context is well-described and hypothesised risk factors and pathways precisely defined, the NCA Analyst can start planning for field data collection (Parts 5 and 6).

5

COMMUNITY-
LEVEL QUALITATIVE
ENQUIRY

This chapter provides guidance on conducting a community-level qualitative enquiry during a Link NCA. Readers who would like additional guidance on conducting a qualitative enquiry can refer to “Qualitative Research Methods”¹ by Family Health International (FHI) and “Data collection: qualitative methods”² by Médecins Du Monde (MDM). The International HIV/AIDS Alliance has developed a toolkit of participatory learning and action (PLA) tools that can be adapted for use in the Link NCA qualitative enquiry³.

Section 5.3 describes the suggested methods for implementing each objective of the community-level qualitative enquiry and proposes outputs that will contribute to the final Link NCA report. Sample guides on the suggested methods are provided in the Tool kit (*Examples of survey instrument for the qualitative enquiry*).

1) Mack, N., Woodsong, C., Macqueen, K. M., Guest, G., Namey, E. (2005), Qualitative Research Methods: A Data Collector’s Field Guide, Family Health International. Retrieved from <http://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector%27s%20Field%20Guide.pdf>

2) Bouchon, M., (2009) Data collection: qualitative methods, Médecins Du Monde. Retrieved from <http://www.medecinsdumonde.org/index.php/Configurations/DSC/Sociocultural-determinants-of-access-to-health-care/Tool-kit>

3) International HIV/AIDS Alliance, (2009). Tools together now! Frontiers Prevention Project. Retrieved from http://www.aidsalliance.org/includes/Publication/Tools_Together_Now_2009.pdf



Objectives of chapter 5

Develop a local definition and understanding
of under-nutrition
.....

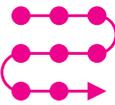
Characterise food security, health,
and care in the community
.....

Explore respondent perceptions of the causes and
consequences of poor food security, health,
and care in relation to under-nutrition
.....

Understand the practices of caregivers of positive
deviant children (i.e., well-nourished and healthy
children of parents who seemingly face the same
challenges and barriers as parents
of under-nourished children)
.....

Identify seasonal and historical trends in
under-nutrition and risk factors
.....

Understand how the community
prioritises these factors
.....



If the Link NCA will contain a quantitative survey, the community-level qualitative enquiry (i.e., focus group discussions) can be carried out before or during the quantitative survey ¹. Implementing the qualitative enquiry concurrently with the quantitative survey will help economise time.

Before the community-level qualitative enquiry can begin, the NCA Analyst needs to develop discussion guides and other instruments that will be used during the enquiry. The first section of this chapter discusses the development and pre-testing of instruments used during the qualitative enquiry.

5.1 DEVELOPMENT AND PRE-TESTING OF DISCUSSION GUIDES AND OTHER INSTRUMENTS

Qualitative fieldwork often relies on semi-structured research instruments to guide the process of data collection. Instruments for qualitative data collection are different than for quantitative surveys, which are comprised of close-ended questions that are rigidly systematized across interviews. Qualitative instruments provide the researcher with a general road map that contains landmarks for reaching the final destination – that is, they guide the types of open-ended questions and probes that should be posed to participants in order to yield information addressing the research objectives. The questions embedded in these instruments are not set in stone. Interviewers need to use judgement based on an in-depth understanding of the research aims in order to probe deeper into issues that emerge in the course of conversation. They also need to be able to pursue interesting and relevant lines of questioning, even if they were not anticipated during the development of the instruments. Unlike quantitative instruments that cannot be further adapted once the data collection has started, qualitative and participatory instruments and techniques can evolve as needed in the course of the enquiry.

Guides will need to be prepared for each of the various approaches to eliciting qualitative data that will be used during the community-level qualitative enquiry (e.g., focus group discussions, key informant interviews, case histories, and participatory activities). The instruments should be developed before the start of the community-level qualitative fieldwork and they should be pre-tested.

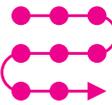
5.1.1 PRE-TESTING OF QUALITATIVE INSTRUMENTS

Pre-testing of qualitative instruments is intended to ensure that the following three criteria are met:

1. Respondents sufficiently understand the questions asked
2. The timing and flow of questioning is logical
3. The information yielded addresses the research objectives

One way to assess these issues is to follow a process called “cognitive debriefing”. Cognitive debriefing involves asking respondents, after conducting an interview, what their interpretations were of the questions that were posed to them to judge whether respondent understanding aligns with the intended meaning of the question. A cognitive debriefing also asks participants to flag issues or questions that they may not have fully understood when they were asked during the interview. The person conducting the debriefing should also ask respondents for suggestions about how questions or terms could

¹) Each option has pros and cons: conducting the qualitative enquiry before the quantitative survey can inform the development of the questionnaires, but this option requires a separate trip to the field (and is therefore more costly). Implementing the qualitative enquiry at the same time as the quantitative survey is more cost-effective than having two separate trips to the field.



be better worded or explained. A second important chapter of the pre-test is for facilitators to debrief amongst themselves to discuss what seemed to work well or not work well during the discussion. Issues to consider include: timing and transition from one topic to the next, completeness and clarity of the responses, usefulness of the information, any perceived sensitivities to be aware of, and potential alternative approaches for improving the nature and quality of the information obtained. The instruments should be adjusted to reflect what was learned in the pre-test.

5.2 SAMPLING

Approaches to determining sample size and selecting a sample of respondents for a qualitative enquiry differ in important ways from those used in quantitative surveys. The sampling approach outlined in this section highlights some of the differences and describes the approach that should be employed for this qualitative portion of the Link NCA.

5.2.1 DECIDING THE NUMBER OF COMMUNITIES (OR CLUSTERS) TO INVESTIGATE

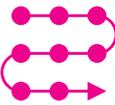
Simply stated, the number of clusters selected (and focus groups or interviews per community) is determined by the number needed to address the research question. Note that although the term “cluster” can refer to any sampling unit (e.g., schools, hospitals, or neighbourhoods) in the Link NCA Guidelines it is typically used to refer to a village in a rural setting. In qualitative research, the sample is considered sufficient once no new major themes or insights emerge – that is, when the data have reached a “theoretical saturation” point. The “saturation point” is reached when new pieces of data add little, if any, new value to the emergent analysis¹. Practically speaking, this saturation approach will need to be balanced by resource constraints as well as the need to avoid overburdening participants and communities. These practical and theoretical considerations are addressed below.

The first step in determining the sample size for the community-level qualitative enquiry is to estimate the number of days to spend in each community. Though it is impossible to know in advance precisely how much time will be required to reach the “saturation point”, in previous Link NCAs six days per village were necessary and sufficient to achieve the research objectives without overextending resources. Of course the amount of time ultimately spent in each village will vary according to context, logistics, available resources, the specific objectives of the Link NCA, and the community’s capacity to devote time to the survey. Local time constraints as well as the level of acceptance of the Link NCA affect the degree to which a community participates in the enquiry. Acquiring permission to operate in the community from local leaders, planning visits to the community in advance, consulting participants and community leaders to determine the timing and sequencing of the study that is convenient for them, and ensuring the availability of light refreshments during the data collection phase all bolster the community’s level of acceptance of the Link NCA.

Note that if the NCA Analyst has allocated six days per village but finds that the “saturation point” is reached sooner he or she should move on to the next village. There is no reason to continue the enquiry in that village once the information received from a variety of respondents has become repetitive or adds no new insight.

Once the NCA Analyst has determined approximately how many days to spend in each village he or she can estimate the number of clusters (i.e., “communities”) to visit.

1) Tracy, S. (2012). *Qualitative research methods: collecting evidence, crafting analysis, communicating impact*. Somerset, NJ: Wiley Publishers. p. 195.



A common mistake would be to plan to spend a very short time in each community in order to increase the total number of communities investigated. The purpose of the qualitative enquiry is to gain an in-depth understanding of the situation, as related to the research questions, rather than trying to achieve a representative sample. Taking time to dig deeper in fewer communities will be more useful than a quick investigation of many communities.

5.2.2 SELECTING THE SAMPLE OF COMMUNITIES

The Analyst may decide that all of the clusters in the Link NCA area seem quite homogenous, meaning that there is no obvious reason to suspect that any one cluster will have significantly different information to share about the causes of under-nutrition. In this case, the Link NCA relies on a cluster sampling approach. The Analyst can randomly choose a number of clusters, (generally limited to 4 due to operational and financial constraints), from all the clusters in the Link NCA geographic area.

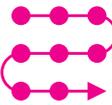
In contexts where the situation is more heterogeneous, purposive sampling can be more appropriate. Unlike quantitative methods, which attempt to provide statistically representative and unbiased data on the population of interest, qualitative research tends to rely on purposive sampling approaches. Purposive sampling involves non-random and intentional approaches to selecting those respondents that are best positioned to contribute useful information about the study research questions. “Purposive” sampling is different than “convenience sampling” (i.e., choosing respondents that are easiest to reach to cut down on time or effort). Convenience sampling should be avoided.

In order to choose communities to conduct the qualitative enquiry in heterogeneous context the Link NCA relies on a hybrid approach called “random purposive sampling”¹. This approach is useful when the category of individuals meeting the purposive sampling criteria is large (for instance, if there are many communities in the Link NCA area that would be potentially useful to visit). It helps to cut down on the biases that can come from selecting samples of convenience by randomly choosing clusters (i.e., communities) from the larger pool of those that could potentially provide useful information.

For example, if the NCA Analyst intends to visit four villages total, she/he should consider whether there are certain types of villages that would be important to visit, especially if the causes of under-nutrition might be expected to differ by type of village. The “nutrition vulnerable groups” that were identified during the technical expert workshop (see Chapter 4) should be considered when developing the sampling plan for the community-level qualitative enquiry. For instance, if it is thought that the causes of under-nutrition are likely to differ significantly by major livelihood zone, then the NCA Analyst could stratify by livelihood zone by dividing the villages in the Link NCA area into the number of primary livelihood zones in that geographic area (in this example, we will use “two”). From these two livelihood zones, the Analyst could then randomly choose two villages each in which to conduct the qualitative enquiry. The Analyst is thus being purposive about wanting to speak with people living in different livelihood zones (i.e., stratifying by livelihood zone), and yet by using random selection the options are narrowed in a way that avoids the risk of going only to villages close to a road or big city.

Alternatively, the Analyst may decide that all of the villages in the Link NCA area seem quite homogenous, meaning that there is no obvious reason to suspect that any one village will have significantly different information to share about the causes of under-nutrition. In this case the Analyst can randomly choose four villages from all the villages in the Link NCA geographic area. Because the sample size of communities is small for the qualitative enquiry, there is a limit to the number of different “types” of villages that should be visited. It is helpful to visit at least two villages for each “type” (e.g., livelihood zone, urban vs. rural, primary ethnic group) in order to ensure that theoretical saturation is reached through the interviews while also being careful not to overburden a single community or group of respondents.

¹ Kemper, E. A., Stringfield, S., & Teddlie, C. (2003). Mixed Method Sampling Strategies in Social Science Research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (273-296). Thousand Oaks, CA: Sage.



In previous Link NCAs an allocation of six days per four different villages (i.e., clusters) was a necessary and sufficient amount of time to meet the objectives of the community level qualitative enquiry without violating logistic, budgetary, and community constraints.

If the Link NCA also contains a quantitative SMART and/or Risk Factor survey, these guidelines recommend that the qualitative and quantitative surveys be implemented in parallel with one another for time and other logistical considerations. To optimize the time in the field, it can be helpful to develop the sampling plan for the quantitative survey before determining the sample for the qualitative enquiry so that the qualitative enquiry sample can be selected from a random sub-sample of the clusters chosen for the quantitative survey. Refer to the sampling section 6.4 of Chapter 6 for more information.

5.2.3 SAMPLING OF RESPONDENTS WITHIN A COMMUNITY: PURPOSIVE SAMPLING

At the community level, it is easiest to select respondents using a purposive sampling approach, that is, to intentionally choose which people to speak to, based on the usefulness of the information they are likely to provide. The NCA Analyst must have a very good sense of the objectives of the qualitative enquiry (see Section 5.3) in order to seek out the informants that can provide the richest data for each objective. As it has been stated previously, it is essential to review the guidelines in full before beginning work on the Link NCA. This will ensure a high level of understanding of the objectives and the work required.

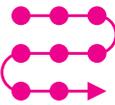
The Analyst should purposively select the following four types of participants: 1) community leaders, 2) key informants, 3) mothers and fathers of children under the age of 5, and 4) a sample of women whose selection is based on the nutritional status of their child. These four groups are described below.

Selection of community leaders

The first conversations in the community should be with the community leadership in order to inform them of the study objectives and to obtain their permission and assistance in accessing community residents. Community leaders may be “official” (e.g., local or district-level government officer) or traditional leaders (e.g., village chief). Colleagues at the mission-level office and related organisations should be able to assist the NCA Analyst in identifying appropriate community leaders. Once the Analyst has selected the key community leaders, an initial meeting should be held so the Analyst can introduce herself, explain the purpose and expected duration of the study, and seek permission to operate in the community. If the community leaders are amenable to the Link NCA, the leaders should be consulted for their assistance in recruiting community members and key informants for the ensuing qualitative interactions.

Selection of key informants

Relevant key informants of interest to the Link NCA’s community-level qualitative enquiry include local or district level government representatives, local leaders, anthropologists, health workers, teachers, and any NGO staff operating in the target communities. Discussions with these individuals should be done in the form of a semi-structured key informant interview. Interviews should pick up where the qualitative interactions at the national level left off. They are intended to provide the NCA Analyst with an overview of the local context and culture (e.g., beliefs or norms concerning gender roles, motherhood, fatherhood, the life cycle, the role of religion and tradition in daily life, or any other element of culture that may help understand under-nutrition causality). The key informants can be identified using snowball sampling. In this sampling method, individuals who have already been recruited to participate in the study suggest other potentially appropriate participants. For instance, when asked for a list of names of potential participants in the qualitative enquiry a community leader may suggest the name of a government representative who may then suggest the name of an NGO staff member and so on.



This process should be continued until the NCA Analyst has gathered enough information to meet the objectives of the qualitative enquiry (Section 5.3 provides more information on this point). In addition to providing the Analyst with an overview of the local culture and context, key informant interviews are also used for gathering information needed to meet the objectives of the qualitative enquiry: to highlight what they believe to be leading causes of under-nutrition in the community, who is most affected by it and why, and how risk factors of under-nutrition change seasonally and over time.

This information is a rich source of data, and it will also help the NCA Analyst to further prepare for ensuing focus group discussions (FGD) with community mothers and fathers. Key informants may also be able to assist local leaders in identifying and recruiting participants for these focus groups.

Selection of mothers and fathers of children under 5

The community-level qualitative enquiry should contain interviews in the form of focus group discussions with mothers and fathers of children under five years of age. The discussions with mothers should be conducted separately from those with fathers. Mothers are likely to be best positioned to speak with experience about their understanding of concepts of under-nutrition, their children's health, issues related to food security, and their own caring practices. It can also be useful and illuminating to hear the perspective of fathers and, as such, it is recommended that the NCA Analyst include two or three focus groups in the qualitative enquiry that contain males only.

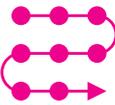
In previous Link NCAs, interviewing members of different wealth groups provided a useful picture of contrasting perspectives and experiences. Organising the focus group discussions by wealth group membership may not be appropriate in all contexts (e.g., there may be a high risk of stigmatisation). If the research conducted to this point in the Link NCA process suggests that another variable may be more important in explaining differences in under-nutrition within different groups of people in a community, then the NCA Analyst could organise the focus group discussions around this particular variable (e.g., ethnicity).

Once the criteria for inclusion in the focus groups is settled, the Analyst can then ask a community leader (or community health worker) for assistance in recruiting mothers and fathers based on the selection criteria. Developing clear criteria will help minimise selection biases (e.g., community workers selecting only families speaking a certain language or those that live closest). Where feasible, it can be useful to verify that the respondents identified by community leadership do indeed meet the selection criteria. In the Burkina Faso Link NCA, for example, focus group discussions were organised by socio-economic status. The day prior to the FGD the Analyst visited each potential participant at her home. The Analyst found this was an effective way to verify that socio-economic criteria were met and to obtain the support of the entire household to "allow" the female participant to leave her duties in order to join the focus group.

Whatever the selection criteria for focus group inclusion, keep in mind that focus groups work best when they are relatively homogenous along socio-economic, gender, or other key demographic variables. While heterogeneous groups can provide lively discussion and a wide range of opinions, homogenous groups often run more smoothly since participants are more likely to feel comfortable speaking when they are surrounded by individuals who are relatively similar to themselves.

Selection of women based on the nutritional status of their child

The community-level qualitative enquiry should include case histories of mothers of severely under-nourished children as well as one-on-one interviews with mothers of positive deviant children (i.e., well-nourished and healthy children of parents who seemingly face the same challenges and barriers as parents of under-nourished children). Mothers of positive deviant (PD) children should be included in the qualitative enquiry to satisfy the fourth objective of the enquiry: understand the practices of caregivers of positive deviant children. Interviewing mothers of under-nourished children can deepen the NCA Analyst's understanding of the causes and consequences of under-nutrition in the community, following a positive-negative deviant analysis. It may be difficult to identify such women without visiting health or nutrition centres and seeking the assistance of a community health worker or other health official involved in tracking nutritional status. Alternatively, if the Link NCA contains a SMART nutrition survey, the Analyst can use the survey data to identify mothers of under-nourished and PD children.



EXAMPLE OF PARTICIPANT SELECTION FOR QUALITATIVE ENQUIRY IN BURKINA FASO

In Burkina Faso, the NCA Analyst obtained a list of potential participants and their household locations from discussions with key informants. Key informants also advised the Analyst which days of the week would be difficult for women to participate (e.g., market days, holidays).

The NCA Analyst visited the homes of potential participants and asked to speak with the potential female participant (in this case, mothers of young children) as well as any other adults in the household. The NCA Analyst then described the study, its purpose, requirements of participation, and the rights of participants. If the mother expressed interest in participating in the study, the Analyst conducted the informed consent process at this stage. The tentative dates for the focus group discussions were also presented. By presenting information on the study to all of the adults in the household, as opposed to just the potential female participant, the decision regarding her participation was made at the household-level as opposed to by her alone. Obtaining support for her participation from the entire household likely fostered higher levels of support for the study in the community than if only the mother had been approached.

Despite the benefits of this approach to recruitment, it is quite time-consuming and has the potential to add an extra day of work for the NCA Analyst in each village. This approach may not be necessary or feasible in all contexts. If it does seem useful, the NCA Analyst could partner with another member of the research team and divide the workload in order to reduce the time required.

5.3 ORGANISATION OF THE ENQUIRY

5.3.1 TIMING AND SEQUENCING THE ENQUIRY

With the assistance of community leaders, the NCA Analyst should outline a clear itinerary for each of the visits in the different communities. When developing the itinerary the Analyst should consider market days, holidays, social events, and labour demands (especially farming), which may change from one community to another. In any case, participants have to be informed in advance of the date to ensure their participation.

Table 5.2 presents an illustrative daily itinerary for the qualitative enquiry, which allocates six consecutive days per village. The illustrative itinerary, which can and should be modified according to context, includes the different types of respondents the Analyst should speak to and the general type of information that should be gathered from them. Days 2 to 5 are generally implemented consecutively but Days 1 and 6 may occur at earlier or later phases in the Link NCA process. On Day 5 it is recommended that the Analyst leave an open block of time to follow-up with individuals whose perspectives may contribute to, clarify, or confirm information gathered during the other discussions. There will also be a gap of time between Day 5 and Day 6 since the NCA Analyst must conduct preliminary analyses of the data collected during Days 1 to 5 before returning to the villages to implement the objectives for Day 6 (see Table 5.2). When the NCA Analyst returns to the village on Day 6 he/she should present preliminary analyses of data collected for that particular village as well as preliminary findings for the qualitative enquiry as a whole. Limited resources may mean that it is not feasible for the NCA Analyst to make a separate trip to the villages at a later date to implement Day 6 of the enquiry. In that case, the NCA Analyst will not have time to conduct a thorough analysis of the data before presenting the findings to the community. Under these circumstances, the NCA Analyst can just present preliminary results for the individual village as opposed to findings for the study as a whole.

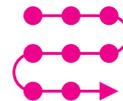


TABLE 5.1 COMPARISON OF APPROACHES FOR IMPLEMENTING THE QUALITATIVE ENQUIRY

TYPE OF APPROACH	DESCRIPTION	PROS	CONS
Consecutive	If the qualitative enquiry will require 6 days per village, the Analyst would conduct all or most of the 6 days of work in one village before moving on to the next village.	More efficient when villages are widely dispersed.	More difficult to incorporate trends that have emerged in discussions with other villages (since the Analyst does not make frequent trips to the village after surveying the other villages). Less feasible if participants are unable to meet on consecutive days.
Iterative	If the qualitative enquiry requires 6 days per village and there are 4 villages in the study, the Analyst would conduct Day 1 activities in one village and then move to the next village to complete the work for Day 1 for that village. After all Day 1 activities have been conducted in all 4 villages, the Analyst returns to the first village to conduct the work for Day 2.	Easier to build on trends that have emerged in discussions with other villages (because the Analyst makes frequent visits between villages).	Only feasible if communities are located close together. May hinder the discussion momentum that can be gained by staying in one community for several days.

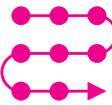
The Analyst can organise her visits to the different villages in one of two ways: by using 1) an iterative approach or 2) a consecutive approach. These two approaches are presented in Table 5.1. A Link NCA implemented in Kenya used the consecutive approach: the NCA Analyst spent five days in one village before moving on to the next village. If various groups of respondents in one village are not available to participate in discussions over consecutive days, the Analyst may need to use the iterative approach, which entails iterating among the different villages in the sample (e.g., implementing “Day 1” of the itinerary in each sampled community, then moving on to “Day 2” tasks, and so on). All else equal, this iterative approach is generally less desirable – it may not be logistically feasible if communities are located far a chapter from one another and may hinder the discussion momentum that can be gained by staying in one community for several days.

5.3.2 HUMAN RESOURCES

The responsibilities and desirable qualifications of each member of the qualitative enquiry team are outlined below.

The NCA Analyst

The Analyst is responsible for organising and managing the entire community-level qualitative enquiry (i.e., sampling, team recruitment and training, data collection, and analysis). During the focus group discussions, the NCA Analyst will facilitate while another team member takes notes. If a translator is needed, then the NCA Analyst can ask questions through the translator and take notes while the translator translates the discussion.



Using a tape recorder for FGD makes the conversation more fluid, allows for highly detailed translation, and minimizes misinterpretations. However, a large amount of time is required for the transcription and the timeline as described in these guidelines does not account for that. Additional resources would be needed.

Additional Investigator(s)

Depending on the itinerary, the number of communities to investigate, and the resources available, two teams, rather than one, may be necessary for the community-level qualitative enquiry. See the section on team configuration below for more information on the pros and cons of one and two-team configurations (section 5.3.3). Regardless of the number of teams, the focus group discussions should always be conducted by a team of at least two investigators (or one investigator and one translator), with one person facilitating and the other taking notes.

Translator

If the NCA Analyst does not speak the local language it will be necessary to hire a translator. Working with a translator will considerably increase the time required to complete the enquiry (e.g., time for the discussions is doubled, time required for training, time required to perform quality checks on the translation). The Analyst should take this additional time requirement into consideration when planning for the qualitative enquiry. The translator must have prior qualitative research experience as well as a good understanding and sensitivity to the socio-cultural background of the study population. The MDM qualitative research guide contains additional useful tips on selecting a good translator ¹.

Community Facilitator

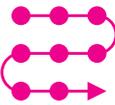
The NCA Analyst will need to recruit a Community Facilitator (one for the whole survey). This individual will serve several important and time-saving functions: he or she will welcome participants as they arrive, organise the provision of drinks and food, and socialise with participants while they wait their turn. In Burkina Faso the Community Facilitator also proved to be a valuable source of information. She was able to provide additional insights to the NCA Analyst based on informal conversations she had had with participants before and after the focus group discussions.

Community Mobilizer

The role of the Community Mobilizer is to assist the NCA Analyst with focus group discussions. The Community Mobilizer can help by identifying potential participants for the focus group discussions and by assisting with the organisation of the FGDs (e.g., determining the time and place of the discussions). At the beginning of the community-level qualitative enquiry the NCA Analyst has to consult the community leaders and ask them to identify someone suitable for this role. He or she will be someone who is well known in the community and can dedicate time to the Link NCA. The most important quality of the Community Mobilizer is a high level of familiarity with the households of the village. The Community Mobilizer should provide the Analyst with a list of households that fit the selection criteria of the community-level qualitative enquiry and who may wish to participate in the focus group discussions. Each village sampled in the community-level qualitative enquiry will have its own Community Mobilizer.

The role of the Community Mobilizer is valuable but brief and as a result he or she is generally not paid for providing a list of potential participants. The choice as to whether or not to provide financial compensation for the Community Mobilizer's assistance to the Link NCA should be made on a case-by-case basis. The NCA Analyst should speak with senior advisors at his/her organisation to see what the policy is regarding compensation in such instances.

1) Bouchon, M., (2009) Data collection: qualitative methods, Médecins Du Monde. Retrieved from <http://www.medecinsdumonde.org/index.php/Configurations/DSC/Sociocultural-determinants-of-access-to-health-care/Tool-kit>



Driver(s)

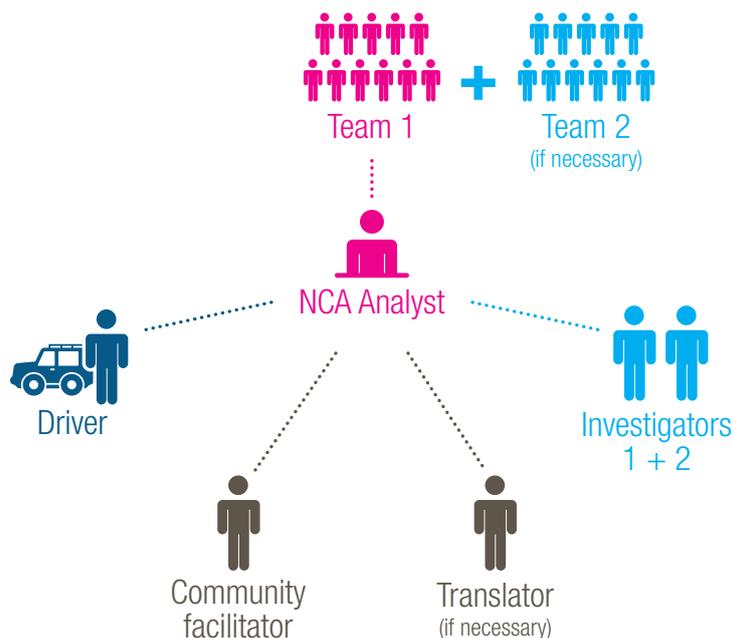
If the Link NCA includes a quantitative survey (i.e., a SMART nutrition survey, Risk Factor Survey or both) then drivers are needed to transport the enumerators and supervisors to the field. Since the travel schedule and needs of the qualitative team differ from those of the quantitative team, it will be necessary to hire separate drivers to transport the qualitative team to the villages. Ideally, the focus group discussions will take place within walking distance of participants' homes. If that is not possible then the NCA Analyst may wish to arrange transport for participants.

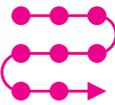
5.3.3 TEAM CONFIGURATION

The qualitative enquiry will always contain at least one team consisting of at least two people (one person to facilitate and possibly translate the discussion while the other takes notes). The choice to have a one-team or two-team configuration (see figure 5.1) will be determined by logistical considerations and available resources (i.e., the number of communities to investigate, resources available, and itinerary of the Link NCA). If the Analyst does not speak the language that it may work better to have two investigators conduct the qualitative interviews, with close supervision from the Analyst to make sure everything is on track.

Each configuration has its advantages and disadvantages. A one-team configuration will provide the NCA Analyst with a very thorough overview of the qualitative discussions since he/she will have conducted all of them. On the other hand, a two-team configuration can diversify the technical skill set among the team. For example, if the Analyst has a technical background in nutrition then he or she might want to hire an additional pair of team members based on their expertise in complementary areas such as food security or water, sanitation, and hygiene. The downside of a two-team configuration is that extra time is needed in order to train the team members so that they thoroughly understand the research objectives and apply a similar method. The two teams also need to be sure to regularly discuss results as chapter of the iterative analysis process described in the Analysis section (section 5.8 of chapter 5). If a two team configuration is used, both teams should aim to work simultaneously in the same community so that they can travel and process data together.

FIGURE 5.1 EXAMPLE OF POSSIBLE TEAM CONFIGURATION FOR THE QUALITATIVE ENQUIRY





5.4 TRAINING

Qualitative research requires skilled and knowledgeable personnel who are capable of in-depth exploration of the research topic. Additionally, one of the hallmarks of qualitative methods is flexibility, which means that the researcher must be prepared to pursue interviews with respondents and lines of questioning that have not necessarily been pre-identified in the interview discussion guides. The NCA Analyst should exemplify these traits. In order to ensure uniformly high quality standards are met, the Analyst must conduct a rigorous training session for the rest of the research team (i.e., the translator and any additional investigators who may either facilitate the focus groups or act as note-takers). The following describes the three main objectives of the training session:

- 1. FAMILIARISE THE TEAM WITH THE OBJECTIVES OF THE LINK NCA AND THE METHODS USED TO MEET THEM.** It is essential that the team have a clear understanding of the goals of the community-level qualitative enquiry in order to effectively translate, probe, and transcribe information during the focus group discussions.
- 2. ENSURE THAT THE PRINCIPLES OF RESEARCH ETHICS ARE UNDERSTOOD.** The rules concerning the protection of human research subjects must be adhered to during the focus group discussions. See Chapter 3 for more information on research ethics and the Link NCA.
- 3. PRACTISE EFFECTIVE TRANSLATION, FACILITATION, AND NOTE-TAKING.** For an overview of how to address common challenges in qualitative research, as well as guidance on effective translation, facilitation, and note-taking the NCA Analyst should refer to the MDM¹ and FHI² qualitative field research guides. The NCA Analyst should use the training sessions as an opportunity to practice these techniques with the team and offer feedback.

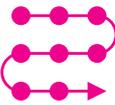
In order to meet these objectives the NCA Analyst should budget two to three days for the training. Tool *Organising training of enumerators for the qualitative survey* provides an example agenda for the qualitative training session. It is critically important that the training session include a pilot test (i.e., practise session) before starting data collection. The pilot test is intended to introduce the team to the data collection process as well as provide an opportunity to practise their role. The NCA Analyst should use the pilot test as an opportunity to observe the performance of the team members and offer constructive suggestions for improvement where necessary.

5.5 LOGISTIC RESOURCES

Besides transport, the NCA Analyst should plan to provide basic necessities for participants such as healthy snacks, drinks, adequate shelter, and sanitation facilities. All of these provisions tend to be very well appreciated and can help build rapport between the Analyst and participants. Other items that should be budgeted for include notebooks, bags, pens, and possibly a tape recorder (if one will be used).

1) Bouchon, M., (2009) Data collection: qualitative methods, Médecins Du Monde. Retrieved from <http://www.medecinsdumonde.org/index.php/Configurations/DSC/Sociocultural-determinants-of-access-to-health-care/Tool-kit>

2) Mack, N., Woodsong, C., Macqueen, K. M., Guest, G., Namey, E. (2005), Qualitative Research Methods: A Data Collector's Field Guide, Family Health International. Retrieved from <http://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector%27s%20Field%20Guide.pdf>



5.6 DATA COLLECTION

Table 5.2 presents an illustrative itinerary and modes of data collection for the qualitative research conducted in each community sampled for the qualitative enquiry. This itinerary can and should be adapted as necessary to context. Italicised, capitalised, numbered “Objectives” presented in the table correspond to the following six core objectives of the community-level qualitative enquiry:

OBJECTIVE 1: Develop a local definition and understanding of under-nutrition

OBJECTIVE 2: Characterise food security, health, and care in the community

OBJECTIVE 3: Explore respondent perceptions of the causes and consequences of poor food security, health, and care in relation to under-nutrition

OBJECTIVE 4: Understand the practices of caregivers of positive deviant children (i.e., well-nourished and healthy children of parents who seemingly face the same challenges and barriers as parents of under-nourished children)

OBJECTIVE 5: Identify seasonal and historical trends in under-nutrition and risk factors

OBJECTIVE 6: Understand how the community prioritises these factors



TABLE 5.2 ILLUSTRATIVE QUALITATIVE ENQUIRY ITINERARY AND MODES OF DATA COLLECTION

DAY	WHO	OBJECTIVE	FORMAT
01	<ul style="list-style-type: none"> Community leaders (i.e., traditional leaders or government officials) NGO staff Government representatives Local leaders Health worker(s) Anthropologists Teachers 	<ul style="list-style-type: none"> Introduce the NCA Analyst to community leaders Explain the purpose of the study Obtain permission to operate in the community Ask for assistance in organising the itinerary and identifying a Community Mobilizer Obtain an “orientation” to key facets of the culture that will contextualize the FGDs (e.g., beliefs/norms concerning gender roles, motherhood, fatherhood, the life cycle) Gain assistance in recruiting participants. Ask local health workers to help identify mothers of under-nourished and positive deviant children <i>OBJECTIVE 1</i> <i>OBJECTIVE 2</i> <i>OBJECTIVE 3</i> 	<ul style="list-style-type: none"> Initial meeting with leaders Key informant interviews
02	<ul style="list-style-type: none"> Mothers/caretakers of children < 5 years, stratified, if necessary, when a key variable (e.g., ethnicity, livelihoods, or socio-economic status) may significantly differentiate the causes of under-nutrition for that group. Stratification helps to ensure representation of these different perspectives in the enquiry. 	<ul style="list-style-type: none"> <i>OBJECTIVE 1</i> <i>OBJECTIVE 2</i> <i>OBJECTIVE 3</i> <i>OBJECTIVE 5</i> 	<ul style="list-style-type: none"> FGDs Seasonal calendar/historical timeline Role playing games
03	<ul style="list-style-type: none"> Same as Day 2 	<ul style="list-style-type: none"> <i>OBJECTIVE 6</i> 	<ul style="list-style-type: none"> Participatory rating exercises
04	<ul style="list-style-type: none"> Selected mothers of under-nourished children; mothers of well-nourished children Fathers and possibly other individuals with alternative perspectives (e.g. traditional healers, marginalised people) 	<ul style="list-style-type: none"> <i>OBJECTIVE 1</i> <i>OBJECTIVE 2</i> <i>OBJECTIVE 3</i> <i>OBJECTIVE 5</i> 	<ul style="list-style-type: none"> In-depth case histories from two mothers of under-nourished children and two mothers of well-nourished children. Key informant interviews or focus groups with fathers and possibly other individuals with alternative perspectives.
05	<ul style="list-style-type: none"> Selected mothers of under-nourished children; mothers of well-nourished children Fathers and possibly other individuals with alternative perspectives (e.g. traditional healers, marginalised people) 	<ul style="list-style-type: none"> <i>OBJECTIVE 4</i> Triangulate information; clarify and confirm understanding of the topics discussed in days 1-4. <i>OBJECTIVE 2</i> <i>OBJECTIVE 3</i> 	<ul style="list-style-type: none"> In-depth case histories from two mothers of under-nourished children and two mothers of well-nourished children. Key informant interviews or focus groups with fathers and possibly other individuals with alternative perspectives.
06	<ul style="list-style-type: none"> All participants Community representatives Regional authorities 	<ul style="list-style-type: none"> Present the results of the enquiry from that community Seek confirmation of the accuracy of conclusions drawn in that community 	<ul style="list-style-type: none"> Oral presentation Open debate FGD

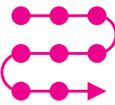
While Table 5.2 provides a snapshot of the six days that comprise the community-level qualitative enquiry, Table 5.3 hones this picture further. Table 5.3 presents an illustrative itinerary of a typical day during the community-level qualitative enquiry. This example is taken from a Link NCA in Burkina Faso.

TABLE 5.3 EXAMPLE OF A TYPICAL DAY DURING THE COMMUNITY-LEVEL QUALITATIVE ENQUIRY IN BURKINA FASO

TIME	DESCRIPTION
 7 am	Departure
 8 am	<p>Arrive in village and regroup women by socio economic group (i.e., the variable used to stratify the qualitative sample in Burkina Faso). All women were invited to arrive at the same time of the day.</p> <p>Organisation: Provide a welcoming area for sitting and chatting, and another private area for Link NCA formal exercises.</p> <p>The Community Facilitator was in charge of staffing the welcoming area. She welcomed participants as they arrived, chatted with them, and provided beverages, fruit, and biscuits to women who were waiting for their turn to participate. There was a lot of informal exchange between women in the welcoming area, which proved instructive to the results of the Link NCA.</p>
 9 am	<p>Beginning of exercises.</p> <p>Each exercise took 25-30 minutes maximum which permitted 1 to 2 exercises per socio-economic group per day.</p> <p>In Burkina Faso, participation in the FGDs was taxing: it required a large amount of thinking and concentration, adaptation to unusual practices and questions, and discussion of sensitive topics in front of other participants whom were otherwise unknown to the participants. To minimise stress, each FGD did not last more than 30 minutes.</p>
 1 pm at the latest	Back to office
 4-6 pm	Debriefing and analysis with team and preparation for the next day

The tool *Examples of survey instruments for the qualitative enquiry* provides an overview of topics and questions that should be explored in these focus group discussions. In preparing the discussion guide for each objective, the NCA Analyst should also be sure to consider the hypothesised risk factors and hypothesised pathways that were developed during the initial stages of the Link NCA (see Chapter 4). Hypotheses that appear to be relevant should be explored through qualitative interaction. The Analyst should keep the hypotheses in mind while conducting the qualitative enquiry but remain open to alternative hypotheses. The Link NCA final report should highlight any new or modified hypotheses that emerged during the qualitative enquiry and relate them back to the original hypotheses.

Below is a description of suggested methods for achieving each of the qualitative enquiry's six objectives. The methods should be adapted to the local context. Each section proposes outputs that will contribute to the final Link NCA report.



5.6.1 OBJECTIVE 1: DEVELOP A LOCAL DEFINITION AND UNDERSTANDING OF UNDER-NUTRITION

Overview

One important starting point of the qualitative assessments in the villages is to develop an understanding of how individuals describe or conceive of good nutrition and under-nutrition, the ways in which under-nutrition manifests in the community, community members' beliefs about its causes and consequences, and what is "normally" done to prevent and treat it. Acquiring this information early on will enable the NCA Analyst to use locally relevant terms and references when discussing under-nutrition in later conversations with the community. Understanding the local perspective is also necessary to design appropriate, contextualized interventions to address under-nutrition (see Chapter 8).

Under-nutrition may or may not be recognised as a problem, particularly if it is relatively mild and takes the form of stunting rather than wasting (i.e., if all children in the community are short for their age, no single child will stand out as being "too short"). Micronutrient under-nutrition is also often invisible. Societies may not think of under-nutrition according to a western medicalised model, but rather may conceive of its causes and expression as being rooted in the social, spiritual, or even supernatural.

At this early stage, the conversations should be as open as possible, and should not be guided by preconceived ideas that could potentially bias the information being shared.

Process

This first objective should be explored initially through conversations with subject matter experts during the Technical Expert Workshop (see Chapter 4). Useful information can be obtained through secondary document review, by reading ethnographic accounts and by speaking with anthropologists or other academic specialists at local universities.

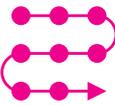
At the community level, this objective should be explored through key informant interviews on the first day, particularly with local health workers who may be able to relay information about local knowledge, attitudes, practices, and beliefs and describe their experiences in communicating concepts of health, nutrition and under-nutrition to the community. Examples of questions that the NCA Analyst may wish to use as prompts during the key informant interviews include the following:

- Is under-nutrition considered a disease? A contagious disease?
- How is under-nutrition differentiated from other ailments? According to the community, is there more than one type of under-nutrition?
- What behaviours are believed to cause under-nutrition?
- Is under-nutrition recognised as a problem in the community?

Focus group discussions with mothers of young children and interviews with mothers of under-nourished children provide an opportunity to delve into these issues in greater depth. Refer to *Examples of survey instruments for the qualitative enquiry* in the Tool Kit for more information.

Output

The output should be a written description of local understandings of sound nutrition and under-nutrition.



5.6.2 OBJECTIVE 2: CHARACTERISE FOOD SECURITY, HEALTH, AND CARE IN THE COMMUNITY

Overview

The purpose of this step is to understand the food security, health, and care situation in the community (i.e., typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs). This forms the basis of understanding needed in order to address Objective 3. At this stage the Analyst should hold off on probing for information on participants' perceptions on the causes of under-nutrition since this topic will be explored using the methods described under Objective 3. Essentially, Objective 2 seeks to understand the "actual" causes of under-nutrition by exploring typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs relating to food security, health, and care. Objective 3 aims to understand the community's "perceived" causes under-nutrition, which may or may not align with the causes elucidated during Objective 2 discussions.

Process

This objective can be assessed through focus group discussions with mothers of children under five years of age, in depth interviews with mothers of under-nourished children under five, as well as with key informants. This objective should also be assessed during the all-male focus groups made up of fathers of children under five years.

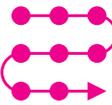
Outputs

One outcome of the focus group discussions exploring these subjects should be a brief narrative that describes the typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs related to food, health and care that are common in the community. The narrative should also comment on any gendered differences that emerged between the all-female and all-male focus group discussions as well as key insights that emerged during the interviews with mothers of under-nourished children under five. The narrative should refer back to the hypothesized risk factors and pathways that were agreed upon at the Technical Expert Workshop, in order to mention whether information seems to reinforce those hypotheses or contradict them. The qualitative information will likely expand on an understanding of the thinking behind the original hypotheses, and will also likely contribute to the development of additional hypotheses.

5.6.3 OBJECTIVE 3: EXPLORE RESPONDENT PERCEPTIONS OF THE CAUSES AND CONSEQUENCES OF POOR FOOD SECURITY, HEALTH AND CARE IN RELATION TO UNDER-NUTRITION

Overview

The purpose of this step is to document 1) whether or how respondents feel that food insecurity, health insecurity or poor caring practices lead to under-nutrition outcomes, 2) what respondents believe to be the main constraints (if any) to achieving optimal food security, health, and care for their children, and 3) the interrelationships among these constraints.



Another major aim of this stage is to understand the interrelationships among what the UNICEF causal framework deems as “underlying causes” of under-nutrition. Though the focus group discussions will mainly explore causes of under-nutrition that operate at the household or community level, the NCA Analyst should attempt to link underlying causes of under-nutrition to basic causes. At the same time, each of these topic areas (i.e., food security, health, and care) is very broad and challenging to cover in a single focus group session. For this reason, each individual FGD should focus on one of these areas, while also seeking to understand the transversal interrelationships among different “underlying causes”.

Process

Like Objective 2, this objective can be assessed through focus group discussions with mothers of children under five years of age, interviews with mothers of under-nourished children under five, key informant interviews, and all-male focus groups made up of fathers of children under five years.

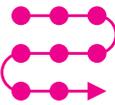
The underlying elements of the UNICEF causal framework are the starting point for this chapter of the enquiry. However, it is important to keep in mind that the respondents may not view food security, health, or care as a “problem” or a “cause of under-nutrition”. Thus, the facilitator should avoid implying that these are “causes” or “problems”, at least a priori. After establishing an understanding of the typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs during the discussions centred upon Objective 2, the NCA Analyst can move into a discussion of respondent opinions of what is considered “optimal” relative to what is “typical”, and can enquire about whether and how the community is constrained from achieving optimal outcomes. The NCA Analyst should also probe for information on how and why previous interventions in the community have succeeded or failed to produce optimal outcomes.

This approach contrasts with the approach taken under Objective 1, in that it uses a causal model to guide the direction of the discussions. It seeks to understand local experiences and beliefs in relation to this model. Taking caring practices as an example, the NCA Analyst should use the focus group discussion to trace the backward, forward, and transversal linkages between causes, consequences, and trade-offs of less-than-ideal caring practices and barriers to ideal caring practices. These discussions are thus intended to touch on “basic” causes as well as “immediate” causes of under-nutrition through their perceived linkages to food security, health, and care.

Outputs

One outcome of the focus group discussions exploring these subjects should be a brief narrative that details respondent perceptions of the causes and consequences of poor food security, health and care in relation to under-nutrition. The narrative should comment on any differences between the information gained from following the UNICEF causal framework and that obtained from community perceptions of under-nutrition. The narrative should also comment on any gendered differences that emerged between the all-female and all-male focus group discussions as well as key insights that emerged during the interviews with mothers of under-nourished children under five.

A second and related output will be a visual depiction of the challenges or constraints (i.e., risk factors or causes) that respondents feel may impede their ability to obtain optimal food security, health and/or care, along with a narrative that describes the relationships among the factors listed. Specifically, the output should be a visual representation of pathways for each hypothesised risk factor that depicts how these factors are believed to relate (or not) to food intake, disease, and under-nutrition status. The visual depiction of pathways should be accompanied by a brief set of narrative statements that refer to and explain these pathways. Each set of narrative statements should include key quotes and text as supporting evidence.



5.6.4 OBJECTIVE 4: UNDERSTAND THE PRACTICES OF CAREGIVERS OF POSITIVE DEVIANT CHILDREN (I.E., WELL-NOURISHED AND HEALTHY CHILDREN OF PARENTS WHO SEEMINGLY FACE THE SAME CHALLENGES AND BARRIERS AS PARENTS OF UNDER-NOURISHED CHILDREN)

Overview

The Link NCA should not focus exclusively on elucidating causes of under-nutrition but also highlight ways in which certain caregivers successfully overcome barriers to good nutrition. The community-based qualitative work provides an important opportunity to uncover positive deviant practices in the community; that is, the behaviours of caregivers whose children who have good health and nutrition despite the fact that they seemingly face similar constraints as caregivers of wasted or stunted children. Again, the task for the NCA Analyst here is to understand common positive deviant (PD) behaviours as well as and respondent perceptions of PD practices. This step will be easier to implement once the Analyst has established what “typical” knowledge, attitudes, practices, assets, access issues, strategies and trade-offs are among general respondents as well as among mothers of under-nourished children.

Process

The outputs from objectives 1-3 of the community-level qualitative enquiry should provide the NCA Analyst with a baseline familiarity with factors that are likely to influence under-nutrition in the community. The Analyst should also arrange to interview at least two mothers of PD children. As Table 5.2 indicates, these mothers can be identified with the help of a community health worker. The section below gives guidance on how to approach the interviews with mothers of positive deviant children.

The positive deviance method emphasises practice instead of knowledge¹. Emphasis on “how” a particular challenge is overcome is believed to facilitate behaviour change to a greater extent than focusing on “what” motivates the positive deviant behaviour and “why”. At this point in the community-based qualitative enquiry, the NCA Analyst should have a good understanding of “typical” practices and the beliefs surrounding them as well as the common barriers and challenges to adequate nutrition. The Analyst should also have a clear idea of how good nutrition is characterised by the population. These two pieces of information lay the foundation for the individual interviews on positive deviance.

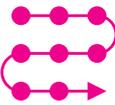
The four basic steps to a positive deviance enquiry are as follows:

1. Define the problem and the desired outcome
2. Determine common practices
3. Discover uncommon but successful behaviours and strategies through enquiry and observation.
4. Design an action learning initiative based on the findings².

The Link NCA is not intended to be a full-fledged positive deviance enquiry. The focus group discussions and key informant interviews centred on Objectives 1-3 of the qualitative enquiry meet the criteria for Steps 1 and 2 of a typical PD Enquiry. The individual interviews with mothers of positive deviant children are intended to “discover uncommon but successful behaviours and strategies” to achieving good health and nutrition, as stated in Step 3. The NCA Analyst should ask probing questions to un-

1) Pascale, R. T. Sternin, J., & Sternin, M. *The power of positive deviance: How unlikely innovators solve the world's toughest problems*. Boston, Mass: Harvard Business Press. p. 197.

2) *Ibid.* p. 207.



cover PD behaviours and strategies. Examples of lines of questioning the NCA Analyst might pursue include the following¹:

- Many people have explained to us how difficult it is to do X because of high costs, conflict with community customs, etc. I was wondering what you do to overcome these barriers or challenges encountered by others in your community?
- You said you did X; how were you able to do that?
- What do you do when X problem happens or you are faced by the challenge of Y?

Once common PD behaviours and strategies have been uncovered, a typical PD enquiry would transition into a process of designing an action learning initiative (i.e., Step 4). These guidelines recommend that the information gathered during the interviews with mothers of PD children be revisited during response analysis activities (see Chapter 8) so as to not lose a potentially valuable approach to changing behaviours. When the Analyst returns to the village on Day 6 to present preliminary analyses of the qualitative data, she should also be sure to include information on common PD practices that were uncovered during the interviews. This information should be contrasted with data collected during interviews with mothers of under-nourished children under five and during the focus group discussions.

Output

The output of these individual interviews will be in-depth case histories from two mothers of positive deviant children.

5.6.5 OBJECTIVE 5: IDENTIFY SEASONAL AND HISTORICAL TRENDS IN UNDER-NUTRITION AND RISK FACTORS

Overview

The purpose of this objective is to explore seasonal and historical trends in the food security, health status, and care situation as well as trends in their causes and consequences. The NCA Analyst should seek to understand how causes of under-nutrition in these areas change throughout the seasons. To achieve this objective, the Analyst should use a participatory process of developing the seasonal calendar and historical timeline. The process of developing a seasonal calendar can be incorporated into the focus group discussions described above, in order to efficiently elicit the desired information. The development of the historical timeline is equally important but perhaps a more challenging task due to its multi-year focus and the fact that it requires that a “normal year” be established. It is important to establish a “normal” year so respondents will have a point of reference when discussing whether historical events made them better or worse off.

Process

The discussion below is divided into two sections. The first section discusses the process of identifying seasonal trends and creating the seasonal calendar of risk factors for under-nutrition. The second section discusses the process of developing historical timeline on risk factors of under-nutrition.

Seasonal calendar

After the steps needed to achieve Objectives 2 and 3 have been completed, the NCA Analyst should make a list of the key factors that emerged during the discussion and use this list as the basis for developing a nutrition risk factor calendar (see “Examples of survey instruments for the qualitative en-

1) Ibid.

quiry” in the Tool Kit). The calendar will be used to describe how those factors may or may not change seasonally. Participants should be asked to use proportional piling techniques to show which months of the year these factors are more or less of a problem for each risk factor. They should be asked to describe what happens in those months, under which circumstances things improve or get worse, and the specific causes of these changes. For additional guidance, see the ACF technical sheet on creating a seasonal calendar that incorporates risk factors of under-nutrition ¹.

Risk factor timeline

The NCA Analyst should also seek to understand how causes of under-nutrition have changed over time. Historical trends in these factors should be explored using a risk-factor timeline. Historical trends are different from seasonal trends in that they are not necessarily cyclical in nature. It is recommended that the historical timeline span 10 years – a longer timespan risks overburdening respondents. The risk factor time-line process begins by identifying a normal year, and drawing a horizontal line to represent that year.

In the next step, participants should be asked to plot how far above or below that line each risk factor belongs each year over the course of a historical period. If people in the community do not recognise under-nutrition as a problem then the NCA Analyst should avoid referencing it directly and instead speak of the concept of under-nutrition more generally. To help participants recall historical conditions, the Link NCA may ask participants to relate changes in risk factors to milestones in their own lives (e.g., the birth of their first child). Once the trend in each risk factor has been plotted, the participants should be asked to explain why they thought the trends were occurring. The NCA Analyst should be sure to elicit information from respondents on both negative trends (i.e., years in which risk factors increased) and positive trends (years in which protective factors were more prominent).

The factors plotted in the historical timeline and seasonal calendar can be organised as “food security”, “health” and “care practices,” or they can be listed in a more disaggregated format (e.g., “breastfeeding”, “diarrhoea”, “dietary diversity”). Another approach to achieving this objective is through a key informant interview. The NCA Analyst can ask a few different key informants to describe how these factors and their consequences have changed over some meaningful historical period of time for people in the community. From that point, the Analyst can construct a timeline around a “normal” or “baseline” year.

Outputs

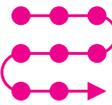
The outputs of this stage of the enquiry are a visual seasonal calendar and historical timeline depicting the trends described above (refer to *Examples of survey instruments for the qualitative survey* in the Tool Kit). A brief narrative that describes respondent explanations of the trends should accompany the visuals.

5.6.6 OBJECTIVE 6: UNDERSTAND HOW THE COMMUNITY PRIORITISES THESE FACTORS

Overview

The purpose of this next step is to engage community members in prioritising factors according to a) which causes are believed to be problematic (i.e., both prevalent and severe), and b) which causes are likely to be modifiable given community knowledge and resources.

1) ACF International, (2012) Nutrition Multi-Sectoral Seasonal Calendar. Technical Sheet. Retrieved from http://www.actionagainsthunger.org/sites/default/files/publications/Nutrition_Multi-sectoral_Seasonal_Calendar_03.2012.pdf



Process

A pile sorting [rating] exercise should be done to rate factors discussed in focus groups according to how significant a constraint they are for the well-being (and adequate nutrition, if that concept is understood) of participants' children.

A rating exercise is different from a ranking exercise. A rating exercise asks participants to rate risk factors, according to a set of criteria, on a scale of 1-10. If respondents feel that all risk factors are critical and merit a "10", then that is their prerogative. The rating approach differs from ranking in that participants do not need to prioritise factors relative to others, a cognitively difficult task. Thus, the rating approach is preferred over the ranking alternative.

This exercise could be included in the focus groups used for Objectives 2 and 3 though due to the significant time required it is better to conduct it as a separate session (but ideally with the same groups of people that participated in the other FGDs).

The rating exercise can be done in the larger focus group (i.e., the NCA Analyst, translator, and focus group participants). The typical number of respondents in each focus group (i.e., eight to nine people) is small enough to conduct the rating exercise with ease. The NCA Analyst in Burkina Faso decided to break the focus group respondents into smaller groups to discuss amongst themselves, and then come back to the larger group to discuss the findings. This approach takes a little more time than doing the entire exercise in the larger focus group but it may promote more participation among respondents (especially for respondents who feel more comfortable voicing their opinion in smaller groups). The small group approach to the rating exercise that was used during the Link NCA in Burkina Faso is presented below as an example approach. The NCA Analyst should feel free to adapt the approach to the rating exercise to his or her circumstances.

The rating exercise (or "piling" exercise as it is sometimes termed) begins by splitting the participants up into groups of two or three individuals. The main causes of under-nutrition identified in the FGDs of the last several days should be read out loud one by one by the NCA Analyst, and then written (if the participants are literate) or drawn in pictorial form on a large sheet of paper. It is helpful to ask one or more of the group members to volunteer to do the writing and drawing, in order to boost participation.

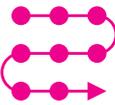
Once the causes are listed, participants working in small groups should be asked to select four or five factors that they consider to be the most problematic in their community. The term "problematic" encompasses both prevalence and severity. Tokens such as bottle caps or small pebbles can be used during the rating exercise. For example, five pebbles can be placed beside the picture representing the cause deemed as the most problematic in the community, four pebbles can be placed beside a picture of an important but less problematic cause, and so on.

The NCA Analyst should then compile the small group responses and enumerate to the group the top ten to twelve causes mentioned. Then as a large group the participants should select the top five causes among the ten to twelve listed that they rate as most significant factors affecting under-nutrition in the community. Major causes in the community are likely to be easily determined by a consensus but more time may be required to reach a consensus on the minor causes of under-nutrition. Throughout the exercise the NCA Analyst or facilitator should follow-up each rating with questions about why participants chose to rate each factor as they did. The note taker should record deliberations among participants. Throughout the process, the NCA Analyst should also ask participants to reflect on which causes they believe to be the most modifiable given the resources and knowledge available within the community.

Outputs

The output of this exercise should be a visual depiction of the rating results as well as a narrative explanation as to why some factors were rated higher or lower than others.

The results can be captured in a photograph (if using visuals like bottle caps and pictures). They can be presented in photographic form in the report or depicted graphically, for instance by using a bar chart in Excel.



5.7 QUALITY CONTROL

The following table (Table 5.4) summarizes some key measures the NCA Analyst should follow to ensure a high standard of quality throughout the qualitative enquiry.

TABLE 5.4 KEY QUALITY ASSURANCE MEASURES FOR THE QUALITATIVE ENQUIRY

When sampling

- Discuss the sampling strategy with team

When building the survey instruments

- Work with a translator to translate technical terms into their local definition
- Pre-test the instruments before the enquiry

When recruiting and training

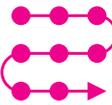
- Ensure staff recruited have experience in qualitative enquiry

During the survey

- Ensure a high level of participation and good rapport with participants (plan visits in advance, discuss the timing and sequencing with participants ahead of scheduling, ensure food and drinks are available to participants)
- Plan team debriefing session every evening to
 - Check completeness and accuracy of the notes and the translation
 - Debrief on the results – trends, themes, patterns - emerging from the discussions
 - Propose modifications and flag follow-up questions for the next day
- Ensure an appropriate environment for the enquiry (i.e., a convenient location for respondents and a private place to conduct the focus groups or individual interviews)

During data analysis

- Analysis should be ongoing and iterative. Prepare a nightly summary of the themes from that day's results.
- Present the results to communities to validate the findings and conclusions
- Reflect on reliability and usefulness of information gathered with field teams



5.8 ANALYSING EVIDENCE FROM THE QUALITATIVE ASSESSMENT

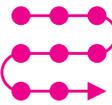
The process of analysing qualitative data is ongoing and iterative. The Link NCA qualitative analysis begins with the first key informant interview conducted by the NCA Analyst, which will likely be at the national level. Qualitative secondary data, findings from the initial technical expert workshop, and data from the community-level qualitative enquiry must all be treated as qualitative information sources that need to be analysed in a continuous fashion, as the data are gathered. The purpose of the qualitative analysis is to identify patterns – commonalities, and differences across groups of respondents and communities – that pertain to the central Link NCA objectives.

The continuous analysis of qualitative data will help the Analyst prepare to write the Link NCA final report. The final report is a large undertaking and should be started as early as possible.

During any interview, meeting, or focus group, interviewers should keep notes. Notes should contain a transcription of the conversation and as well as interviewer observations and insights that they gain during the process. Not all data come from verbal communication; the unspoken or omitted topic can be as relevant a piece of information as that which is vocalised. Interviewers should keep their eyes open for various types of non-verbal signals and dynamics taking place during each interaction and should take note of these subtleties. After each interview or focus group discussion, the interviewers should review their notes to ensure that all information is complete and comprehensible. If working with a translator, the interviewers should review the notes with the translator to ensure that the notes are accurate.

Each evening, all interviewers engaged in the research should meet together as a group to discuss the findings from the day's work. This rule applies equally to situations where there is only one team (e.g., the NCA Analyst and a translator). Each interviewer should prepare a written summary, organised according to key themes – pertaining to the objectives of the enquiry – that emerged during that day's conversations. The results of these debriefing discussions will not only help the Analyst to digest the information obtained that day, but will also help to highlight questions, issues, or gaps that need to be pursued through subsequent interviews and conversations. This nightly debriefing can also suggest needed changes in the line of questioning, in the ways in which questions are asked (e.g., sequencing, probing), or in the types of respondents that need to be interviewed to obtain additional information. It is also an opportunity to start considering "theoretical saturation" – that is, whether the information gained from interviews has repeated itself to the point where no new relevant insights are obtained.

In addition to written daily summaries, the qualitative teams should engage in weekly analysis of the transcripts. Transcript analysis requires sorting all of the accumulated textual data according to the various themes, or topics that have emerged during the enquiry. For example, all information related to "food taboo" should be grouped together. Similarly, text that discusses "intra-household power dynamics" would be grouped as a theme. The hypotheses generated during the technical expert workshop offer a potential list of initial thematic groupings; however, the Analyst must also be aware of other themes that can (and will) "emerge" from the data while reviewing the transcripts. Once the data are grouped by theme, the Analyst should investigate how, when, and why different sets of factors might lead to under-nutrition. Themes also need to also be considered in relation to one another. By comparing information across thematic groupings, the Analyst may gain a better understanding of certain interrelationships that would not be clear when reviewing text within the category of a particular theme. For instance, the Analyst may find that the practise of food taboos appears to be influenced by maternal power in the household, and in households where women have less power, they are more likely to avoid all animal-source foods during pregnancy which may lead to foetal under-nutrition.



Throughout the ongoing analysis process, it is important to notice areas of convergence and divergence among different types of respondents. If the sample was stratified in order to interview different types of groups (e.g., different livelihood groups), the data can be analysed separately by group and then compared across groups. Even if the sample was not stratified, the Analyst may notice differences that emerge in the types of responses provided by different types of individuals or in different geographic areas. The Analyst should be cognizant of these variations, since they should be highlighted in the Link NCA outputs.

The key outputs of the analysis process should be:

1. A brief summary of local understandings of sound nutrition and under-nutrition as perceived by different groups of respondents.
2. A brief narrative that describes the typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs related to food, health and care that are common in the community.
3. A set of pathways that link various risk factors to under-nutrition outcomes. This output is proposed instead of a full “local causal model”, because it can be very difficult to visually depict a detailed local causal model showing all of the relevant linkages. Instead the Analyst should create a visual representation of key risk factors and the pathways that connect and explain the linkages to under-nutrition. These pathways depictions should be informed by the totality of synthesised information produced by the analysis. The Analyst may need to present several sets of pathways to represent the various divergent “realities” that were encountered in the interview process (for instance, two different sets of pathways for two different ethnic groups).
4. A set of narrative statements that refer to and explain these visual pathway depictions. Each set of narrative statements should include key quotes and text as supporting “evidence”.
5. A brief narrative that details respondent perceptions of the causes and consequences of poor food security, health and care in relation to under-nutrition.
6. A visual seasonal calendar and historical timeline (or multiple calendars, if the situations differed dramatically by group interviewed) depicting seasonal and historical trends. A brief narrative should accompany the visuals in order to describe respondent explanations for the trends.
7. A description of information obtained during interviews with mothers of “positive deviant” children.
8. A written or visual summary of community rating results along with a narrative summary of respondent explanations for the prioritised and deprioritised factors.

EXAMPLE OF RESULTS PRESENTATION TO COMMUNITIES IN BURKINA FASO

A formal presentation was organised in the communities where the qualitative enquiry took place in order to discuss and get community feedback on the study findings. Community leaders, men and women participating in the study, teachers, health workers, and district officials and representatives from ACF (the organisation that commissioned the Link NCA) were in attendance.

The results were presented, validated and discussed. Women in the community also bravely took this opportunity to formally question community leaders, medical authorities and husbands regarding one of the specific causes of under-nutrition mentioned during the enquiry: contraception measures to control birth spacing. The research process itself was a first step for community sensitisation and mobilisation around this issue.

6

QUANTITATIVE SURVEY

The decision regarding whether or not to include a quantitative Risk Factor Survey and/or a SMART nutrition survey in the Link NCA should be made during the Preparatory Phase (see Chapter 2). Note that if the Link NCA will contain both surveys they will be implemented together as chapter of one household survey. If the NCA will not include either type of survey, the NCA Analyst can move directly to the work described in Chapter 7.

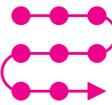


Objectives of chapter 6

Estimate the prevalence of under-nutrition through a SMART nutrition survey
.....

Measure and assess the magnitude and severity of hypothesised risk factors through a cross-sectional Risk Factor Survey
.....

Perform descriptive analyses on the prevalence of under-nutrition and risk factors by nutrition vulnerable groups. The nutrition vulnerable groups are identified in the work described in Chapter 4.
.....



6.1 TERMINOLOGY RELATED TO THE QUANTITATIVE SURVEY

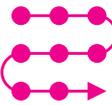
The quantitative survey of a Link NCA can be comprised of a SMART nutrition survey and/or a Risk Factor Survey; both being optional. As described in the Preparatory Phase, the decision to undertake one or both of these elements of the survey should be made after considering whether existing secondary data are sufficient to inform the types of information that these surveys seek to capture.

The SMART nutrition survey is a survey of child anthropometry that uses the SMART method and consequently the SMART guidelines¹ are referred to throughout this part. The Risk Factor Survey is intended to measure the magnitude and severity of a range of under-nutrition risk factors. It is different from the KPC² and KAP³ survey methods, which are designed to measure Knowledge, Attitudes and Practices (KAP) or Knowledge, Practices and Coverage (KPC). The Risk Factor Survey is unique because not all risk factors it seeks to measure are related to knowledge, attitudes, practices, or coverage. However, the Risk Factor Survey's methods in terms of sampling design, data collection, quality control, data entry, and data analysis are the same as those described the CORE group's Knowledge, Practices, and Capacity (KPC) guidelines. For this reason the Risk Factor Survey often references the KPC guidelines.

6.2 ETHICAL CONSIDERATIONS

See Chapter 3 for a full discussion of the ethical standards that must be adhered to during the quantitative survey work and throughout the Link NCA.

1) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>
2) Core and CSTSP, (2001). Knowledge, Practices, and Coverage Survey 2000+ Field Guide, The Child Survival Technical Support Project. Retrieved from [http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-\(care\)\(1\).pdf](http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-(care)(1).pdf)
3) ACF International, (2005) Conducting KAP Surveys: A Learning Document Based on KAP Failures. Retrieved from <http://www.actionagainsthunger.org/publication/2013/01/conducting-kap-surveys-learning-document-based-kap-failures>



6.3

DEVELOPMENT OF HOUSEHOLD SURVEY INSTRUMENTS

6.3.1 SELECTING INDICATORS

Identifying valid indicators and survey questions to capture all risk factors can be a time consuming process. The Link NCA Indicator Guide is intended to facilitate questionnaire development. It should be reviewed in full by the Analyst, and used as a compilation of existing indicators from which to select those that are relevant to the context. The guide reviews indicators that meet the following criteria:

- Widely used and recognised as valid indicators for use across many contexts (based on the UNICEF causal framework, field experience, and evidence in the scientific literature)
- Easily measurable by questionnaire and respondent recall within a cross sectional survey design
- Often strongly related to under-nutrition (summarised in the Pathways to Under-nutrition module, a review of existing scientific evidence on the strength of association between risk factors and under-nutrition)

The Link NCA Indicator Guide includes the following two types of indicators:

- A list of core indicators – these are indicators of risk factors that are strongly recommended for inclusion in the Risk Factor Survey because of they are often strongly associated with under-nutrition and meet a high standard of measurability and feasibility.
- A list of optional indicators whose relevance will vary from context to context.

The Link NCA Indicator Guide includes user-friendly information on how to measure each indicator, a list of tools to use (e.g., questionnaire templates, references to published manuals), precautions to take, and how to analyse and interpret each indicator.

The tool *List of the Link NCA core indicators* gives an overview of the contents of the Link NCA Indicator Guide.

The Link NCA Indicator Guide is intended to facilitate questionnaire development but not to provide a standardised survey questionnaire. Context-specific indicators not found in the Link NCA Indicator Guide can and should be included in the Risk Factor Survey where relevant. Indicators in the guide must be adapted to the local context.

The selection of indicators for the questionnaire is a two-step process. Step 1 of the indicator selection process involves selecting relevant indicators from the list of Link NCA core indicators detailed in the indicator guide.

This process is illustrated in Figure 6.1 below. The purpose of this step is to ensure that all Link NCA core indicators are considered for inclusion in the questionnaire. The NCA Analyst should review the Link NCA Indicator Guide to become familiar with the pros and cons of each of the core indicators. This understanding is important in order to be able assess whether existing secondary data will meet the information needs of the indicator.

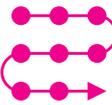
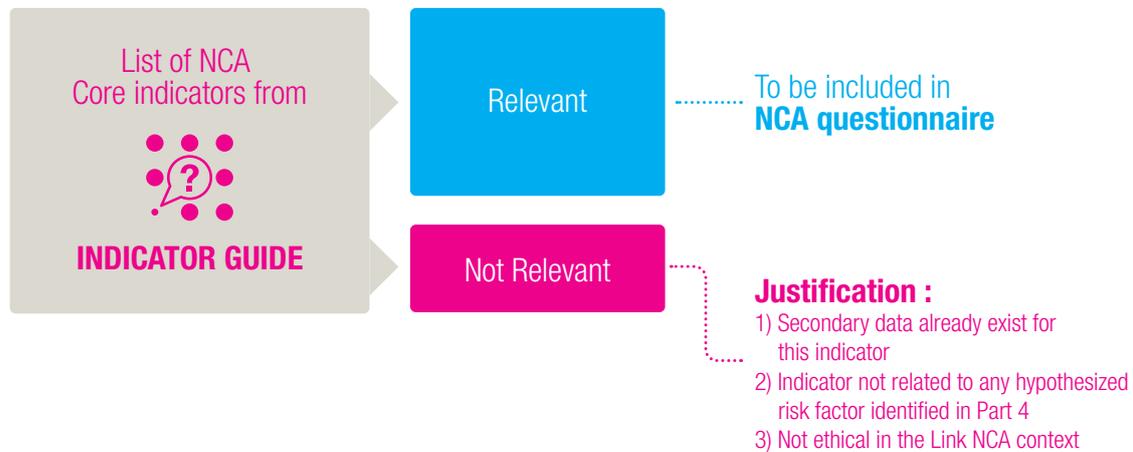


FIGURE 6.1 STEP 1 OF THE INDICATOR SELECTION PROCESS:
Selecting relevant indicators from the Link NCA core indicators list.



Notes from Figure 6.1: Possible justifications for excluding a core indicator

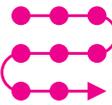
1) Secondary data already exist for this indicator

For example, the indicator “Women’s completed years of education” might have been measured in a recent Demographic and Health Survey. The NCA Analyst must critically assess the way the indicator has been measured. Questions the Analyst should consider when reviewing secondary data include the following:

- Was the indicator measured appropriately? Was the study in which the indicator was measured implemented well? It is important to review the information source and assess its quality.
- Is the population measured in the secondary data the same as the population that is of interest to the Link NCA? The indicator might have been measured at the national level, while the Link NCA seeks to understand under-nutrition at a regional or district level.
- Is it the same indicator? Is it measuring the same risk factor? For example, the Link-NCA Indicator Guide recommends using the household dietary diversity score (HDDS) for measuring diet diversity but in certain contexts, the Women’s Dietary Diversity Score might be more relevant. The NCA Analyst must have a good understanding of the information derived from each of the core indicators in order to determine if the information provided by the secondary data is an appropriate substitute to use in the Link NCA study.
- Were the data measuring this indicator captured recently (i.e., within the last 2 years)?
- In which season was the indicator measured? The significance of some risk factors varies seasonally. It is thus important to check the period of measurement and to compare it with the period when the Link NCA will be implemented in order to decide whether the existing data are sufficiently useful or not.

2) Indicator not related to any hypothesised risk factor identified in Chapter 4

Information gleaned from the secondary data review or discussions with technical experts (see Chapter 4) may strongly suggest that a particular core indicator is not prevalent or not related to under-nutrition in the NCA context. For example, if a recent study indicated that acute respiratory infections (ARIs) are not prevalent in the NCA area, it may not be necessary to include an indicator for this risk factor in the questionnaire.



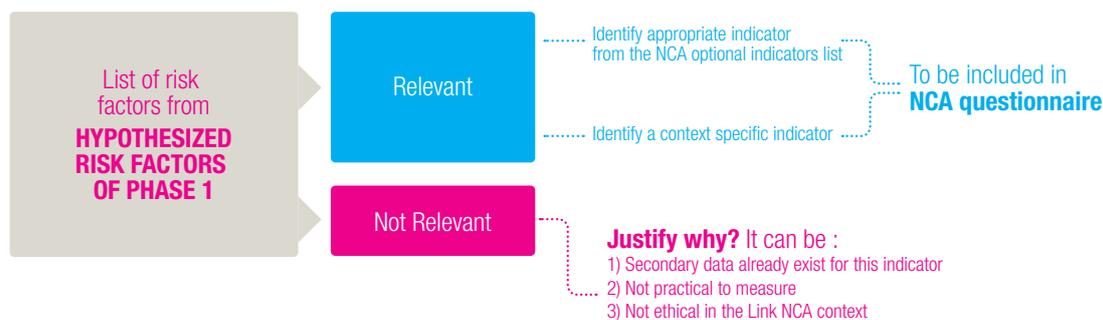
3) Not ethical in the Link NCA context

The proposed indicator and related questions might not be appropriate in the NCA context for ethical reasons. For example, an item to estimate the prevalence of maternal depression might be acceptable to include in the questionnaire in certain contexts but too sensitive in others. In this case, including the item in the questionnaire would not only be ethically questionable but the information collected would likely be of poor quality.

Step 2 of the indicator selection process involves selecting relevant indicators to measure the hypothesised risk factors identified during the work described in Parts 4 and 5. This process is detailed in Figure 6.2 below. The purpose of this step is to ensure that all hypothesised risk factors identified during the work described in Chapter 4 (and perhaps Chapter 5 if the qualitative enquiry yielded any new hypotheses that can still be included) are measured in the questionnaire with a relevant indicator. Some of the hypothesised risk factors will have already been considered in Step 1. The focus of Step 2 is therefore on the remaining risk factors that will be measured, if feasible, by the optional indicators presented in the indicator guide. Optional indicators are distinguished from core indicators in that their relevance to under-nutrition varies from context to context.

FIGURE 6.2 STEP 2 OF THE INDICATOR SELECTION PROCESS:

Selecting relevant indicators to measure hypothesised risk factors identified in Chapter 4.



Notes from Figure 6.2: Possible justifications for excluding a hypothesised risk factor

1) Secondary data already exist for this indicator

This is the same as note 1 from Figure 6.1. See above.

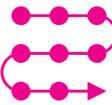
2) Not practical to measure

Some risk factors are difficult to measure. For example the blood sampling and testing needed in order to measure the prevalence and severity of anaemia may be beyond the scope of the study.

3) Not ethical in the Link NCA context

This is the same as note 3 from Figure 6.1. See above.

Steps 1 and 2 will produce a list of indicators to be measured in the Link NCA quantitative survey. Note that many indicators require multiple questions (for example, the HDDS includes twelve questions). A first check on the length of the questionnaire and the feasibility of its implementation should be done at this stage. Ideally the questionnaire (including anthropometric measurements and filling out the consent form) should take no more than one hour to administer.



The NCA Analyst should always consider whether the indicator selected is a valid measure of the risk factor of interest. Before selecting an indicator for the survey, the Analyst should also consider how she or he will analyse the indicator (see the Link NCA Indicator Guide for more information).

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6.3.2 BUILDING THE QUESTIONNAIRE

Once the Analyst has selected the indicators for inclusion in the survey, the next step is to elaborate the exact questions that will be asked to respondents in the questionnaire in order to calculate the indicator. The following tips should be kept in mind:

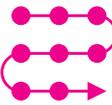
- Some sections of the questionnaire require two enumerators (e.g., the anthropometry section)
- Some indicators require that questions be asked of more than one respondent within the household
- Some indicators will require observations rather than respondent recall

To improve the flow of the questionnaire it is recommended that the Analyst group questions into sections and order them as outlined below:

- Section 1:¹ Consent form.
- Section 2: Identification section. This section should include the name of the respondent and the respondent's relationship to the head of the household. This information is useful for tracking whether the questionnaire was administered to the appropriate individual in the household. For example, income-related questions are typically addressed to the head of the household, whereas food consumption questions are often addressed to an adult female. Also, if the Link NCA intends to disaggregate the analysis by nutrition vulnerable group (refer to Chapter 4), questions about vulnerable group membership should be included in the questionnaire (e.g., which livelihood, ethnicity, religion, geographic region, etc.).
- Section 3: Household level section. This section of the questionnaire covers items that are measured at the household-level (e.g., the items needed to calculate the HDDS).
- Section 4: Child level section. This section contains questions that are relevant to every child aged 0-59 months in the household. This section will include:
 - Identification of the child (i.e., record the name, age, and sex for every child aged 0-59 months in the household).
 - Child-level indicators. Some indicators will be relevant only for children in certain age categories.
 - Anthropometric measurements of all children in the household aged 6-59 months.
- Section 5: Observations (e.g., observing the state of the water point).

Once the Analyst has drafted the questionnaire he/she should check with colleagues and partners to determine its feasibility and adapt it if necessary. The final check on the feasibility of the questionnaire will be done in the pre-test (see Section 6.3.3, "Pre-testing the questionnaire", below). The "Organising the survey" section (6.5) discusses how to administer the different sections of the questionnaire.

¹) Note that data in Sections 1 and 2 are not related to 'indicators' per se but are necessary for the administration of the survey and to disaggregate results by key household characteristics.



Building the questionnaire can take considerable time. The questionnaire should be clearly understood by enumerators, data entry officers, the NCA Analyst, and potential respondents. If the Link NCA team speaks two different languages, the questionnaire should feature both languages. All terms must be clearly defined in the questionnaire. There should be a clear and standard definition of a household that is understood by all members of the survey team. A clear coding system is also necessary for the data-entry officer to operate effectively.

6.3.3 PRE-TESTING THE QUESTIONNAIRE

Once the questionnaire has been drafted, it is important to conduct a field test in order to

- Ensure that the questions are well formulated, understood, and ethically acceptable
- Assess the feasibility of the questionnaire. In other words, is the time needed to conduct the questionnaire and the level of concentration demanded of respondents appropriate?

The pre-test is not a very long process but it is a critically important step that must not be skipped. The pre-test should occur prior to the training of enumerators. A pre-test is different from a pilot test, which is done during the training of enumerators with the objective of giving enumerators an opportunity to practise implementing the questionnaire. The pre-test is the only real occasion to make sure that the questionnaire is not too long. “Too long” should be understood as being defined by the perspective of the respondent. In considering the length of the questionnaire, the NCA Analyst must be mindful of the opportunity cost of respondents’ time (and their level of fatigue) and the Link NCA’s limited resources. Past a certain length, the quality of the information collected may decrease as respondents become fatigued. A good target for the time to administer such questionnaires is one hour. Note that the time required to administer the questionnaire typically reduces as the enumerators become more accustomed to delivering it; therefore, the pre-test can provide a starting point for estimating the time required per respondent, but the length of time required for each pre-test interview can often be cut down by a third as enumerators get up to speed.

6.4 SAMPLING DESIGN

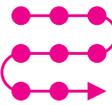
The following section is largely informed by a KPC Field Guide¹, the SMART methodological guide² (referred as “the SMART guidelines”), a CDC manual on conducting under-nutrition and mortality surveys³, and a KAP ACF learning document⁴. Please refer to these resources for more detailed information on designing the sampling strategy.

1) Core and CSTSP, (2001). Knowledge, Practices, and Coverage Survey 2000+ Field Guide, The Child Survival Technical Support Project. Retrieved from [http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-\(care\)\(1\).pdf](http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-(care)(1).pdf)

2) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>

3) CDC and WFP, (2005). A Manual: Measuring and Interpreting Malnutrition and Mortality. Retrieved from http://www.unscn.org/layout/modules/resources/files/A_Manual_Measuring_and_Interpreting_Malnutrition_and_Mortality.pdf

4) ACF International, (2005) Conducting KAP Surveys: A Learning Document Based on KAP Failures. Retrieved from <http://www.actionagainsthunger.org/publication/2013/01/conducting-kap-surveys-learning-document-based-kap-failures>



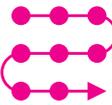
6.4.1 SELECTING THE MOST APPROPRIATE SAMPLING APPROACH

The choice of the sampling approach depends on the Link NCA context and the population data available. The four main types of sampling approaches used to estimate prevalence are described below:

- **Exhaustive sampling:** This method requires that all households can be visited (e.g., small refugee camp settings). Since the entire population is measured using this method, the prevalence measurement is not an estimate, per se, but a measurement of the true value. It is rarely feasible and therefore not commonly used.
- **Simple Random Sampling:** A random selection of households is drawn from an exhaustive list of households living in the area. It is applied, for example, in large refugee camps or in a small town when an exhaustive population census is available and households can be easily numbered or listed. Since exhaustive population censuses are rarely available this method is not commonly applied.
- **Systematic random sampling:** This method requires both an exhaustive population census and that households are arranged in a systematic way (e.g., certain refugee camp settings). Systematic arrangement of households permits the surveyor to select households methodically (e.g., every twelfth household). Since both these criteria are not usually met this method is uncommonly applied.
- **Cluster Sampling:** This is the most commonly selected sampling method and will likely be most appropriate in Link NCA contexts. Cluster sampling is used when households are arranged in an unsystematic way that prevents them from being easily numbered or listed. A cluster is a naturally occurring group of individuals (such as a village, ward, or city block) likely to include the population group the Link NCA is interested in studying. Cluster sampling proceeds in two or more stages (which is why it is sometimes termed “two-stage cluster sampling”, “three-stage cluster sampling”, and so on). In a classical two-stage design, a list of clusters – the primary sampling units (PSU) -- (e.g., villages) is randomly selected from an exhaustive list of clusters existing in the area. Then, in a second stage, a certain number of secondary sampling units (e.g., households) are randomly selected from each PSU. This method requires increasing the sample size to take into account the fact that people within a cluster are likely to resemble each other more than they resemble people from other clusters. Also, during data analysis, methods for calculating confidence intervals differ when cluster sampling is used.

TABLE 6.1 ADVANTAGES AND DISADVANTAGES OF THE PROPOSED SAMPLING DESIGNS

	EXHAUSTIVE SAMPLING	SIMPLE RANDOM SAMPLING	SYSTEMATIC RANDOM SAMPLING	CLUSTER SAMPLING
Advantages	<ul style="list-style-type: none"> • Most precise sampling method 	<ul style="list-style-type: none"> • Limits the sample size 	<ul style="list-style-type: none"> • Limits the sample size 	<ul style="list-style-type: none"> • Adaptable to many contexts
Disadvantages	<ul style="list-style-type: none"> • Rarely feasible • Can be costly and time-consuming 	<ul style="list-style-type: none"> • Rarely feasible • Expensive when the population is scattered 	<ul style="list-style-type: none"> • Rarely feasible 	<ul style="list-style-type: none"> • Increases sample size • Specific data analysis method required



*These guidelines provide instruction on **cluster sampling** since it will likely be the most applicable sampling method in an NCA context.*

6.4.2 SAMPLE SIZE CALCULATION

The Tool *Understanding sample size calculation for the quantitative survey* describes in detail how to calculate sample size, using software or formulae. The principles of sample size calculation are highlighted below.

For the analytical objective of estimating the prevalence of under-nutrition and of risk factors, the sample size depends on:

1. The expected prevalence. This estimate is based on previous surveys. The sample size will be larger the closer the prevalence is to 50%.
2. The precision required. Though the preferred level of precision varies from person to person, there are accepted standards that should always be followed. As precision increases, sample size increases disproportionately. Prevalence and desired precision are inversely related: a low prevalence demands a high precision whereas a low precision is more acceptable when prevalence is high.
3. The sampling design. As mentioned earlier, a cluster sampling design is easier to implement but requires a larger sample size than other sampling designs (due to the “design effect”). A very general rule is to double the sample size to account for the design effect.

The process for sample size calculation for a multi-indicator survey such as the Risk Factor Survey is outlined in the following steps:

- List the indicators of interest and gather existing information on their prevalence. This step is described above (see *Section 6.3.1, Selecting indicators*).
- Decide on the desired precision needed for each indicator.
- Calculate the sample size required for each indicator.
- Choose the sample size for the most demanding indicator (i.e., the indicator for which the sample size is the highest), taking into consideration the level at which the indicator is measured as well as the need for operational feasibility.

The sample size calculations will likely yield a different sample size for each indicator. How to then decide what the final sample size should be? The Analyst must select the most demanding (i.e., the largest) sample size across indicators at each level of measurement (i.e., household and child-level indicators).

Table 6.2 is extracted from the SMART guidelines. It displays the minimum sample size needed for estimating the prevalence of wasting as well as the precision level commonly used at different prevalence levels. The column where the design effect is equal to 1 reflects sample size calculations that are applicable when simple random or systematic random sampling are used. Design effects of 1.5 or 2 are used during cluster sampling.

TABLE 6.2 PRECISION NECESSARY AT VARIOUS LEVELS OF WASTING PREVALENCE FOR CHILDREN 6-59 MONTHS OF AGE ¹

ESTIMATED WASTING PREVALENCE (%). BASED ON PREVIOUS SURVEYS	DESIRED PRECISION (%)	SAMPLE SIZE (NUMBER OF CHILDREN)		
		DESIGN EFFECT = 1	DESIGN EFFECT = 1.5	DESIGN EFFECT = 2
5	2	456	684	912
10	2.5	553	830	1106
15	3	544	816	1088
20	5	246	369	492
30	7.5	143	169	287
40	10	92	138	184

Table 6.3 illustrates the relationship between sample size and precision. Using a design effect of 2 and an estimated prevalence of 50%, the table shows the precision level attained for different household sample sizes. For example, a sample size of 200 households will yield a precision of 9.8% and a sample size of 400 households will yield a new precision level of 6.93%. Precision is a measure of how close an estimator is expected to be to the true value of a parameter. Precision is usually expressed in terms of imprecision and related to the standard error of the estimator. Less precision is reflected by a larger standard error.

TABLE 6.3 THE EFFECT OF SAMPLE SIZE ON PRECISION LEVEL

INDICATOR	SAMPLE UNIT	D ⁽¹⁾	p ⁽²⁾	N ⁽³⁾	PRECISION (d)
%Access to a safe water source	Household	2	0.5	200	0.098
		2	0.5	400	0.069
		2	0.5	600	0.056
		2	0.5	800	0.049
		2	0.5	1000	0.043

1) D: Design Effect; 2) p: Estimated Prevalence, 3) N: Sample Size.

Calculating sample size for all indicators

Different indicators (and related questions) will be needed to capture information about different populations. Many indicators, like the household diet diversity score (HDDS), are measured at the house-

1) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/Pg.45>.

hold level. Other indicators are measured among children in different age categories. Anthropometric indicators are often measured from children between 6 and 59 months while most of infant and young child feeding (IYCF) indicators refer to children between the ages of 0 and 23 months.

These guidelines recommend measuring all children aged 6-59 months in the household for anthropometric as well as other child-level indicators.

The following example illustrates the need to use different indicators to capture information about different populations. Household A has three children from the same mother. They are aged five months, thirty-six months and seven years. The team will therefore: ask one set of questions to the mother about the HDDS of the household; take anthropometric measurements for all children aged 6 to 59 months (only one child for Household A); and ask the mother questions about diarrhoea episodes in reference to her two children under fifty-nine months.

Once the sample sizes are calculated, demographic data can be used to estimate the numbers of households that must be visited to ensure these sample sizes are met. Specifically, demographic data can be used to determine the proportion of children in the desired age range that are likely to be found in each household.

Table 6.4 provides an example based on demographic data from Burkina Faso where there is an average of two children aged zero to fifty-nine months in each household. The table provides a typical calculation, for a cluster sampling design, using the usual 10% precision for all indicators and a 50% estimated prevalence (except for anthropometric indicators).

TABLE 6.4 TYPICAL SAMPLE SIZE CALCULATION

EXAMPLE OF INDICATOR	POPULATION TARGETED	D ⁽¹⁾	d ⁽²⁾	p ⁽³⁾	NB OF MEASURES NEEDED ⁽⁴⁾	NB OF MEASURES PER HOUSEHOLD VISITED ⁽⁵⁾	MIN. NB OF HOUSEHOLDS TO VISIT ⁽⁶⁾
Wasting	6-59 months	1.5	0.03	0.12	736	1.8	408
Household diet diversity score (HDDS)	Household	2.0	0.10	0.50	208	1	208
Prevalence of Diarrhoea	0-59 months	2.0	0.10	0.50	208	2	104
Initiation of breastfeeding	0-23 months	2.0	0.10	0.50	208	0.8	260

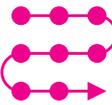
1) Design Effect

2) Desired Precision

3) Estimated Prevalence. When no previous data are available, the prevalence of all indicators is set at 50% since this is the most demanding estimate in terms of sample size.

4) Calculated using software or formulae available in the Tool "Understanding sample size calculation for the quantitative survey" contained in the Tool kit.

5) Based on demographic data. Analyst should ensure that the data are high quality and comparable with estimates in other field surveys. This helps avoid a situation where too few children are measured after having visited all the households in the survey.



6) This is the [number of measures needed] (4) divided by [number of measures per household visited] (5). It does not take into consideration households declining the interview or those who are unavailable. A 10% increase is usually a safe estimate to account for non-response.

The wasting data presented in Table 6.4 indicates that 408 households are estimated to contain 736 children aged six to fifty-nine months. Measuring all 736 children will yield a precision of 3% if the prevalence of wasting is approximately 12%. To account for households who will decline participation in the survey, it is prudent to plan to visit 450 households. Note that the sample size calculation for wasting yields a higher precision (i.e., 3%) than the calculation for the other indicators (HDDS, diarrhoea, initiation of breastfeeding), which are estimated to provide a precision level of 10%.

The wasting data presented in Table 6.4 indicates that 408 households are estimated to contain 736 children aged six to fifty-nine months. Measuring all 736 children will yield a precision of 3% if the prevalence of wasting is approximately 12%. To account for households who will decline participation in the survey, it is prudent to plan to visit 450 households. Note that the sample size calculation for wasting yields a higher precision (i.e., 3%) than the calculation for the other indicators (HDDS, diarrhoea, initiation of breastfeeding), which are estimated to provide a precision level of 10%.

The NCA Analyst will inevitably face trade-offs when selecting the appropriate sample size for the quantitative survey. The Analyst must balance the desire for precision with the resources available and the need for an adequate sampling design for the Link NCA context.

For this reason, the authors of these guidelines acknowledge that a typical precision of 10% may not be achievable for all indicators in the Link NCA. This is likely to be the case for indicators that are addressed to a very specific age category of children. For example, “exclusive breastfeeding” (EBF) is an indicator measured in children aged zero to six months. Children in this age group are a very small percentage of the overall population. An unfeasibly large number of households (more than 2500) would have to be visited to reach 10% precision. The following indicators will often yield less than the typical 10% precision:

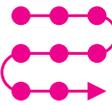
- *Exclusive breastfeeding under six months (targeting only children aged zero to six months)*
- *Continued breastfeeding at one year (targeting only children aged twelve to fifteen months)*
- *Introduction of solid, semi-solid or soft foods (targeting only children aged six to eight months)*
- *DPT3 immunization status (targeting only children aged twelve to twenty-three months)*

Cluster sampling procedures

Once the NCA Analyst has determined the number of households to sample, he or she must then decide the number of clusters to sample. In case of high degree of heterogeneity within the Link NCA area, the organisation may have decided, in the preliminary phase, on focusing on two or more of nutrition vulnerable groups. In such cases, the Analyst should stratify the sample size that would have to be multiplied by the number of strata defined (see section 2.4.2 for more information on this point). It is important that the Analyst develop a thorough understanding of cluster sampling procedures before beginning the process of cluster and household selection since error and bias can easily be introduced when proper procedures are not observed. The highlights of cluster sampling procedures are presented below but in order to have a sufficient understanding of this process, it is strongly recommended that the Analyst read the cluster sampling sections of the SMART Guidelines¹ (2006) and the KPC Field Guide² (2001). The text below, drawn from these Guides, describes the process for a two-stage cluster sample. Please refer to other resources when conducting a three-stage (or more) cluster sampling procedure.

1) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>

2) Core and CSTSP. (2001). Knowledge, Practices, and Coverage Survey 2000+ Field Guide, The Child Survival Technical Support Project. Retrieved from [http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-\(care\)\(1\).pdf](http://files.enonline.net/attachments/314/annex-4-kpc-survey-field-guide-(care)(1).pdf)



The first stage of two-stage cluster sampling is the selection of clusters. Clusters are commonly selected according to Probability Proportional to Size (PPS). In the second stage, households within the clusters are randomly selected using various techniques.

Stage one: Selecting the cluster

The first stage of two-stage cluster sampling is the selection of clusters. Cluster sampling requires the grouping of the study population into smaller geographical units such as villages. One should always choose the smallest available geographical unit, as long as population data are available and the geographical unit has a name. For example, it is preferable to first group the population by district and then select villages from the sample of districts. Consult section 4.4.3.3 of the SMART guidelines for information on what to do if population data are not available.

The identification of clusters (from which a cluster for the survey's sample will ultimately be chosen) must be conducted so that the chance of any particular cluster being selected is proportional to the population of the section. This is called probability proportional to size (PPS) sampling. Thus, if one cluster has a population of 4,000 and another 1,000, then the first cluster has four times the chance of being chosen compared to the second cluster. This is the main reason why (approximate) population data are required.

It is strongly recommended that the software programme Emergency Nutrition Assessment (ENA)¹ be used to select clusters and enter/analyse anthropometric data. Consult chapter 5 of the SMART guidelines for instructions on using ENA to select clusters.

How many clusters should be selected?

The most important point to understand with regard to the number of clusters selected is that the lower the number of clusters, the higher the design effect (and thus the lower the precision). In order to compensate somewhat for the reduction in precision caused by the lower number of clusters, more households per cluster will have to be sampled. It is therefore not more efficient to opt for fewer clusters. Thirty clusters offer a good compromise between the need to have enough clusters to maintain a high degree of precision but not so many that the survey becomes infeasible. However, there is no definite rule and the choice of number of clusters depends on the characteristics of the study area. For example, in urban settings, there is no reason to limit the sample to the “traditional” thirty clusters since it is actually quite easy to have forty, fifty, or even sixty clusters (and fewer households in each of them) which will yield more precise estimates. In rural settings, it is often more logistically difficult to have numerous clusters but, generally speaking, one should try not to select fewer than thirty clusters.

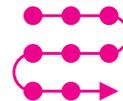
Cluster selection using ENA software is straightforward. Users are required to input the list of villages and their estimated population size and to indicate the number of households and number of clusters necessary. ENA will then randomly select the villages to survey. The SMART guidelines should be referred to for more detailed instructions.

Stage two: Selecting households within clusters

See pages 56-57 (section 4.4.3.3.3) in the SMART Guidelines (2006) for detailed information about how to sample households within clusters. The following is an excerpt:

“There are several methods of choosing the households from the cluster. The best way is to treat each cluster as if it is a “small population” and to select the houses using the simple or systematic random sampling methods described above. If the cluster is to be taken from a larger population, the first step of stage two is to subdivide the population into segments of roughly the same number of people. One of these segments is then chosen from the random number table. In this way the “village” is reduced to an area containing up to 250 households. These households are then listed, and the required households selected from the list by simple or—if they are arranged in some logical order—systematic random sampling” (pg. 56).

1) ENA software can be download, free-of-charge, from the following website: <http://smartmethodology.org/survey-planning-tools/smart-emergency-nutrition-assessment/>



When selecting households within clusters, it is common to find that a large village is naturally sub-divided into districts but the population of each district is unknown. When the number of households within each district is unknown, simple or systematic random sampling is not a practical choice for household selection. If it is not possible to select the households by simple or systematic random sampling, the “EPI” method can be used. Although this method is simple, widely recognised, easy to teach, and rapid, it results in a somewhat biased sample. However, its advantage compared to other household selection methods is that it reduces the time needed to select the sample and move from house to house. See page 57 of the SMART guidelines for instructions on using the EPI method to select households within clusters.

6.5 ORGANISING THE SURVEY

6.5.1 DETERMINING THE LENGTH OF TIME NEEDED TO COMPLETE THE SURVEY

For budgetary reasons, the NCA Analyst needs to estimate the length of time needed to complete the field data collection for the quantitative survey. In order to make this estimation, the NCA Analyst must consider how many questionnaires each team of enumerators can reasonably administer per day. The following is a list of factors that should be considered:

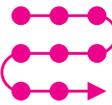
- travel time to and from the village
- time for sampling households
- time for obtaining informed consent and administering the questionnaire
- lunch time and breaks
- transport time between households

Once the Analyst has estimated the number of questionnaires that each team of enumerators can reasonably administer per day, he/she should use the information contained in Table 6.5 to calculate the total number of days needed for the quantitative survey. Table 6.5 presents a hypothetical scenario of a Link NCA with eight teams of two enumerators each, a sample of 448 households, and 28 clusters.

TABLE 6.5 CALCULATING THE NUMBER OF DAYS NEEDED TO COMPLETE THE FIELD DATA COLLECTION

NB OF TEAMS	NB OF CLUSTERS	NB TEAMS/ CLUSTER	NB OF HOH/DAY/ TEAM	NB OF HOH PER CLUSTER	NB DAYS SPENT IN EACH CLUSTER	SAMPLE SIZE (NB OF HOH)	TOTAL NB OF DAYS FOR THE WHOLE SURVEY
8	28	2	4	16	2	448	14

In this scenario, the field data collection will theoretically last fourteen working days, not taking into account the time to travel between clusters or the time needed to conduct the training of the survey team. A three week plan with six working days per week (eighteen working days total) and eight teams



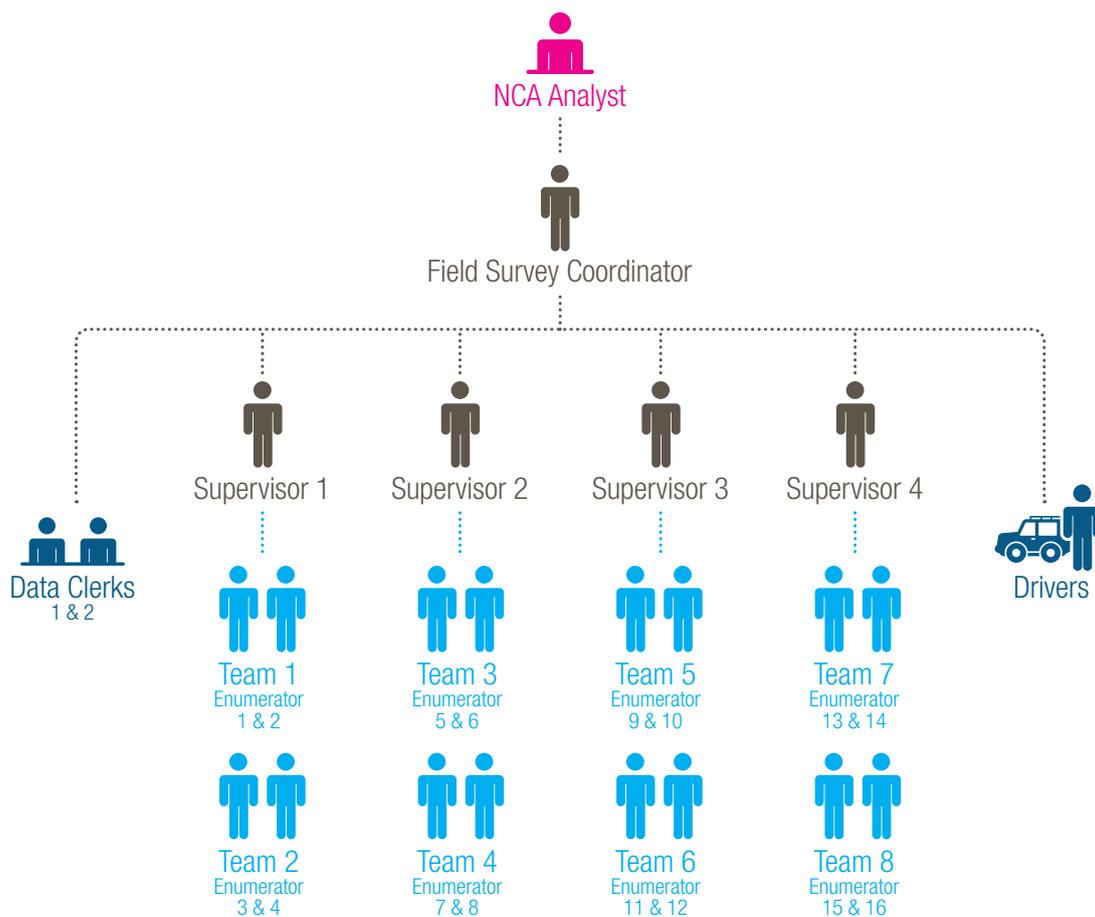
of two enumerators should be sufficient to interview the target number of households, taking into account travel time between clusters and unforeseen events. In addition to the three weeks of field data collection, the NCA Analyst should budget for a weeklong training session for the quantitative survey team (see section 6.6).

6.5.2 TEAM CONFIGURATION

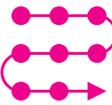
There are six positions that are required for every Link NCA that has a quantitative survey (i.e., risk factor and/or SMART nutrition survey). These six positions are summarised below and presented in Figure 6.3. This figure illustrates a team configuration with one NCA Analyst, one Field Survey Coordinator, two data clerks, eight teams of two enumerators each, four supervisors (one per four enumerators) and drivers¹.

The recruitment process for the Link NCA can be quite long. It should start as soon as the NCA Analyst is operational or possibly even earlier (refer to Chapter 2).

FIGURE 6.3 TYPICAL TEAM CONFIGURATION FOR THE QUANTITATIVE SURVEY



1) The number of drivers hired and type of vehicle(s) rented will depend on logistics and budgetary constraints.



See the Tool *Example budget for a Link NCA* for a detailed description of the human resources required to implement the survey.

6.5.3 TEAM DESCRIPTION

NCA Analyst

Please refer to the Tool *Description of the NCA Analyst position*. The NCA Analyst is in charge of implementing the qualitative enquiry. He or she also manages the Field Survey Coordinator who oversees the implementation of the quantitative survey.

The Link NCA is a mixed method approach. In recruiting personnel for the key positions, ensure that the skillset of the NCA Analyst complements that of the Field Survey Coordinator.

Field Survey Coordinator

The Field Survey Coordinator is responsible for the effective implementation of the quantitative survey. He or she should have significant experience in the implementation of field surveys, especially SMART nutrition surveys and KAP or KPC surveys; team management skills; excellent communication skills; and the ability to train the team on anthropometric measurement (if not, a consultant has to be hired). The Field Survey Coordinator needs a mobile phone, computer, stationary, and transport.

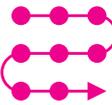
Supervisors

Supervisors manage the enumerators and are responsible for quality control, sampling, organising logistics for enumerators, and reporting daily to the Field Survey Coordinator. They should provide completed questionnaires each day to the Field Survey Coordinator after conducting a quality check. These individuals should be rigorous, dynamic, organised, and effective leaders and problem solvers. They should speak the local language. They need a mobile phone, stationary, and transport as well as training on Link NCA field data collection.

Enumerators

There are two enumerators per team. They are responsible for sampling households within each cluster (under the close supervision of the supervisors), obtaining informed consent, and collecting good quality data. They must speak the local language. They should have experience in previous field surveys, be rigorous, patient, able to work in a team, and familiar with the local context. They need field equipment and stationary (refer to the Tool *Example of equipment check-list for the field survey* and the next section 6.5.4).

Some parts of the questionnaire are addressed to men, others to women. The gender of the enumerators may (or may not) be important to facilitate the interview. The NCA Analyst should investigate whether the enumerator's gender is relevant in the Link NCA context.



Data Clerks

Data clerks are responsible for entering the data from the questionnaires into the computer. It is recommended that double blind data entry be used for every Link NCA with a quantitative survey. In order to implement double blind data entry, two data clerks must be hired. Each data clerk should enter the same questionnaire data into the computer. The Field Survey Coordinator will then be able to easily spot data entry errors. Checks for data entry errors should be done regularly throughout the data entry process. The Field Survey Coordinator is responsible for providing the questionnaires every day to data clerks.

Data clerks should have prior data entry experience, a high attention to detail, and a good work ethic. Data entry clerks must be able to maintain high quality standards despite the tiresome and monotonous nature of the work. They need a computer, office, and basic stationary. They need to be trained on the Link NCA questionnaire and coding for data entry.

Drivers

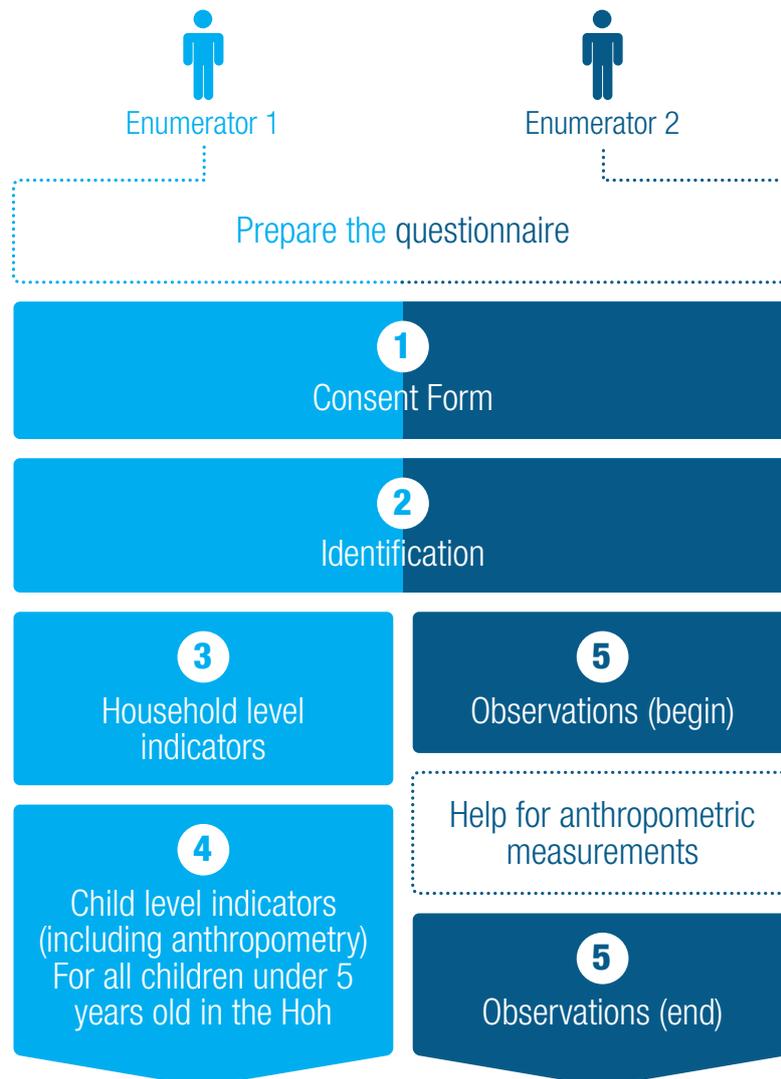
Drivers are under the direct supervision of the supervisors and are responsible for transporting the Link NCA team (particularly the enumerators).

6.5.4

ENUMERATORS AND DIVISION OF LABOUR

Each team is comprised of two enumerators. Both receive anthropometric training but only one will be responsible for taking anthropometric measurements during the survey. The enumerator who took the most accurate measurements during the training tests should be designated to take anthropometric measurements during the field data collection. The same enumerator should always be the one responsible for the anthropometry. Increasing the number of enumerators taking anthropometric measurements increases the variability and reduces the quality of the data.

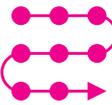
FIGURE 6.4 OUTLINES THE DIVISION OF TASKS BETWEEN ENUMERATORS DURING QUESTIONNAIRE ADMINISTRATION



6.6 TRAINING OF QUANTITATIVE SURVEY TEAM

All team members should participate in the training exercises. One week is generally a sufficient length of time to conduct the training though more time may be required if the team is inexperienced or if translation during the training is required.

The NCA Analyst should view the training as the final step of the recruitment process. As mentioned above, it is important to train more collaborators than necessary. For example, the Analyst can invite twenty enumerators to the training (all attendees should be paid for their time) but ultimately only hire the sixteen enumerators that performed the best during the training. In the event that enumerators quit or fall sick during the field survey, the Analyst can call on the extra enumerators as back up.



6.6.1 TRAINING ON ANTHROPOMETRIC MEASUREMENTS (WHEN THE SURVEY INCLUDES A SMART NUTRITION SURVEY)

Training on anthropometry must be based on the SMART Guidelines¹. Anthropometric measurements taken during the survey must strictly adhere to the SMART method. Only individuals who are SMART-trained can conduct the training. If neither the NCA Analyst nor any of his or her colleagues are trained in the SMART method, it may be necessary to hire someone for three days to lead the training.

The training on anthropometry usually takes two to three days. This includes the time needed to conduct a standardisation test where multiple enumerators measure the same children in order to evaluate the consistency of measurements. The standardisation test is a critically important exercise and must be done to maximise the quality of the survey results. The Analyst should use the results of the standardisation test to help him or her identify the most skilled enumerators.

Do not underestimate the difficulty of precisely measuring anthropometric status, especially age and MUAC.

The Tool *Organising training of enumerators for the quantitative survey* provides an example agenda of a quantitative training.

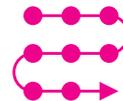
6.6.2 TRAINING ON SAMPLING HOUSEHOLDS WITHIN CLUSTERS AND ON ADMINISTRATION OF THE QUESTIONNAIRE

Once the training on anthropometric measurement is complete the remainder of the week should be dedicated to training on questionnaire administration and a field test.

Enumerators must be thoroughly trained on the meaning of each question, question delivery, and how to properly complete the questionnaire. The Analyst can use the training as an opportunity to have the enumerators translate the questionnaire into the local language. After the questionnaire has been translated into the local language the Analyst should hire a translator to translate it back into the original language. Back-translation of the questionnaire will give an indication of how well the enumerators understood the questions. The Link NCA Indicator Guide provides information and tools that the Analyst should use during the training. The age calendar and process for random selection are two key items that the training should address.

During the training the questionnaire should be pilot tested, a step that involves enumerators administering the questionnaire to a handful of households so that they get familiar with the questionnaire. The pilot test is critically important to ensure that enumerators clearly understand all questions. The pilot test will also help standardise enumerators' approach to the observation questions. An example of a possible observation question could be the assessment of a well as "dirty", "clean", or "very dirty". Field practice will help standardise responses across enumerators so that, for example, there is a common understanding of what constitutes a "dirty" versus a "clean" well. By the end of the training, the Analyst will be in a position to select the most skilled enumerators and form the teams for the survey.

1) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>



Each team will consist of two enumerators; one will be in charge of anthropometric measurements and observations and the other will administer the questionnaire.

6.6.3 TRAINING FOR DATA CLERKS

Data clerks need to have training on the quantitative survey instruments used during the Link NCA, the coding system, and the software they will use for data entry.

6.7 DATA MANAGEMENT AND DATABASE CLEANING

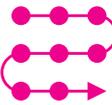
6.7.1 CHOICE OF SOFTWARE

EPIDATA and ENA are recommended for data entry and analysis of the Risk Factor Survey data and anthropometric data, respectively. Table 6.6 lists the strengths and weaknesses of each of these software programmes.

TABLE 6.6 STRENGTHS AND WEAKNESSES OF SOFTWARE OPTIONS

SOFTWARE	STRENGTHS	WEAKNESSES
ENA	<ul style="list-style-type: none"> • ICompulsory for nutrition data analysis • Estimates of age and Z-scores standardised • Easy to export data to Excel • Plausibility check of data • Automatic Microsoft Word report • Calculates sample size • User-friendly • Free download : http://www.smartmethodology.org 	<ul style="list-style-type: none"> • Not designed for variables other than nutrition status
EPIDATA	<ul style="list-style-type: none"> • Free software • Easy to download (file size is not overly large) and install • Runs on very old computers • Syntax is easy to learn • Broad functionality • Convenient module for comparison of double entry • Exportable to several statistical software programmes (SAS, Stata, SPSS) • The EPIDATA ANALYSIS module is easy to use for basic statistical analyses 	<ul style="list-style-type: none"> • Updates to the software are rare; further development is slow • Not compatible with Mac OS • Does not easily handle hierarchical databases (e.g., household >> several mothers >> several children) • Back and forth navigation through the questionnaire can cause computer troubles (as well as the use of the mouse instead of the keys and arrows) • Preparing and testing the data entry sheet can be time consuming, especially for non-experienced users • Variable names are limited to 8 characters

Note on the table 6.6: Using Excel is a possibility although it is not ideal for data entry and thus is generally not recommended



when other options are available. Using direct entry of questionnaire data onto tablets is a good option to avoid entry errors and reduces time for database management. Using tablets for data capture is not suitable for all circumstances due to a range of cost, human resource, and logistical considerations. ACF has a good experience of using tablets for the Link NCA in the Philippines (2015) and can share questionnaires and experience (please contact the Link NCA technical unit at linknca@actioncontrelafaim.org).

6.7.2 DATABASE CLEANING

After entering the data, the database should be crosschecked and cleaned. Working one variable at a time, the Analyst should:

- Identify the number of missing values. Are the missing values consistent with the sample size and the expected questionnaire response patterns?
- Identify any potentially not applicable (NA) values.¹ Are the NA values consistent with the expected questionnaire response patterns?

6.7.3 ADDRESSING DATA ENTRY ERRORS

It is recommended that the Analyst use double entry (i.e., all questionnaires are entered twice – once by each of the two data clerks) to identify and correct data entry errors. The EPIDATA comparison module easily identifies and corrects data entry errors. Checks for data entry errors should ideally occur every day during the data collection period.

For anthropometric data, ENA will automatically generate “flags” when data entry errors are suspected. Flags are extreme outliers for anthropometric measurement and should be checked for every day during the data collection. If some measurements are “flagged”, the team should visit the child in question again and the anthropometric measurement should be retaken to rule out a measurement or typing error. By the end of the survey, ENA automatically generates a “plausibility check report” that provides controls for the quality of the survey. Refer to the SMART guidelines² and nutritionist professionals for more information on addressing these types of errors.

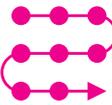
It can be helpful to examine the results of each variable in the form of a histogram and scatterplot to help identify outliers or potential errors in the data. All outliers or unusual values should be double-checked against the original questionnaire. Extreme outliers (e.g. > +/- 4SD) may need to be removed from the analysis.

6.7.4 VARIABLE CREATION

Some indicators require construction from multiple items on the questionnaire. The NCA Analyst should consult the Link NCA Indicator Guide for detailed instruction on how to create indicators from items within the questionnaire.

1) Not applicable values are normally left as blank in the database.

2) Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (2006), Retrieved from <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>



6.8 QUALITY CONTROL

There are a variety of mechanisms that can be employed to ensure the quality of the quantitative survey data. Table 6.7 provides an illustrative list of quality control tactics.

TABLE 6.7 KEY QUALITY ASSURANCE MECHANISMS FOR SURVEY DESIGN AND IMPLEMENTATION

When sampling

- Adhere to instructions in the guidelines and Toolkit. Consult colleagues with extensive sampling experience.

When building the questionnaire

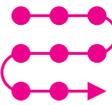
- Reserve sufficient time for questionnaire development or local adaptation of existing instruments. Consult knowledgeable key informants.
- Ensure that each questionnaire has space for a unique identifier number on each page.
- Include an enumerator identifier on the questionnaire.
- Print questions in all languages used by the team.
- Include ample space to record data codes for each item in the questionnaire (e.g., “yes” should be coded 1 in the database and “no” as 0).

When recruiting and training

- Hire professionally trained and experienced enumerators.
- Conduct centralised training for all enumerator teams to ensure standardisation in survey administration and anthropometric measurements.
- Conduct a pre-test and a pilot test of the questionnaire.

During the survey

- Carefully manage teams. Conflict within a team can jeopardize the quality of the information collected. Several weeks in the field can be very tiresome so be sure to schedule a sufficient number of rest days for the enumerators (e.g. at least one day per week).
- Maintain a high supervisor to enumerator ratio. One supervisor per two teams of enumerators is an ideal ratio.
- Ensure that sample selection procedures are respected by making frequent visits to the field.
- Supervisors should check all questionnaires for completeness and accuracy before the team moves to the next site.
- Supervisors should carefully document any methodological anomalies and decisions made



during implementation.

- Maintain completed questionnaires in safe, waterproof location while in the field.

During data entry and analysis

- Hire reputable and experienced data entry persons who will also be available to research and correct errors detected in analysis.
- Data entry quality must be checked during the survey. Randomly select 5% of the questionnaires and verify that the data were correctly entered.
- Double entry of data is costly but recommended. If the Analyst has difficulty recruiting an experienced data entry clerk, this option is particularly desirable.
- To the extent feasible, anthropometric data should be entered into ENA every day. ENA has the capacity to detect “flags” (i.e., potential measurement or data entry errors). Re-measure children whose measurements were flagged. Non-anthropometric data can be entered using EPIDATA.

6.9 DATA ANALYSIS AND PRESENTATION

The main objective of the quantitative survey is to measure the magnitude of under-nutrition and hypothesised risk factors. This section describes how to organise and analyse the survey data to achieve these objectives.

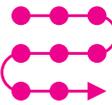
6.9.1 OBJECTIVE 1: ESTIMATE THE PREVALENCE OF UNDER-NUTRITION

If the quantitative survey measured anthropometric status then the first step in the analysis of the survey data is to estimate under-nutrition prevalence. Detailed instructions on how to estimate under-nutrition prevalence can be found in the SMART guidelines¹.

The standard reporting system of ENA software can be used to generate the following results, which should be incorporated into the Link NCA analysis:

- Prevalence of severe (SAM), moderate (MAM) and global (GAM) acute malnutrition with confidence intervals
- Prevalence of GAM by age groups with confidence intervals
- Prevalence of GAM by sex with confidence intervals
- Prevalence of stunting with confidence intervals

1) “Chapter 5: Using Nutrisurvey-ENA software, Step-by-Step” in *Measuring mortality, nutrition status and food security in crisis situation: SMART methodology*. 2006. <http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>



- Prevalence of stunting by age groups with confidence intervals
- Prevalence of stunting by sex with confidence intervals

Note that although the SMART guidelines contain instructions on collecting mortality data, Link NCAs will rarely collect this information. The Analyst can therefore ignore the mortality-related results that are automatically generated by ENA.

The SMART nutrition survey outputs provide evidence of the magnitude and severity of the under-nutrition problem in the area. The outputs are therefore useful to a wide range of stakeholders. The ENA software automatically produces a standardised nutrition survey report. This report should be produced in addition to the Link NCA report. It should be validated by nutritional professionals from the organisation that has commissioned the Link NCA or from the relevant authorities and should be disseminated as any other nutrition survey report. The Analyst should work with other nutrition professionals in the Link NCA area to make sure the survey report is communicated to relevant bodies.

Additional guidance for the interpretation of the results can be found in a Humanitarian Practice Network (HPN) guide entitled “The meaning and measurement of acute malnutrition in emergencies: primer for decision-makers.”¹

6.9.2 OBJECTIVE 2: ASSESS RISK FACTORS’ MAGNITUDE AND SEVERITY

After estimating the prevalence of under-nutrition the next step in the analysis is to generate the following:

- Frequency distributions for risk factors that are expressed as a proportion and confidence intervals
- Summary statistics (mean, median, standard deviation) for risk factors that are expressed by continuous variables and confidence intervals

Calculating confidence intervals

A confidence interval indicates the precision of a measurement. Confidence intervals supply important information on the reliability of the estimates and therefore should always be calculated and included in the Link NCA analysis. Statistical software programmes are the most efficient means of calculating confidence intervals. If the Analyst does not have access to such programmes he or she can directly calculate the confidence interval. The Tool *Calculating confidence intervals* provides needed information for by-hand calculations.

When calculating confidence intervals, the Analyst should ensure that he or she (or the software) uses the appropriate formulae. Formulas for the calculation of confidence intervals differ based on the sampling type and whether the variable is expressed as a mean or a proportion.

1) Young, H. and S. Jaspers. “The meaning and measurement of acute malnutrition emergencies: a primer for decision-makers,” Humanitarian Practice Network, Network Paper No. 56.2006. <http://www.odihpn.org/report.asp?id=2849>

Presentation of results

The NCA Analyst should review the Tool «Example of a Link NCA report structure» for an illustration of how results were presented in previous Link NCAs. It is important that the Analyst begin work on the Link NCA final report as early as possible. It is recommended that each variable’s descriptive statistics be presented in a table shell similar to the one presented in Table 6.8. The Analyst should create a summary table for all indicators and present it in one section of the Link NCA final report (or in an annexe).

TABLE 6.8 TABLE SHELL FOR DESCRIPTIVE ANALYSIS

INDICATOR	N	MEAN OR PROPORTION	LOWER CONFIDENCE INTERVAL-95%	UPPER CONFIDENCE INTERVAL-95%
% Children (0-23 months) with adequate initiation of breastfeeding (<1hr after birth)	176	38%	31%	45%
Mean Household Diet Diversity Score (score 0 to 12)	479	4.75	4.62	4.87

N.B. From the above example, one could say that there is a 95% chance that the true mean HDDS in the population sampled is between 4.62 and 4.87.

Where possible, it is desirable to express the results as a proportion of individuals below a certain threshold (when a threshold exists) since the key objective is to evaluate the magnitude and severity of the problem. When there is no widely accepted threshold the Analyst can use quartiles as a way of gauging the distribution of severity. Alternatively, the Analyst can assess severity by comparing the results in the Link NCA area to other contexts (e.g., neighbouring countries or the regional average).

Comparison with secondary information

When possible, it is useful to compare the results from the Risk Factor Survey with results from other surveys. This option allows for assessment of consistencies and inconsistencies with other survey results. An example of a table that compares the results of the Link NCA with secondary information is presented in Table 6.9.

TABLE 6.9 TABLE SHELL FOR COMPARISON OF LINK NCA RESULTS WITH SECONDARY INFORMATION

INDICATOR	NCA RESULTS NOV 2012 N=479	FS REGIONAL SURVEY ^(REF) JULY 2012 N=250	NATIONAL SURVEY ^(REF) JUNE 2010 N=2620
Mean Household Diet Diversity Score (score 0 to 12)	4.75 +/- 0.125	3.05 +/- ?	3.52 +/- 0.05

The Link NCA method recommends against reporting bivariate correlational analysis and multivariate analyses. The Link NCA approach chosen relies on an alternative to bivariate and multivariate correlational analysis for reasons described in the Overview (see section 3.3 of the Overview).

6.9.3 OBJECTIVE 3: EXAMINE RESULTS FOR EACH NUTRITION VULNERABLE GROUP

If the Link NCA identified a set of nutrition vulnerable groups to study in depth, then the Analyst should calculate the prevalence of under-nutrition and risk factors separately for these different vulnerable groups (e.g., age groups, livelihood groups, rural vs. urban groups) as well as for all groups together.

In order to communicate the differences in under-nutrition prevalence and risk factor prevalence among vulnerable groups, it is recommended that the Analyst present vulnerable group data in a format similar to the one presented in Table 6.10.

TABLE 6.10 TABLE SHELL FOR VULNERABLE GROUP ANALYSIS. EXAMPLE FROM BURKINA FASO LINK NCA, ECONOMIC GROUPS.

INDICATOR	ALL HOUSEHOLDS (MEAN OR PROPORTION, n)	POOR AND VERY POOR HOUSEHOLDS (MEAN OR PROPORTION, n)	“BETTER OFF” HOUSEHOLDS (MEAN OR PROPORTION, n)
Weight for Height Z-score	-0.92 (n=479)	-1.02 (n=208)	0.82 (n=197)
% of children (0-23 months) with adequate initiation of breastfeeding (<1hr after birth)	38% (n=176)	35% (n=92)	42% (n=84)
Nb of Months during last year with Adequate Household Food Provisioning (MAHFP)	9.12 (n=479)	8.80 (n=251)	9.47 (n=228)

6.9.4 POTENTIAL LIMITATIONS

At the end of the data analysis section in the Link NCA report, the Analyst should include a short description of the limitations of the data presented. Refer to the Tool *Limitations of the Link NCA method* for more information.

A large white number '7' centered within a solid red circle.

SYNTHESISING RESULTS AND BUILDING TECHNICAL CONSENSUS

Chapter 7 describes the triangulation and evaluation of all the information that has been collected throughout the Link NCA thus far. The Link NCA method does not include a statistical analysis of causality. Instead, the Link NCA method adopts a plausibility approach to understanding the causality of under-nutrition, relying on the triangulation of evidence from multiple sources and methods. It also relies on a consensus-building process that takes place through a stakeholder workshop. During the workshop stakeholders agree on which factors are most relevant in explaining under-nutrition in the area based on this triangulation of evidence.

In this part, the NCA Analyst is instructed to review the Link NCA outputs and assign a preliminary rating to the hypothesised risk factors. The hypothesised risk factors are rated according to “relevance” which is defined by the prevalence and degree to which the hypothesised risk factors plausibly contribute to under-nutrition cases in the Link NCA area. The multiple sources of data collected during the Link NCA are used to assess plausibility. The Link NCA outputs and preliminary ratings are then presented at a stakeholder workshop. The ratings are discussed and updated if necessary and the stakeholders assign a confidence note to the rating of each risk factor. After the stakeholder workshop has concluded the NCA Analyst will be positioned to complete the Link NCA’s final report.



Objectives of chapter 7

Synthesise the large volume of data collected and analysed thus far (i.e., secondary, qualitative, and quantitative data).

.....

Build technical consensus around the findings in order to generate the necessary stakeholder buy-in to effectively move forward the nutrition agenda.

.....

Rate hypothesised risk factors by order of relevance. “Relevance” is defined according to the prevalence and degree to which the hypothesised risk factors plausibly contribute to under-nutrition cases in the Link NCA area.

.....

Re-visit outputs from the Link NCA study and elaborate on the pathways to under-nutrition in the study context.

.....

Validate the conclusions of the rating with stakeholders by assigning a confidence note.

.....

7.1 STEP 1: PREPARE FOR THE STAKEHOLDER WORKSHOP: REVIEW THE LINK NCA OUTPUTS

In the first step, the NCA Analyst should review all of the outputs of the Link NCA that have been completed thus far. The intention of the outputs review is to help the NCA Analyst prepare for the stakeholder workshop where he or she will present the outputs of the Link NCA and his or her preliminary rating of the hypothesised risk factors (see Section 7.5). As suggested in previous parts, the NCA Analyst should begin writing the Link NCA final report as early as possible (i.e., during the community-level qualitative enquiry and quantitative survey period or earlier, if possible). The writing of the final report is an intellectually demanding task, requiring the NCA Analyst to synthesise large amounts of complex information contained in the outputs of the Link NCA. Beginning this process early will increase the efficiency of the work in Chapter 7.

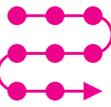
Recall that a risk factor and pathway that have not yet been empirically studied are referred to, respectively, as a “hypothesised risk factor” and “hypothesised pathway”. Once studied and then validated by the confidence note exercise the word “hypothesised” is dropped.

7.1.1 LIST OF OUTPUTS FROM THE LINK NCA (CHAPTERS 1-6)

1. Meeting minutes from the technical meeting (Ch. 2)
2. Description of the quantity and quality of information found during the landscape assessment (Chapter 2)
3. List of indicators for which secondary data was found to suffice and a narrative justification (Chapter 2)
4. Description on medium term trends in under-nutrition and seasonality of wasting and stunting (Chapter 4)
5. Recent prevalence levels of wasting and stunting by age groups and sex and a comparison with national and regional data (Chapter 4)
6. An overview of where the gaps are in nutrition data for the context and the reliability of the data (Chapter 4)
7. A narrative on food security / care practices / health environment at the national and local levels. The narrative includes preliminary analysis of seasonality of under-nutrition and related causes (i.e., it contains a compilation of existing seasonal calendars) (Chapter 4)
8. Table detailing existing recent data on Link NCA core indicators at national level and local level when available. (Chapter 4)
9. Identification of gaps in information on immediate, underlying, and basic causes of under-nutrition (Chapter 4)

10. Preliminary list of hypothesised risk factors and pathways, accompanied by a narrative for each risk factor (Chapter 4)
11. Draft of local causal model that outlines the pathways in which the hypothesised risk factors affect under-nutrition (Chapter 4)
12. A list of carefully formulated hypothesised risk factors and pathways that emerged from the technical expert workshop (Chapter 4)
13. List of nutrition vulnerable groups (Chapter 4)
14. A preliminary rating of hypotheses by technical experts (Chapter 4)
15. A brief summary of local understandings of sound nutrition and under-nutrition as perceived by different groups of respondents (Chapter 5)
16. A brief narrative that describes the typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs related to food, health and care that are common in the community (Chapter 5).
17. A visual set of pathways that link various risk factors to under-nutrition outcomes. (Chapter 5)
18. A set of narrative statements that refer to and explain the visual pathway depictions in output #17. (Chapter 5)
19. A brief narrative that details respondent perceptions of the causes and consequences of poor food security, health and care in relation to under-nutrition. (Chapter 5)
20. A visual seasonal calendar and historical timeline (or multiple calendars, if the situations differed dramatically by group interviewed) depicting seasonal and historical trends. Also included in this output is a brief narrative that describes respondent explanations for the trends. (Chapter 5)
21. A description of information obtained during interviews with mothers of “positive deviant” children. (Chapter 5)
22. A written or visual summary of community rating results along with a narrative summary of respondent explanations for the prioritised and deprioritised factors. (Chapter 5)
23. SMART and/or Risk Factor Survey report (Chapter 6)

The NCA Analyst should be fully transparent about the process leading to the results, especially during the stakeholder workshop and, obviously, in the final report. An acknowledgement the complexity of such a study and a clear statement of the limits of the results are critical for the credibility of the process (refer to the [Tool Limitations of the Link NCA method](#)).



7.2 STEP 2: PRESENT PREVALENCE OF ALL HYPOTHESISED RISK FACTORS

In the second step the NCA Analyst will examine prevalence data for the hypothesised risk factors of under-nutrition that were collected during the risk factor portion of the quantitative survey and review of secondary data. This step focuses exclusively on quantitative data; however, the subsequent steps call for a triangulation of all forms of data collected during the Link NCA study (i.e., both quantitative and qualitative data). To complete this step the NCA Analyst should draw upon the list of hypothesised risk factors that was devised during the technical expert workshop (see Chapter 4). During Step 2 the NCA Analyst should present the prevalence of each of the hypothesised risk factors as well as a note that indicates the nutrition/public health significance of the estimated prevalence value (see Table 7.1). Prevalence data should have already been compiled and reported in the SMART nutrition survey report, Risk Factor Survey report, or outputs from the review of secondary data sources (see the outputs from Chapter 4). In other words, the NCA Analyst should have already completed most of the work for Step 2.

“New” causes of under-nutrition that emerged during the community-level qualitative enquiry and that are not specified in the list of hypothesised risk factors from the technical expert workshop will also be considered during the rating exercise. These risk factors may not have prevalence data if they were identified through qualitative mechanisms. The discussion below explains how to integrate these risk factors into the rating in Steps 3 and 4.

It is important to note that some risk factors considered in Step 2 may have prevalence data but no recognised threshold of prevalence that indicates nutrition/public health significance. In these circumstances, the NCA Analyst may wish to compare the prevalence in the area studied to the prevalence in the national or regional level. For example, the NCA Analyst might wish to compare the prevalence of low birth weight in his or her NCA context (e.g., central Amhara in Ethiopia) to regional estimates (e.g., prevalence of low birth weight in the Horn of Africa or East Africa). If this comparison reveals that the local Link NCA estimate is higher than the regional figure then the Link NCA Analyst should consider the risk factor of high nutrition/public health significance.

TABLE 7.1 CRITERIA FOR NOTES (FROM – TO +++) GIVEN TO THE PREVALENCE DATA

SOURCE OF INFORMATION	NOTES
Prevalence of risk factor from secondary data	– below prevalence where considered a nutrition/public health issue
	+ similar prevalence where considered a nutrition/public health issue
	++ higher prevalence than when considered a nutrition/public health issue
	+++ Much higher prevalence than when considered a nutrition/public health issue
Prevalence of risk factor from Risk Factor Survey	– below prevalence where considered a nutrition/public health issue
	+ similar prevalence where considered a nutrition/public health issue
	++ higher prevalence than when considered a nutrition/public health issue
	+++ Much higher prevalence than when considered a nutrition/public health issue

7.3 STEP 3: ESTIMATE THE STRENGTH OF THE ASSOCIATION BETWEEN THE RISK FACTOR AND UNDER-NUTRITION

After the NCA Analyst has examined the prevalence of the various risk factors, the next step is to estimate the strength of the association between the risk factor and under-nutrition. The three main information sources considered during this step are as follows:

- The strength and consistency across contexts of the association between the risk factor and under-nutrition (as indicated in the Pathways to Under-nutrition module)¹. Unless the module contains context-specific information, the NCA Analyst will not be able to ascertain the exact strength of the association between the risk factor and under-nutrition in the Link NCA context. In these circumstances, the association presented in the module serves as a reference of what the strengths of association have been across the literature. Seasonality and medium-term trends of hypothesised risk factor related to seasonality and medium-term trends of under-nutrition (as

1) Refer to "Pathways to Under-nutrition" module.

indicated in output #20 listed above)

- Participatory rating exercise results from the community-level qualitative enquiry (output #22 listed above)

Table 7.2 below presents criteria for assessing the strength and consistency of the association between the risk factor and under-nutrition. These criteria will be synthesised with information on prevalence of the risk factor in Step 4.

TABLE 7.2 CRITERIA FOR RATING THE STRENGTH OF ASSOCIATION BETWEEN THE RISK FACTOR AND UNDER-NUTRITION (FROM – TO +++)

SOURCE OF INFORMATION	NOTES
Strength and consistency across contexts of association between the risk factor and under-nutrition (from the Pathways to Under-nutrition Module)	<p>NOTE: This category is not applicable for risk factors that do not appear in the Pathways to Under-nutrition Module. Also note that the criteria assume statistical significance of the association.</p> <p>– Weak association has been demonstrated in at least a few contexts.</p> <p>+ Medium strength association has been demonstrated in at least a few contexts.</p> <p>++ Strong associations demonstrated in at least a few contexts or an association demonstrated in the particular context of the Link NCA.</p>
Seasonality and medium-term trends of risk factor related to seasonality and medium-term trends of under-nutrition (applies mainly for wasting)	<p>– The seasonal variation and medium-term trends of the prevalence of the risk factor do not correspond to the seasonal variation and medium-term trends of the under-nutrition outcome considered.</p> <p>+ Seasonal variation and medium term trends in risk factor prevalence sometimes correspond to the seasonal variation and medium term trends in under-nutrition outcome considered.</p> <p>++ The seasonal and medium term trends in prevalence of the risk factor match the seasonal and medium term trends in the under-nutrition outcome considered.</p>
Participatory rating exercise with community	<p>– The risk factor is rarely or never mentioned in the rating exercise.</p> <p>+ The risk factor is irregularly mentioned as one of the top 5 risk factors.</p> <p>++ The risk factor is regularly mentioned as one of the top 5 risk factors.</p>

7.4

STEP 4: PRELIMINARY RATING OF HYPOTHESISED RISK FACTORS AND PATHWAYS BY THE NCA ANALYST

During this step the NCA Analyst synthesises the various sources of data gathered throughout the Link NCA in order to assign a preliminary rating to the hypothesised risk factors. Any causes of under-nutrition that were measured qualitatively that were not considered in Steps 2 and 3 must be considered in Step 4. The NCA Analyst must triangulate all the pieces of information collected during the Link NCA to evaluate whether the information is reliable, coherent, and seems to contribute significantly to under-nutrition prevalence.

In Step 4 the NCA Analyst uses the criteria in Table 7.3 to assign a preliminary rating to the risk factors. The Analyst may wish to use a table similar to Table 7.4 when determining the preliminary ratings. These preliminary ratings will be presented, discussed, and validated during the stakeholder workshop. Note that the ratings for any given hypothesised risk factor may differ when considering wasting versus stunting. Also note that not all criteria presented in Table 7.3 will be applicable to every risk factor.

TABLE 7.3 RISK FACTOR CATEGORIES AND CRITERIA

CATEGORY	CRITERIA
MAJOR RISK factor and pathway	Prevalence of risk factor is classified as +++ for +++ AND Strength of association from literature review is classified as + or ++ AND Majority of + or ++ for all other sources of primary qualitative and quantitative data collected during the study
IMPORTANT RISK factor and pathway	Prevalence of risk factor is classified as ++ for +++ AND Strength of association from literature review is classified as + or ++ AND Majority of + for all other sources of primary qualitative and quantitative data collected during the study
MINOR RISK factor and pathway	Prevalence of risk factor is classified as + AND Strength of association from literature review is classified as + or - AND Majority of + for all other sources of primary qualitative and quantitative data collected during the study
REJECTED RISK factor and pathway	Prevalence of risk factor is classified as - AND Strength of association from literature review is classified as - AND Majority of - for all other sources of primary qualitative and quantitative data collected during the study
UNTESTED RISK factor and pathway	Information gathered not complete or not available

TABLE 7.4 EXAMPLE OF GRID FOR RATING ANALYSIS

HYPOTHESISED RISK FACTOR AND PATHWAY	PREV. FROM SECONDARY DATA	PREV. FROM QUANTITATIVE SURVEY	STRENGTH OF ASSOCIATION WITH UNDER-NUTRITION	SEASONALITY OF RISK FACTOR	PARTICIPATORY RANKING EXERCISE WITH KEY INFORMANTS	INTERPRETATION
Risk Factor A	+++	++	+++	+++	++	MAJOR
Risk Factor B	+	-	+	+	+	MINOR

There will be some risk factors that will have emerged during the community-level qualitative enquiry that do not have any accompanying quantitative data (e.g., there are no prevalence data). An example of such a risk factor could be “limited maternal empowerment” manifested by a lack of control over the family’s dietary choices. It is essential that these causes of under-nutrition not be neglected – they must be included in the rating exercise despite not having been evaluated in Step 2. Since these causes

of under-nutrition lack prevalence data, the NCA Analyst must use alternative means to assess the magnitude and severity of such risk factors. The NCA Analyst should use other applicable outputs to rate the risk factor, such as information from the participatory rating exercise.

The NCA Analyst may also wonder how to incorporate the myriad of information sources into the rating exercise whilst remaining systematic in his or her approach. It is recommended that the NCA Analyst approach the rating systematically but allow room for flexibility to ensure that all sources of information are reflected in the rating. The Link NCA in Burkina Faso provides an example where the NCA Analyst took a flexible approach to the rating exercise. The Analyst lacked quantitative data on the significance of birth spacing as a cause of under-nutrition; however, this factor had emerged as a very significant cause in the community-level qualitative enquiry. Based on the information obtained during the community-level qualitative enquiry, the NCA Analyst determined that birth spacing should be rated as a major risk factor of under-nutrition. The NCA Analyst should be open to adapting the criteria in Table 7.3 to avoid mistakenly deprioritising key risk factors of under-nutrition in the area.

After the Analyst has assigned a preliminary rating to all of the hypothesised risk factors, he or she should then review the visual depictions of pathways and accompanying narratives (i.e., two of the outputs from the community-level qualitative enquiry). These outputs should be used to assess the number of pathways in which the risk factor is believed to affect under-nutrition. The Analyst should then revisit the preliminary rating and adjust it based on the number of pathways that the risk factor is thought to impact under-nutrition. He or she should feel free to assign a higher rating to a risk factor if it impacts under-nutrition through multiple pathways. The output for Step 4 is a narrative justification for all of the NCA Analyst's preliminary ratings. The Analyst will have to present his or her justifications when the preliminary ratings are presented and debated at the stakeholder workshop.

There may also be risk factors identified by the community that diverge from the Western, medical understanding of under-nutrition causes. It is recommended that the NCA Analyst present these discrepancies in perspectives at the stakeholder workshop (and, of course, as chapter of the Link NCA report). Stakeholders can be asked for their input on the diverging perspectives as a means of coming to a consensus about the importance of the risk factor in influencing under-nutrition in the Link NCA area. The narrative justification for the ratings should also mention the divergence between community beliefs and medical understandings of under-nutrition causality. The outputs of the stakeholder workshop should note any lack of consensus, either among stakeholders at the workshop.

The rating exercise can appear somewhat artificial: risk factors can be highly inter-related making classification difficult. In the end, the rating exercise is useful since it highlights which risk factors and pathways seem to be most significant and creates coherence and buy-in of the information collected. The exercise rates risk factors by order of relevance. "Relevance" is defined according to the prevalence and degree to which the hypothesised risk factors plausibly contribute to under-nutrition cases in the Link NCA area. Though the rating exercise yields substantive information that stakeholders can use to prioritise their responses, the responses should not focus exclusively on the major risk factors (see Chapter 8 for more information on preparing to conduct a response analysis). It is recommended that the NCA Analyst follows strictly the criteria of table 7.3 to rate Risk Factors. There is indeed a tendency from technical experts to emphasize their area of expertise as major contributors to under-nutrition. For example a Food Security expert can have the tendency to emphasize Food Security related risk factors as major contributors. Following coherent criteria of classification for all Risk Factors will minimise this risk.

The rating is based on the prevalence of risk factors during the survey period as well as community perceptions on causes of under-nutrition. Using the seasonal calendar and further information (e.g., the focus group discussions), another rating can be extrapolated for another critical season in the year. For example, children's dietary diversity might be a minor risk factor during the time of the survey while it can be extrapolated as a major risk factor during the hunger season.

The rating can also be disaggregated based on the information collected on nutrition vulnerable groups. Certain risk factors might be more significant in one group than in another.

7.5

STEP 5: FINAL STAKEHOLDER WORKSHOP, PRESENTATION OF OUTPUTS, FINALISATION OF RATINGS

Objective of the final stakeholder workshop

The objective of this workshop is to present the outputs of the Link NCA and the preliminary ratings completed by the NCA Analyst, confirm or improve the initial analysis, and strengthen the credibility of the results. The stakeholder workshop is also an occasion for stakeholders to agree on major and minor risk factors and their pathways to under-nutrition.

Process

The NCA Analyst and the NCA Field survey Coordinator should pay particular attention to the identification of participants in the stakeholder workshop. At a minimum, technical experts from the initial meeting must be invited in addition to decision makers. “Stakeholders” are understood here in a broad sense: technical experts, field workers, community leaders, traditional and religious leaders, political leaders, community organisations, formal institutions, and NGO representatives. It is important to include decision makers, since this workshop is an initial step toward policy and programmatic responses that will involve all stakeholders. The down side to including decision makers in the workshop is that they may have a stronger bias towards the response analysis than technical experts. Although it can be difficult to organise, including representative from the local communities can be a strong asset for the workshop. Refer to the tool *Limitations of the Link NCA method* in the Tool kit for more details.

The Tool *Organising the Link NCA Final Stakeholders Workshop* includes suggested content and tips for the workshop. The stakeholder workshop contains five steps, discussed below. The NCA Analyst leads each of the steps.

7.5.1

STEP 1 OF THE STAKEHOLDER WORKSHOP: PRESENTATION OF LINK NCA RESULTS

During this step the NCA Analyst presents the major outputs of the Link NCA. He or she should begin with initial findings from the secondary literature review and technical expert workshop (discussed in Chapter 4). The outputs from the community-level qualitative enquiry and any quantitative survey conducted (e.g., Risk Factor Survey, SMART nutrition survey, or both) should also be presented. The NCA Analyst may wish to structure the presentation of outputs by hypothesised risk factor and pathway. Alternatively, the Analyst could present the major outputs of the Link NCA and then discuss these outputs in the context of the Link NCA’s hypotheses.

7.5.2 STEP 2 OF THE STAKEHOLDER WORKSHOP: PRESENTATION OF THE NCA ANALYST'S PRELIMINARY RISK FACTOR RATINGS

The Analyst should present the ratings for the risk factors and briefly explain how each of the ratings was determined (see example displayed in Table 7.5). During this step it is particularly important that the Analyst reference the visual depiction of pathways and highlight (i.e., assign a higher rating to) risk factors that operate through multiple pathways. Stakeholders should use the visual depiction of pathways to re-evaluate the NCA Analyst's ratings to see if any ratings should be modified.

TABLE 7.5 EXAMPLE OF FINAL RATING TABLE

HYPOTHESISED RISK FACTOR AND PATHWAY	INTERPRETATION DURING RAINY SEASON	INTERPRETATION DURING WINTER SEASON	NUTRITION VULNERABLE GROUPS
Hyp A: Diarrhoea	MAJOR	MAJOR	Risk more prevalent for populations living in islands
Hyp B: Poor Diet diversity	MINOR	MAJOR	Children above 24 months are more sensitive

7.5.3 STEP 3 OF THE STAKEHOLDER WORKSHOP: CONFIDENCE NOTE AND DEBATE ON RISK FACTOR RATINGS

A unique strength of the Link NCA method is its use of confidence notes to gauge the strength of the consensus on the study's conclusions. This approach is similar to the Integrated Food Security Phase Classification (IPC) method¹. Partners and experts assign a confidence note to the risk factor rating. The confidence note proposed has three levels: high, medium and low (see definitions in Table 7.6 below). The confidence note is an assessment of how reliable they deem the rating of a particular risk factor to be. It is based on the perceived strength of the information gathered for each risk factor and the number of pathways through which the risk factor operates.

1) IPC Global Partners, (2012). Integrated Food Security Phase Classification Technical Manual Version 2.0. Evidence and Standards for Better Food Security Decisions. FAO, Rome. Retrieved from http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC-Manual-2-Interactive.pdf

TABLE 7.6 DEFINITION OF CONFIDENCE NOTES LEVELS

CONFIDENCE NOTE	MEANING
HIGH	The participant is convinced by the result, based on the quality of the study's implementation, the coherence of the information collected, and her/his technical and field experience
MEDIUM	The participant is relatively convinced by the result although some points need clarification
LOW	The participant is not convinced by the rating and has doubts about the quality of the study's implementation and/or about the information collected OR key information is missing
UNKNOWN	The participant does not think his/her opinion is relevant for this particular result

The confidence note is intended to be a “temperature-taking tool” rather than a “majority wins” approach. For instance, the idea is not to take a vote and ultimately assign the confidence note to the risk factor that the majority of workshop participants select. Rather the vote should be used to build a consensus around the risk factors and pathways among stakeholders. A lack of consensus on the confidence level indicates that the rating should be debated further. In the final report the NCA Analyst should present the workshop results as either “consensus reached” or “consensus not fully reached” and mention the pros and cons of the minority opinion. The Link NCA final report should also highlight any factors that may affect the confidence note such as the resource capacity of the Link NCA, the quality and accessibility of secondary information, and the transparency of the process.

A high confidence note is not scientific proof of causality but rather conveys that a large majority of stakeholders, after reviewing quality data triangulated from several sources, are similarly convinced of the causal relevance of the risk factor.

7.5.4 STEP 4 OF THE STAKEHOLDER WORKSHOP: FINAL CONFIDENCE NOTE

After the initial assignment of confidence notes and subsequent debate on contentious risk factor ratings, the NCA Analyst should ask stakeholders to assign a final confidence note. If there was broad consensus on certain risk factor ratings during the first confidence vote then there is no need to vote a second time on these ratings.

7.5.5 OUTPUTS

By the end of the stakeholder workshop the NCA Analyst will have achieved the following:

- A presentation of results of the Link NCA study to stakeholders
- A rating of risk factors validated by stakeholders
- An assigned confidence note to each risk factor presented in the study
- Narrative justifications for risk factor ratings
- A workshop and summary report: a short report including initial technical expert workshop and stakeholder workshop minutes that serves as a summary of the Link NCA study before the final detailed report is completed.

8

COMMUNICATING
RESULTS AND
PLANNING FOR A
RESPONSE

At this stage of the Link NCA, there is consensus around the most plausible risk factors of under-nutrition. Major and minor risk factors of under-nutrition are identified.

Ultimately, the Link NCA study will be valuable only if it is linked to a policy or programmatic response. It is not the responsibility of the NCA Analyst to conduct the response analysis. The NCA Analyst provides a detailed situation analysis, and operational recommendations, but is not responsible for the design of operational solutions to the problem. The response analysis can only be implemented by programme teams representative of a wide range of technical expertise that the NCA Analyst may not have. However, it is the responsibility of the NCA Analyst to coordinate with programme teams to develop an action plan for the response analysis.

This chapter describes the response analysis process and existing tools and explains how to develop an action plan for the response analysis.

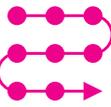




Objectives of chapter 8

Communicating results of the Link NCA study
.....

Link the results to a programmatic response
.....



8.1 COMMUNICATING RESULTS OF THE LINK NCA STUDY

Since the Link NCA is a relatively new method, the Analyst should ensure that stakeholders understand its basic principles before launching into a description of the results of the study. The Analyst must consistently use NCA terminology (refer to the *Glossary* below). Of particular importance is a clear description of the NCA Analyst's role, the content of a local causal model, and the definition of "risk factors" and 'pathways' to under-nutrition. The Analyst should also make sure stakeholders understand the specific objectives and parameters of the Link NCA method as compared to other types of NCAs. The Tool *Introduction to the Link NCA method* in the tool kit summarises this approach and can be included to provide an overview of the method in all Link NCA reports.

8.1.1 VALIDATION OF THE RESULTS

The table 8.1 provides a checklist to ensure that the NCA conducted adheres to the Link method.

TABLE 8.1 : CHECK LIST TO ENSURE COMPLIANCE WITH LINK NCA METHOD

NCA CONTAINS...		<input checked="" type="checkbox"/>
01	... a review of scientific literature, grey literature, and interviews with key technical experts?	<input type="checkbox"/>
02	... a technical expert workshop using the Tool included in these guidelines to identify hypothesised risk factors and pathways of under-nutrition?	<input type="checkbox"/>
03	... a SMART nutrition survey? (depending on available secondary data)	<input type="checkbox"/>
04	... a risk factor survey? (depending on available secondary data)	<input type="checkbox"/>
05	...a community-level qualitative enquiry, that reflects the diversity of the population studied, staying at least one week in each village, in at least 4 villages, and reaching the objectives mentioned in these guidelines?	<input type="checkbox"/>
06	... quality control measures for the data collection?	<input type="checkbox"/>
07	...a validation of the Link NCA results by the communities investigated?	<input type="checkbox"/>
08	...a validation of the Link NCA results by technical experts during a stakeholder workshop?	<input type="checkbox"/>
09	...a rating of the risk factors according to their order of relevance, defined as the prevalence and degree to which the risk factors plausibly contribute to under-nutrition in the NCA area?	<input type="checkbox"/>
10	... a consensus on most of the results of the NCA study?	<input type="checkbox"/>
11	...an identified and planned response analysis process?	<input type="checkbox"/>
12	...a clear statement of the limits of the method used?	<input type="checkbox"/>

If the Link NCA has gone through all these steps with a level of quality judged by the Analyst to be sufficient, he or she can conclude that the NCA has followed the Link method. However, to use the Link NCA logo, you must contact the Link NCA technical unit at linknca@actioncontrelafaim.org as soon as the Link NCA is planned. The Technical Unit will be happy to provide training and technical advices depending on its capacity.



The results of an Link NCA are based on the conclusions of the Link NCA Analyst that are presented, debated, revised and validated by the stakeholders (i.e., technical experts and communities in particular) during the stakeholder workshop (see Chapter 7). In this sense, stakeholders validate the results of the Link NCA. The Link NCA study must report when stakeholders disagree on some results if a consensus is not reached.

8.1.2 EXTERNAL COMMUNICATION OF THE RESULTS

The results of the Link NCA are generally of interest to a diverse range of stakeholders. The Link NCA produces a number of different outputs that can and should be used to communicate the NCA's results. Communication materials should always be adapted to the target audience. Table 8.2 illustrates the various audiences that may be targeted with different NCA communication materials.

TABLE 8.2 : COMMUNICATION STRATEGIES AND TARGET AUDIENCE

COMMUNICATION MATERIAL	OBJECTIVE	AUDIENCE TARGETED
NCA technical expert workshop report (5 pages maximum)	Provide a record of the workshop outputs, detail the next steps of the study.	Partners invited to the technical expert workshop.
NCA final report (70-100 pages)	Communicate detailed results of the NCA study.	Technical partners at local and national levels.
NCA executive summary (3-5 pages)	Communicate the main results and recommendations of the NCA study. The executive summary should be drawn from the final NCA report.	Technical and political partners (e.g., government representatives) at local and national level.
NCA article (2 to 5 pages depending on journal)	Sensitise a larger audience to the NCA study and its method.	National and international technical and political partners.
SMART nutrition survey report, as produced by ENA software (20 pages)	Give an overview of the results of the SMART nutrition survey. Ensure that nutritionists have access to the raw data that can be useful for programming.	Nutrition partners and especially the Ministry of Health.

A presentation can be a useful medium to communicate results that can be used even after the NCA Analyst is no longer operational.

If the Link NCA has an advocacy objective, the communication strategy should identify key messages, key audience, and appropriate timing to for communicating results to take advantage of policy windows and other opportunities to promote change.

NCA Technical expert workshop report

The technical expert workshop report provides a record of the outputs of the workshop. The short report (i.e., 5 pages) should highlight the main outputs and should be sent to participants of the workshop and those that could not attend within one week of the workshop. A proposed agenda is provided in the tool *Organising and implementing the "NCA Technical Expert Workshop"*

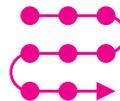
NCA final report

The Tool *Example of a Link NCA report structure* suggests an outline for a Link NCA report and provides examples of outputs for each section.

Reports can be downloaded from www.link-nca.org.

Templates are available from linknca@actioncontrelafaim.org.

Writing the final report is time-consuming so it is strongly recommended that the Analyst begin the writing in the early stages of the Link NCA study.



NCA executive summary

A brief, well written, executive summary of the lengthy Link NCA report is critically important. It should outline the main results of the NCA and the recommendations that emerged from the study. Templates are available from linknca@actioncontrelafaim.org.

NCA article

Since the Link NCA method is new, the results of the Link NCA study will surely be of interest to local, national and international partners. For this reason, it is recommended that the organisation that commissioned the Link NCA consider writing an article for a peer-reviewed publication or, at minimum, an article for publication in the organisation's newsletter or humanitarian journal.

SMART Nutrition Survey Report

If there is a SMART nutrition survey within the NCA, the ENA software has an automatic report function. It produces detailed and standardised results on nutrition indicators. Usually the Link NCA final report will include only most important nutrition results. The detailed nutrition results can either be included in annexe of the Link NCA report or separately using the standard report produced by ENA software.

The ENA nutrition survey report needs to be validated by experienced nutrition professionals. Consult nutrition professionals about which institution in the country is responsible for centralising nutrition surveys so that the report and dataset can be submitted for inclusion. Usually the nutrition divisions within the Ministry of Health and the country's UNICEF office coordinate the process of centralising nutrition data.

8.1.3 CENTRALISATION OF THE INFORMATION

ACF will endeavour to centralise Link NCA studies and make them freely accessible to all on the www.linknca.org website. ACF is not responsible for the content of Link NCA field study reports; its role is limited to providing a communication platform. Any Link NCA reports should be sent to the following email address: linknca@actioncontrelafaim.org. Any questions or comments on the Link NCA method can be sent to this email address.

8.2 LINKING SITUATION ANALYSIS TO PROGRAMMING

8.2.1 DESCRIPTION OF RESPONSE ANALYSIS PROCESS

As for any assessment method, producing results is one step of the process. This is often referred to as the "situation analysis". The second step involves using these results to develop adapted programmes. This step is referred to as the "response analysis" which is defined as:

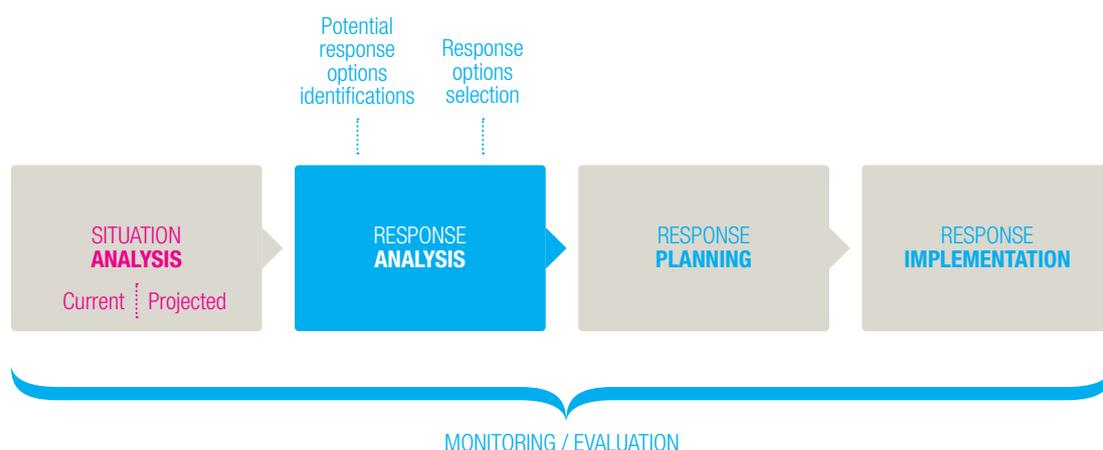
- the link between situation analysis and programme design (here the situation analysis is the NCA study itself);
- the selection of programme response options, modalities and target groups informed by considerations of appropriateness and feasibility; and

- a process that simultaneously addresses needs while analysing and minimising potential harmful side-effects¹.

The process of linking results of the situation analysis (i.e., the NCA study) to programming is described in three steps as illustrated in Figure 8.1.

1. Potential response options identification: identify a range of operational responses that could solve the problem.
2. Response options selection: based on institutional capacity, feasibility, ethics, mandate, and strategic interests select the most relevant operational response.
3. Response planning and implementation: include the operational response selected in the programme cycle.

FIGURE 8.1 : RESPONSE ANALYSIS PROCESS FROM MARSLAND AND MOHAMED²



8.2.2 THE CHALLENGES OF RESPONSE ANALYSIS

Recent articles published by the Humanitarian Practice Network³ (HPN) and Humanitarian Policy Group⁴(HPG) highlighted the common challenges field workers face when conducting a response analysis. These challenges are summarised below.

Poor quality situation analysis and/or lack of consensus

The Link NCA method has been designed to yield a high quality situation analysis. With the Link NCA, the stakeholders agree as a group on the situation analysis.

Lack of involvement of local communities in the process

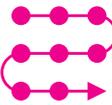
The Link NCA method gives a major voice to communities by identifying and disseminating their perceptions on the main risk factors of under-nutrition. The response analysis process can and should continue this effort by building on the Link NCA process.

1) FAO, Response Analysis: Synthesis Report, Report of a UN Food and Agriculture Organisation workshop held in Rome on 8–9 February 2011. Available at: http://www.fao.org/fileadmin/templates/tc/tce/pdf/Response_Analysis_Framework_Discussion_Papers.pdf

2) "The food security and Nutrition Response Analysis Framework: A technical guide". N. Marsland and S.Mohamed. Draft unpublished 2010.

3) « Response Analysis and response choices in food security crisis : a roadmap ». D.Maxwell, H.Stobaugh; J.Parker; M.McGlinchy. Humanitarian Practice Network, Nb 73, February 2013.

4) « Nutrition and food security response analysis in emergency contexts ». S.Levine and C.Chastre. Humanitarian Policy Group. December 2011.



Lack of time and resources to conduct a response analysis

Project managers are often overloaded with operational tasks with limited time to conduct a response analysis. The NCA Analyst cannot perform a response analysis alone since a response analysis is an inherently collaborative process. There is a risk of conducting a high quality Link NCA (i.e., the situation analysis) without anyone accepting responsibility for ensuring that the NCA's recommendations are incorporated into programming.

This is an important challenge that needs to be discussed during the preparatory phase of the NCA when the organisation is determining the NCA's objectives. The NCA is costly and time consuming for community members and technical partners. The NCA has no "raison d'être" if there is no response developed afterwards. Therefore adequate time and resources should be allocated to the response analysis in advance of the Link NCA study.

Organization's ethos, strategies and capacities

Each organisation is characterised by a specific culture, history and strategic interest. It can be difficult for the members of an organisation to propose a programmatic response that differs from previous programming even if it seems to respond better to the local situation. Standard technical solutions may not exist for some of the identified risk factors. For example, standard technical solutions exist to improve agricultural yields but technical solutions to reduce farming workload of women are less apparent.

The Link NCA process brings together experts from different sectors and organisations from the onset of the study. This set-up is an excellent opportunity to gain experience from others, think outside of one's technical domain, develop new approaches to under-nutrition, and build partnerships.

8.2.3 OVERVIEW OF RESPONSE OPTIONS

This section provides a non-exhaustive list of response options that may be considered after a Link NCA study. It is useful to become familiar with the range of options available in order to eventually select the most appropriate response.

Scale of the response

The response can be implemented at the scale of a single organisation but can also be implemented by complementary organisations:

Response implemented by one organisation:

This is the most straightforward and simple choice where the implementing organisation will develop an internal process to develop programs based on the Link NCA results.

The response possibilities will necessarily be limited by the capacity and experience of the organisation (except if a partnership is envisaged, see below).

Response implemented by complementary organisations:

This choice is more complex to implement but can be more effective at addressing a multi-faceted under-nutrition problem since it leverages the complementarity of various stakeholders. The participatory nature of the proposed Link NCA method offers an excellent platform for such a response. Participants of the technical expert workshop and final stakeholder workshop can naturally continue the process and be chapter of the response analysis. If this option is well designed and decided with partners right from the preparatory phase, the impact of the Link NCA will be much more profound. The output will then be the design of a multi-actor response to the problem of under-nutrition.

For this option, clarifying the organisation that is going to lead the whole process is important. The organisation leading the Link NCA process can be different from the organisation implementing the Link NCA study. This role of coordinating stakeholder's strategies to prevent under-nutrition falls primarily in

the hands of the government and preferably at sub national level, as the Link NCA typically provides locally-specific information. The organisation implementing the Link NCA study can play the role of a technical expert animating the Link NCA process that is lead and validated by the government.

Examples of responses

There is a vast range of possible responses to Link NCA results, from adapting existing programmes to advocacy. The following is a non-exhaustive overview of these choices:

Do no harm

At all times all nutrition programmes must abide by the principle of “do no harm” - that is, existing and future interventions must not have negative impacts on under-nutrition. After the Link NCA, programme managers should review their programmes with an NCA expert in order to judge whether existing programming potentially negatively impact the nutrition of beneficiaries.

Maximising the impact on nutrition

Beyond do no harm, existing programs can be adapted to maximise their impact. In Burkina Faso for example, the Link NCA identified that workload of women was a major contributor to under-nutrition. Programme managers realised that this aspect had not yet received sufficient consideration in existing food security programmes. Although existing food security programmes were effective in addressing food production problems, the farming techniques proposed and income generating activities used were potentially increasing women’s workload rather than reducing it. The manual “Maximising the nutritional impact of food security and livelihood interventions” is useful for this response option¹.

Develop multi-sectoral interventions to reduce under-nutrition

Multi-sectoral interventions are defined here as interventions that aim to reduce the prevalence and severity of under-nutrition by working through multiple sectors while capitalizing on the synergy between and among different interventions. The Link NCA approach was designed to facilitate and inform multi-sectoral responses.

Design sectoral interventions to address one risk factor

In certain contexts, it may be difficult to fund or implement multi-sectoral and multi-actor programmes. Sectoral interventions can be a good option to tackle one or two major risk factor of under-nutrition if the links with other pathways are well-considered.

Advocacy to promote change among stakeholders

In settings where under-nutrition is not very prominent on the political agenda, the Link NCA is a powerful tool to promote change among stakeholders and to propose a multi-sectoral and multi-actor strategy to prevent under-nutrition.

8.2.4 SELECTING RESPONSE ANALYSIS PROCESS

Below is a list of some key response analysis tools. Tools can be selected, adapted, and applied according to the context and objective of the response.

1) « Maximising the nutritional impact of food security and livelihood interventions. A manual for field workers”. ACF-international,2011. Available at: http://www.actionagainsthunger.org/sites/default/files/publications/maximising_the_nutritional_impact_of_fsl_interventions_0.pdf

TABLE 8.3 LIST OF EXISTING TOOLS FOR RESPONSE ANALYSIS.

NAME OF THE TOOL	PURPOSE	ACCESSIBLE FROM
RAF (Response Analysis Framework-FAO)	Process of multi-stakeholder meetings in which various response options are discussed and scored according to different categories in a 'Response Analysis Matrix'	 http://www.fao.org/fileadmin/templates/tc/tce/pdf/Response_Analysis_Framework_Discussion_Papers.pdf
RAP (Response Analysis Project-WFP)	Process to analyse possible responses by defining needs, reviewing capacity, identifying a range of responses and evaluating each response	 http://home.wfp.org/stellent/groups/public/documents/ena/wfp194140.pdf
Oxfam response analysis guide	Defines the role of response analysis and offers criteria for prioritising response options by livelihood appropriateness and agency appropriateness	 http://www.feg-consulting.com/spotlight/Rough%20Guide%20Response%20Analysis.pdf
FAO nutrition: Agreeing on causes of malnutrition for joint action	Multi stakeholder process for coordinated response	 http://www.fao.org/fileadmin/user_upload/wa_workshop/docs/Joint_Planning_for_Nutrition_Nov2012.pdf
PIPA: participatory impact pathway analysis	Multi stakeholder process for coordinated response	 http://www.cgiar-ilac.org/files/publications/briefs/ILAC_Brief17_PIPA.pdf

This table is a direct compilation of tables taken from D.Maxwell, H.Stobaugh; J.Parker; M.McGlinchy - 2013¹ and S.Levine and C.Chastre - 2011²:

8.2.5 LINKING ANALYSIS AND RESPONSE

As mentioned above, it is not the responsibility of the NCA Analyst to perform the response analysis: that responsibility lies with the program managers. However, the NCA Analyst, in collaboration with program teams³, should contribute to the response analysis in the following ways:

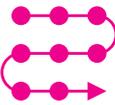
- Help determine the scale of the response: is the response analysis going to be developed internally or with stakeholders (or both)?
- Suggest the most suitable process (tool/protocol)
- Develop an action plan, roles and responsibilities for the response analysis.

To do this, the following steps are proposed:

1) « Response Analysis and response choices in food security crisis : a roadmap ». D.Maxwell, H.Stobaugh; J.Parker; M.McGlinchy. Humanitarian Practice Network, Nb 73, February 2013.

2) « Nutrition and food security response analysis in emergency contexts ». S.Levine and C.Chastre. Humanitarian Policy Group. December 2011.

3) By program team we mean staff in charge of deciding and implementing the phases of the project cycle such as program managers, technical advisors, and program coordinators.



Agree on the scale of the response during the preparatory phase:

Validate the choice made during the preparatory phase (see Chapter 2 for more details).

Discuss on the recommendations of the Link NCA. Suggest the most suitable response analysis process and develop an action plan:

This decision can be done a few days after the final stakeholder workshop during a half-day meeting with the programme team that is facilitated by the NCA Analyst. **The meeting should be planned well in advance.**

During the meeting the NCA Analyst should present a list of operational recommendations that emerged from the Link NCA process, including the final stakeholder workshop. “Operational recommendations” does not mean recommendations on the modalities of interventions. For example, the NCA Analyst will not be in position to recommend a “fresh food vouchers intervention to improve diet diversity” since the Link NCA study does not explore the relevance/appropriateness/feasibility of different modalities of intervention. The NCA Analyst will, however, be in position to propose operational recommendations on where and how to intervene, and what types of objectives the intervention should try to achieve. For example, the NCA Analyst can recommend reviewing all existing interventions to see to see if they include dietary diversity objectives and to assess whether existing interventions to improve dietary diversity may be increasing other identified risk factors like workload.

During the meeting, the operational team can debate the merit of each recommendation and the potential scale of response. Then, the operational team can choose the most appropriate response analysis tool from the list presented by the NCA Analyst. From there an action plan for the response analysis can be organised, with roles and responsibilities clearly defined to effectively use the results of the Link NCA to improve nutrition programming. This step is a transition step, to finalise the Link NCA study and to officially transfer the responsibility of incorporating the results of the Link NCA study to the programming of the operational team.

The outputs of this meeting are:

- Decision by the operational team on the most appropriate/feasible response analysis process
- An action plan for implementing this process with roles, responsibilities, and timeline defined



Glossary

Acute Malnutrition

Also known as “wasting (see definition below)”, “acute malnutrition is characterized by a rapid deterioration in nutritional status over a short period of time”. In children, it can be measured using the weight-for-height nutritional index [i.e., wasting] or mid-upper arm circumference. There are different levels of severity of acute malnutrition: **moderate acute malnutrition** (MAM) and **severe acute malnutrition** (SAM).¹

MAM is defined as “weight-for-height between minus two and minus three standard deviations from the median weight-for-height for the standard reference population.”²

SAM is “a result of recent (short-term) deficiency of protein, energy, and minerals and vitamins leading to loss of body fats and muscle tissues. Acute malnutrition presents with wasting (low weight-for-height) and/or the presence of oedema (i.e., retention of water in body tissues). Defined for children aged 6–60 months, as a weight-for-height below – 3 standard deviations from the median weight-for-height for the standard reference population or a mid-upper arm circumference of less than 115 mm or the presence of nutritional oedema or marasmic-kwashiorkor.”³

Chronic malnutrition

“Chronic malnutrition, also known as “stunting”, is a form of growth failure which develops over a long period of time. Inadequate nutrition over long periods of time (including poor maternal nutrition and poor infant and young child feeding practices) and/or repeated infections can lead to stunting. In children, it can be measured using the height-for-age nutritional index.”⁴

Cluster

“In cluster sampling, basic sampling units, such as households, are grouped together into clusters, so that the distance between basic sampling units within a cluster can be small. The only long-distance travel of the survey teams is between clusters. Cluster sampling is a sampling method in which the first sampling step involves selecting collections of persons or households (clusters) instead of sampling households or persons directly”⁵

1) UNICEF, “Nutrition Glossary: A resource for communicators” Division of Communication, April 2012, p. 3. [http://www.unicef.org/lac/Nutrition_Glossary_\(3\).pdf](http://www.unicef.org/lac/Nutrition_Glossary_(3).pdf)

2) Ibid. p. 9

3) Ibid. p. 11

4) Ibid. p. 4

5) “A Manual: Measuring and Interpreting Malnutrition and Mortality”. CDC, WFP.

Community Level Qualitative Enquiry

While qualitative methods are used throughout the Link NCA study, the Community Level Qualitative Enquiry refers to the qualitative component of the Link NCA field study (described in chapter 5) that is implemented at a local level. It has 6 objectives:

- Develop a local definition and understanding of under-nutrition
- Characterise food security, health, and care in the community
- Explore respondent perceptions of the causes and consequences of poor food security, health, and care in relation to under-nutrition
- Understand the practices of caregivers of positive deviant children (i.e., well-nourished and healthy children of parents who seemingly face the same challenges and barriers as parents of under-nourished children)
- Identify seasonal and historical trends in under-nutrition and risk factors
- Understand how the community prioritises these factors

Confidence intervals

As mentioned in Wikipedia (http://en.wikipedia.org/wiki/Confidence_interval):

“The level of confidence of the confidence interval would indicate the probability that the confidence range captures this true population parameter given a distribution of samples. In applied practice, confidence intervals are typically stated at the 95% confidence level”

So for example, if the mean Diet Diversity Score is 5.2 with confidence interval of [4.6 to 6.8], you can say that there is 95% chance that the true value of the Diet Diversity Score is between 4.6 and 6.8.

Confounding factor⁶

A variable is considered to be a confounding factor if:

- The variable is independently associated with the outcome (i.e. be a risk factor).
- The variable is associated with the exposure under study in the source population.
- It does not lie on the causal pathway between exposure and disease.

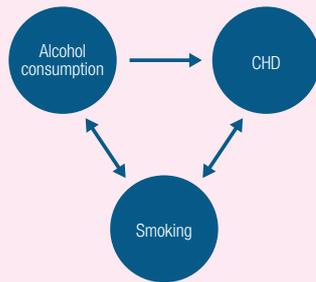
Examples of confounding:

A study found alcohol consumption to be associated with the risk of Coronary Heart Disease (CHD). However, smoking may have confounded the association between alcohol and CHD. For example smoking is independently associated with CHD (i.e., it is a risk factor) and is also associated with

6) “Introduction to Epidemiology”. Bailey L, Vardulaki K, Langham J, Chandramohan D. Open University Press, 2005.



alcohol consumption (i.e., smokers tend to drink more than non-smokers).



Controlling for the potential confounding effect of smoking may in fact show no association between alcohol consumption and CHD.

Confounding factors, if not controlled for, can cause a bias in the estimate of the impact of the exposure being studied.

Cross Sectional Survey

A survey employing a single point of data collection for each participant or system being studied. A cross-sectional study cannot be used to examine changes in the phenomena being studied, and relationships measured cross-sectionally cannot infer cause and effect.

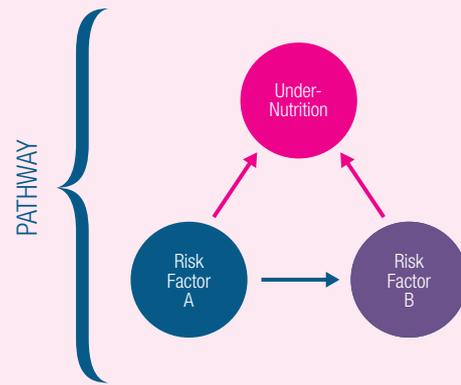
Design Effect

“Using cluster sampling requires a larger sample size than for simple or systematic random sampling. This is because subjects within the same cluster are generally more similar to each other than to members of different clusters, which results in a decrease in precision. The imprecision of cluster sampling is compensated for by multiplying (increasing) the sample size calculated for a simple random sample by a factor, named the design effect”¹.

Hypothesised risk factors and hypothesised pathways

A hypothesised risk factor refers to a specific risk factor that is believed to relate to under-nutrition in the Link NCA context. Hypothesized risk factors may come from the UNICEF causal framework or be informed by locally relevant information. The mechanism by which the hypothesised risk factor is believed to affect under-nutrition is referred to as a «hypothesised pathway». A hypothesised pathway typically connects several risk factors, and represents the mechanism by which risk factors together result in under-nutrition. Once all hypothesised risk factors and pathways have been assessed and validated through the Link NCA process, the results are no longer referred to using the term “hypothesised”. Note that the Link NCA guidelines occasionally use the term “hypothesis” as an umbrella term to represent a hypothesised risk factor and its related hypothesised pathways to under-nutrition.

1) “Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART METHODOLOGY”. 2006, p.44.



Indicator guide for an Link NCA

This Indicator Guide, specifically developed for the Link NCA project, is a selection of commonly used indicators that are recommended for the NCA Risk Factor Survey.

The objective of this Indicator Guide is to improve the efficiency and accuracy of survey instrument design, not to promote a standardised list of indicators.

The indicators were been selected by:

- Prioritising risk factors in the UNICEF framework for which causal linkages with under-nutrition are strong (based on existing scientific literature)
- For each of these risk factors, identifying indicators that are commonly used, precise and easy to measure.

The guide contains a list of “core” and “optional” indicators, a description of their strength and weaknesses, a questionnaire sample for each indicator and guidance for data coding and analysis. The guide refers to existing guidelines and training materials where available.

Knowledge, Attitudes and Practices or “KAP” survey

The KAP survey is a method that contributes to the development, monitoring and evaluation of programmes and aims to identify behaviours influencing nutrition and health status of the population.

Link NCA method

A Link NCA is a structured, participatory, holistic study, based on the UNICEF causal framework, intended to build evidence-based consensus around the plausible causes of under-nutrition in a local context.

The Link NCA is:

- Linking stakeholders across sectors
- Linking risk factors and under-nutrition to identify pathways
- Linking different sources of information to build a case for nutrition causality
- Linking the causal analysis to a programmatic response



Link NCA process

The “Link NCA process” encompasses the period from the idea that a Link NCA could be relevant, up to the programming of nutrition security interventions. It includes the Link NCA study but also its preparation and its utilization.

Link NCA study

The “Link NCA study” refers to the 4-5 months period where the NCA Analyst is in the field and implements the NCA up to the production of results and recommendations.

Local Causal model

The local causal model (see Tool 6 *Examples of local causal models*) is based on the UNICEF Framework for malnutrition. It is adapted to the context of each specific NCA study. The local causal model should only include risk factors that are believed to be relevant in the local context. At the early stages of the study, the local causal model is used as an exercise to define hypothesised risk factors and pathways of under-nutrition. As the Link NCA process unfolds, additional hypothesised risk factors and pathways may become apparent (particularly during the community-level qualitative enquiry) and will complete the local causal model.

Malnutrition¹

“Malnutrition” is a broad term commonly used synonymously with “under-nutrition”, although technically it also refers to “over-nutrition” (i.e., overweight and obesity). People are malnourished if their diet does not provide adequate nutrients for growth and maintenance, often due to economic political and socio-cultural factors, or if they are unable to fully utilise the food they eat due to illness (under-nutrition). They are also malnourished if they consume too many calories (over-nutrition). Underweight (including both stunting and / or wasting), overweight and micronutrient deficiencies are all forms of malnutrition.

NCA Analyst

The NCA Analyst is the person in charge of conducting the NCA study. Refer to the qualitative survey and tool kit sections for more details.

NCA Field Survey Coordinator

The NCA Field Survey Coordinator is the person in charge of the implementation of the quantitative survey of the Link NCA. She/He works under the supervision of the NCA Analyst, and should have complementary skills and experience. Refer to the quantitative survey section for more details.

NCA Focal Point

The NCA Focal Point is a technical staff person responsible for the work conducted during the Preparatory Phase.

1) « Glossary of terminology commonly used to prevent, diagnose and treat under-nutrition ». ACF. 2011

He or she manages the NCA Analyst and coordinates the Technical Advisory Group.

Nutrition Security

The World Bank defines nutrition security as “the ongoing access to the basic elements of good nutrition, i.e., a balanced diet, safe environment, clean water, and adequate health care (preventive and curative) for all people, and the knowledge needed to care for and ensure a healthy and active life for all household members”². In other words, nutrition security is an outcome of good health, a healthy environment, and good caring practices as well as household food security; it is achieved when all household members, have physical, social and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences, combined with a sanitary environment, access to clean water, adequate health services, and appropriate care and feeding practices to ensure an active and healthy life^{3,4,5}. Nutrition security goes beyond the traditional concept of food security (access, availability, stability and utilisation of food) and recognises that nutritional status is dependent on a wide array of factors, all of these being necessary conditions, while none of them alone is sufficient⁶. Nutrition security looks at individuals – in addition to household and community levels, while food security is concentrating on the latter.

Nutrition Vulnerable Groups

The population studied within a single Link NCA can be heterogeneous in terms of available resources, access to social services but also in terms of practices and how they adapt to their environment.

“Nutrition vulnerable groups” designates groups of individuals that are at risk of poor nutrition outcomes, eg. socially excluded individuals; individuals belonging to certain livelihood groups or ethnicities; and individuals who are physiologically vulnerable (Eg. children <2). When the risk factors and pathways leading to malnutrition are likely to differ among different nutrition vulnerable groups, it can be helpful to stratify the sample so as to study each group separately and together.

Pathways to under-nutrition

A causal pathway to under-nutrition is a mechanism describing how a risk factor is linked to under-nutrition in a certain context.

2) The World Bank, 2013, Improving nutrition through multisectoral approaches.

3) WHO, 2013, Global nutrition policy review: what does it take to scale up nutrition action?

4) United Nations Standing Committee on Nutrition (2010). 6th Report on the World Nutrition Situation.

5) Scaling up Nutrition, 2010, A Road Map for Scaling-Up Nutrition.

6) Urban Jonsson, Global Forum on Food Security and Nutrition. Coming to terms with terminology. Collection of contributions received. Discussion from 8 to 28 August 2012.



Pathways to under-nutrition module

The ACF Pathways to Under-nutrition module provides a user-friendly summary of scientific evidence linking key risk factors and under-nutrition outcomes (wasting and stunting). The purpose of the module is to provide a scientific basis for interpreting Link NCA quantitative survey results, with the assumption that factors that have been established as “causal” through the scientific literature are also likely to cause malnutrition when detected in the population studied through an Link NCA. For example, if a lack of exclusive breastfeeding has been linked to malnutrition in multiple contexts through the scientific literature, an Link NCA that detects high rates of non-exclusive breastfeeding may consider this finding to be worthy of programmatic or advocacy/policy attention. The literature in the Pathways to Under-nutrition Module does not tell us the relative contribution of non-exclusive breastfeeding to malnutrition in the Link NCA context.

The Module is organised by key risk factor and provides a description of: likely pathways through which the risk factor commonly leads to malnutrition, a short summary of the scientific studies reviewed; and a conclusion about the strength and generalizability of the causal association.

Prevalence

Prevalence measures the proportion of individuals in a defined population that have a disease or other health outcomes of interest at a specified point in time (point prevalence) or during a specified period of time (period prevalence).

Of 10,000 female residents in town A on 1st January 2006, 1,000 have hypertension.

The prevalence of hypertension among women in town A on this date is calculated as: $1,000/10,000 = 0.1$ or 10%

Precision

As stated in the statistic and Probability Dictionnaire¹: “Precision refers to how close estimates from different samples are to each other. For example, the standard error is a measure of precision. When the standard error is small, estimates from different samples will be close in value; and vice versa.

Precision is inversely related to standard error. When the standard error is small, sample estimates are more precise; when the standard error is large, sample estimates are less precise.”

Probability Proportioned to Size (or PPS)

As stated in CDC manual²: “PPS is a sampling method that can be used in cluster sampling design. When using the PPS method, the first stage selection of clusters is done so that the chance of any specific cluster being selected is proportional to the size of that cluster relative to the entire

population. Thus, if one cluster has a population of 5,000 and another 1,000, then the former cluster has five times the chance of being chosen as the latter cluster”.

Rating of risk factors

The hypothesised risk factors are rated according to “relevance” which is defined by the prevalence and degree to which the hypothesised risk factors plausibly contribute to under-nutrition cases in the Link NCA area.

The rating categories are:

- Major risk factor
- Important risk factor
- Minor risk factor
- Rejected risk factor (when there is a consensus on rejecting the causal hypothesis)
- Untested risk factor (when there is a consensus that there is not enough information to rate the risk factor)

Note that rating is different from ranking. Ranking would identify 1st, 2nd, 3rd...most important risk factors. Rating attributes categories to risk factors (so theoretically, all risk factors could be categorised as “major”).

Response Analysis³:

As for any assessment method, producing results is one step of the process; using these results to develop appropriate programmes is another step that is often challenging. This step is referred as the “response analysis” which can be defined as:

- the link between situational analysis and programme design (here the situation analysis is the Link NCA study itself);
- the selection of programme response options, modalities and target groups informed by considerations of appropriateness and feasibility; and
- a process that simultaneously addresses needs while analysing and minimising potential harmful side-effects

Risk factor

A risk factor is an aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or inherited characteristic that is associated with an increased occurrence of disease or other health-related event or condition.

For the Link NCA, the term “risk factor” is preferred over the term “determinant”.

1) <http://stattrek.com/statistics/dictionary.aspx?definition=precision>

2) A Manual: Measuring and Interpreting Malnutrition and Mortality”. CDC, WFP.

3) FAO, Response Analysis: Synthesis Report, Report of a UN Food and Agriculture Organisation workshop held in Rome on 8–9 February 2011. Available at: http://www.fao.org/fileadmin/templates/tc/tce/pdf/Response_Analysis_Framework_Discussion_Papers.pdf



Risk Factor Survey

The Risk Factor Survey is, with the SMART nutrition survey, a component of the quantitative survey of the Link NCA. The Risk Factor Survey is a cross sectional survey to measure the magnitude and severity of risk factors that may affect the nutritional status of the population studied. The NCA indicator guide provides a list of commonly used indicators related to the UNICEF conceptual framework. It provides a useful starting point to elaborate the Risk Factor Survey (refer to chapter 6 for more details).

SMART nutrition survey¹

SMART (Standardised Methodology for Assessment in Relief and Transition) is an inter-agency initiative, which was launched in 2002 by a network of organisations and humanitarian practitioners.

The SMART methodology is an improved survey method to measure the nutritional status of children under-five years old and the mortality rate of the population.

'SQUEAC' or Semi-Quantitative Evaluation of Access and Coverage²

SQUEAC is a semi-structured activity designed to rapidly accumulate new and relevant information about coverage and factors influencing coverage and to develop and test hypotheses about coverage and factors influencing coverage.

Final Stakeholder Workshop

One of the last stages of the Link NCA study is the Final Stakeholder Workshop where participants of the technical expert workshop as well as key decision-makers, review the results of the study, and give a confidence note on the results to facilitate consensus-building around the main causes of under-nutrition in the population studied.

Stunting

As stated by Victora et al³ (2008): «Stunting is an adaptation to chronic malnutrition, and reflects the negative effects of nutritional deprivation on a child's potential growth, over time. Stunting can occur when a child suffers from long-term nutrient deficiencies and/or chronic illness, so that not only weight gain but height is affected. It can also be an outcome of repeated episodes of acute infections, or acute malnutrition.

Stunting is identified by low height-for-age, indicating a restriction of potential linear growth in children. It has been shown that differences observed in the first 2 years will on average remain until adulthood. Other results are more optimistic and suggest that children can recover from early

nutritional insult and that catch up growth contributes to cognition. Studies on the secular trend in increasing height have been recorded in all societies as child under-nutrition is reduced

Child stunting leads to significant reduction in adult size and one of the main consequences is reduced work capacity, which in turn has an impact on economic productivity. Because it negatively and often irreversibly affects organ growth, stunting is strongly linked to cognitive impairment. Investigators have also stressed the relation between early growth retardation and deficits in social-emotional development compared to non-stunted children through late adolescence.”

Technical Expert Workshop

At the early stage of the Link NCA study, multi-disciplinary technical experts from different types of organisations are invited to attend a one-day workshop to brainstorm potential (hypothesized) undernutrition risk factors and pathways to be tested by the Link NCA team.

Under-nutrition⁴

Under-Nutrition is one of the two forms of malnutrition (over-nutrition being the other) and is defined as the outcome of insufficient food intake and repeated infectious diseases and poor care practices, often due to economic political and socio-cultural factors.

The term includes being underweight for one's age, too short for one's age (see: stunting; chronic under-nutrition), dangerously thin for one's height (see: wasting; acute under-nutrition) and/or deficiency in vitamins and minerals (micronutrient malnutrition).

Underweight⁵

Underweight is a composite form of under-nutrition including elements of stunting and wasting and is defined by a weight-for-age (WFA) z-score below -2 standard deviations of the WHO growth standards. This indicator is commonly used in growth monitoring and promotion and child health and nutrition programmes aimed at prevention and treatment of under-nutrition.

Wasting

The technical definition for wasting is “below minus 2 standard deviations from median weight-for-height of a reference population”⁶.

1) “Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART METHODOLOGY”. 2006.

2) “SQUEAC : A low resource method for evaluating access and coverage in selective feeding programs” 2011.

3) Victora, C.G., Adair, L. Fall, C., Hallal, P.C., Martorell, R., Richter, L., Sachdev, H.S. (2008). Maternal and Child Under-nutrition: consequences for adult health and human capital. The Lancet, 371(9609), 340-357. 26 January 2008.

4) « Glossary of terminology commonly used to prevent, diagnose and treat under-nutrition ». ACF. 2011

5) « Glossary of terminology commonly used to prevent, diagnose and treat under-nutrition ». ACF. 2011

6) UNICEF, “Nutrition Glossary: A resource for communicators” Division of Communication, April 2012, p. 13. [http://www.unicef.org/lac/Nutrition_Glossary_\(3\).pdf](http://www.unicef.org/lac/Nutrition_Glossary_(3).pdf)



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World Health Organisation compiles country-level information on health indicators: <http://www.who.int/countries/en/>



For further information about the design
or implementation of a Link NCA,
visit the dedicated website:
www.linknca.org

To communicate with an expert
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