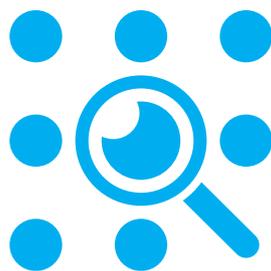


link nca

NUTRITION CAUSAL ANALYSIS

OVERVIEW

JANUARY
2015



This document 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.



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NUTRITION CAUSAL ANALYSIS

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OVERVIEW

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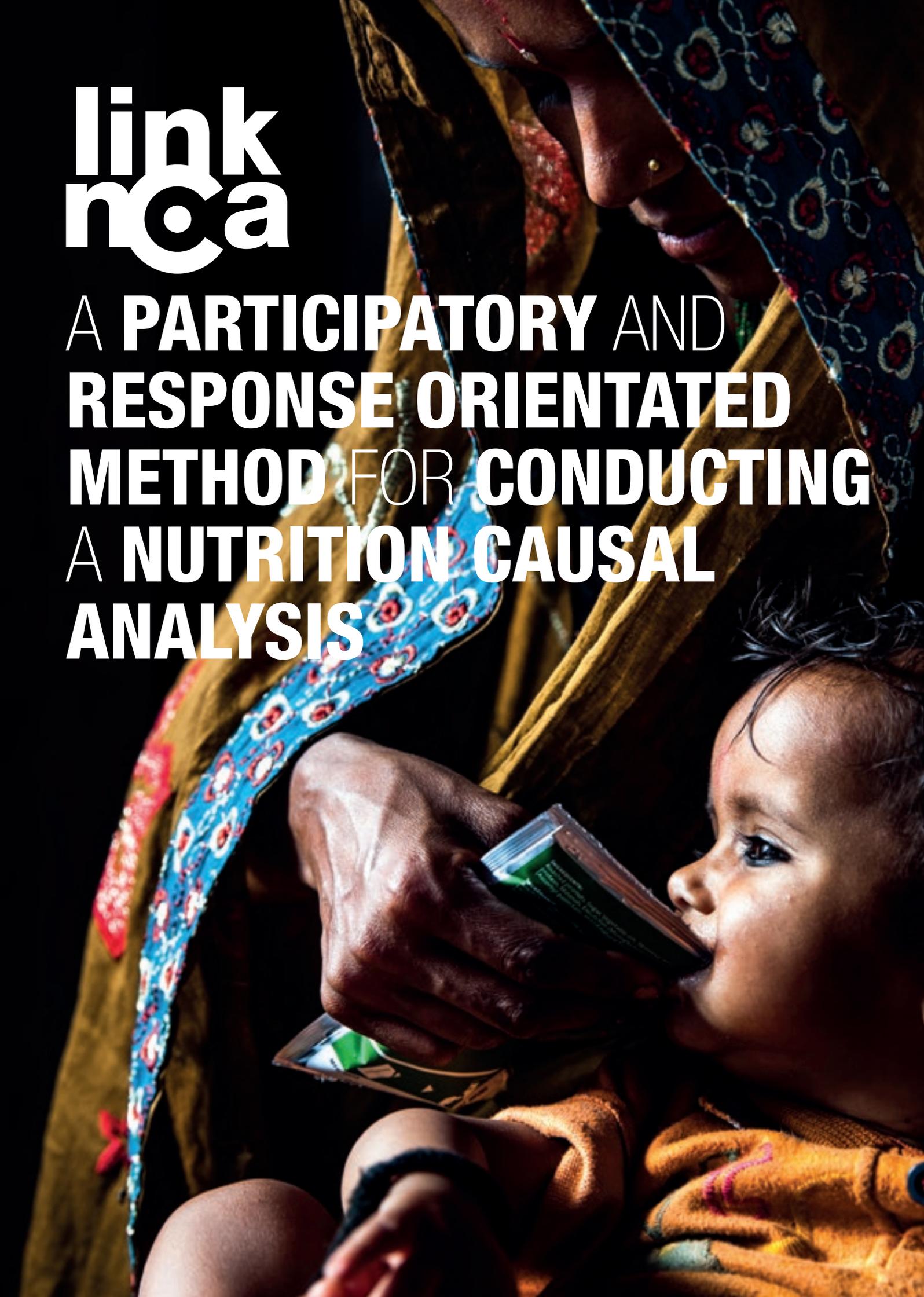
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A close-up photograph of a woman in a blue and red patterned sari feeding a young child with a spoon. The woman is looking down at the child with a focused expression. The child is looking up at the spoon. The background is dark, making the subjects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

**link
nca**

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



OVERVIEW

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1 WHAT IS A NUTRITION CAUSAL ANALYSIS (NCA)?

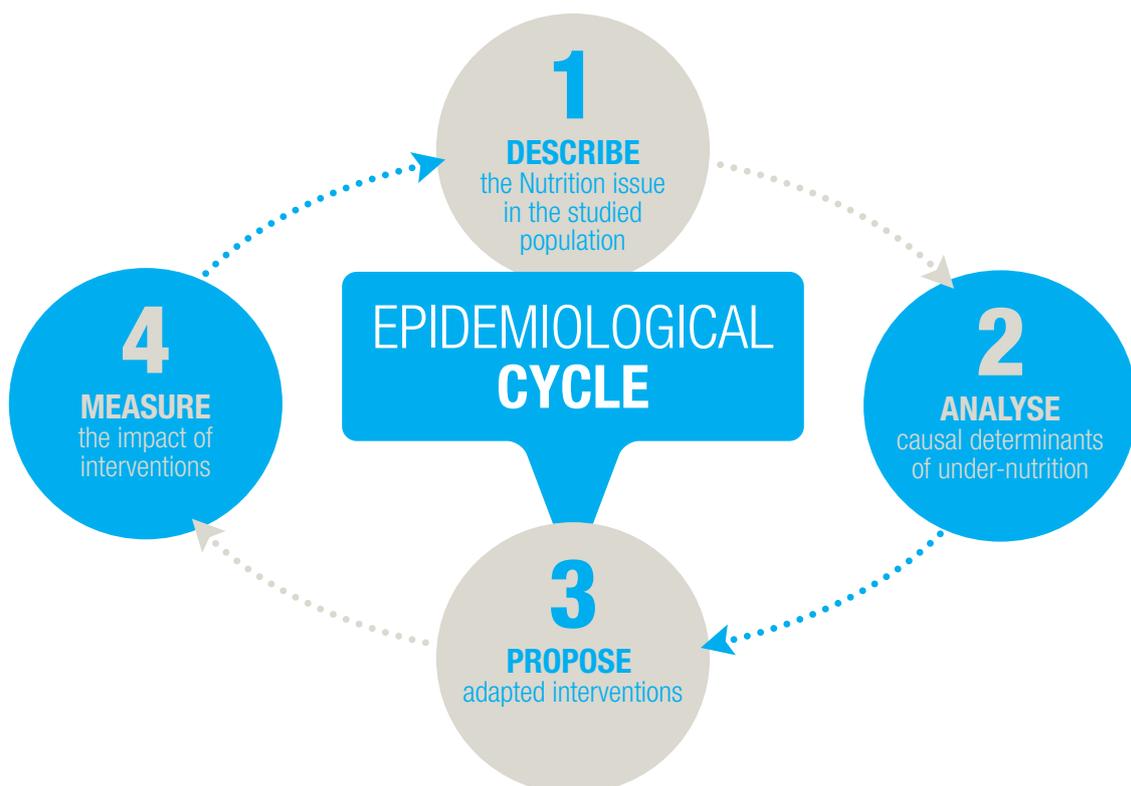
A nutrition causal analysis (NCA) is a method for analysing the multi-causality of under-nutrition, as a starting point for improving the relevance and effectiveness of multi-sectoral nutrition security programming in a given context.

Though there is an increasing global convergence around a well-defined package of ‘essential’ nutrition actions ^(A,B,C), 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 ^(D). 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 ^(E). 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





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^(F,G,H,I), routine assessment of under-nutrition causality has been fairly limited among operational agencies working in nutrition. In part 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 part 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^(J)”. 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^(K)”. 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^(L), neglecting 1) the potential negative impacts of certain interventions, and 2) the importance of interdependent risk factors. A review of response practices^(M) 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.

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

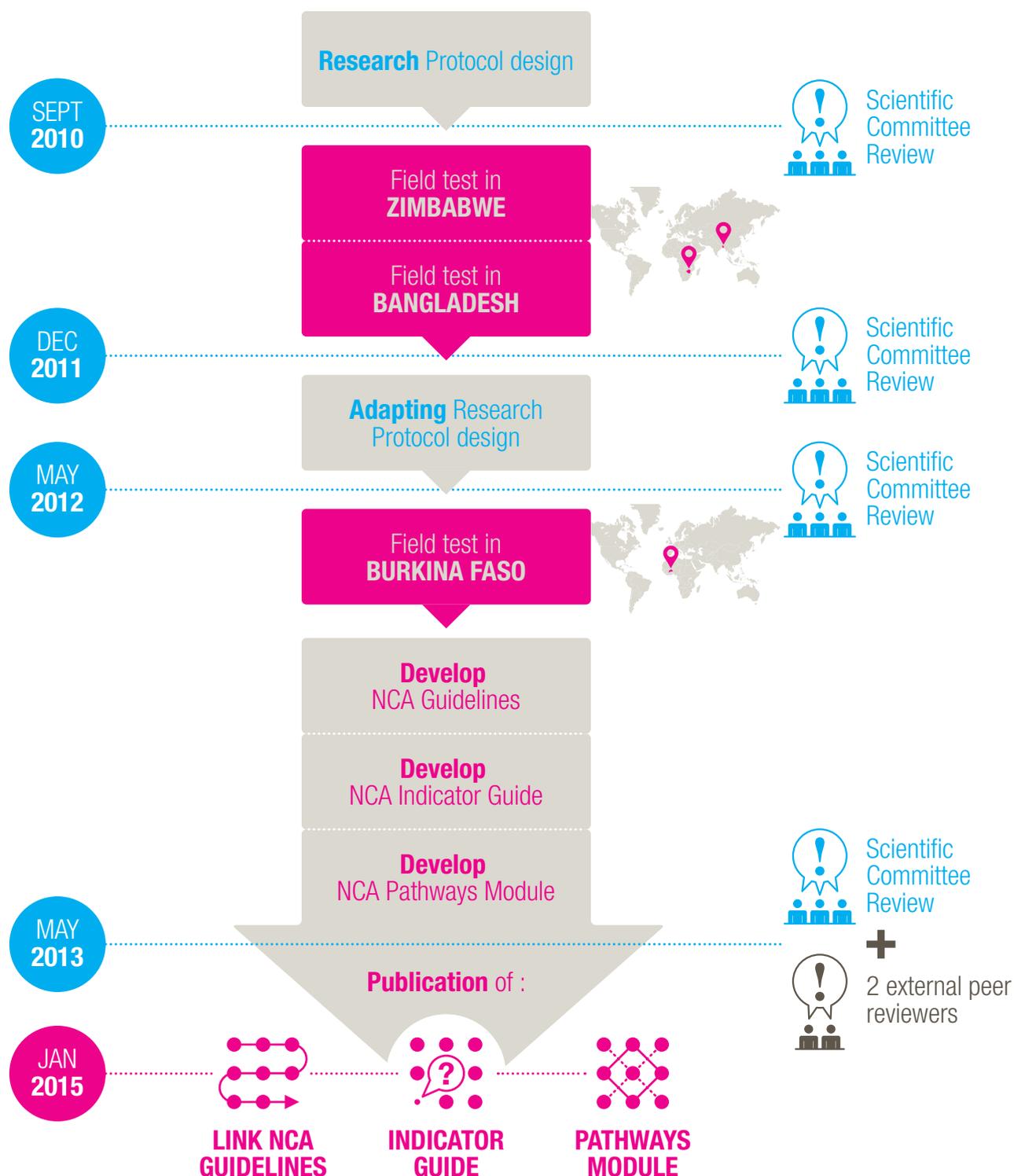
Action Contre la Faim (Action Against Hunger), is a humanitarian NGO that has been working for the treatment and the prevention of under-nutrition for more than 30 years. In order to strengthen the analytical foundation on which its programs are built, ACF invested in the development of a structured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





3 OVERVIEW OF THE LINK NCA

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^(N).

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.

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.

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.

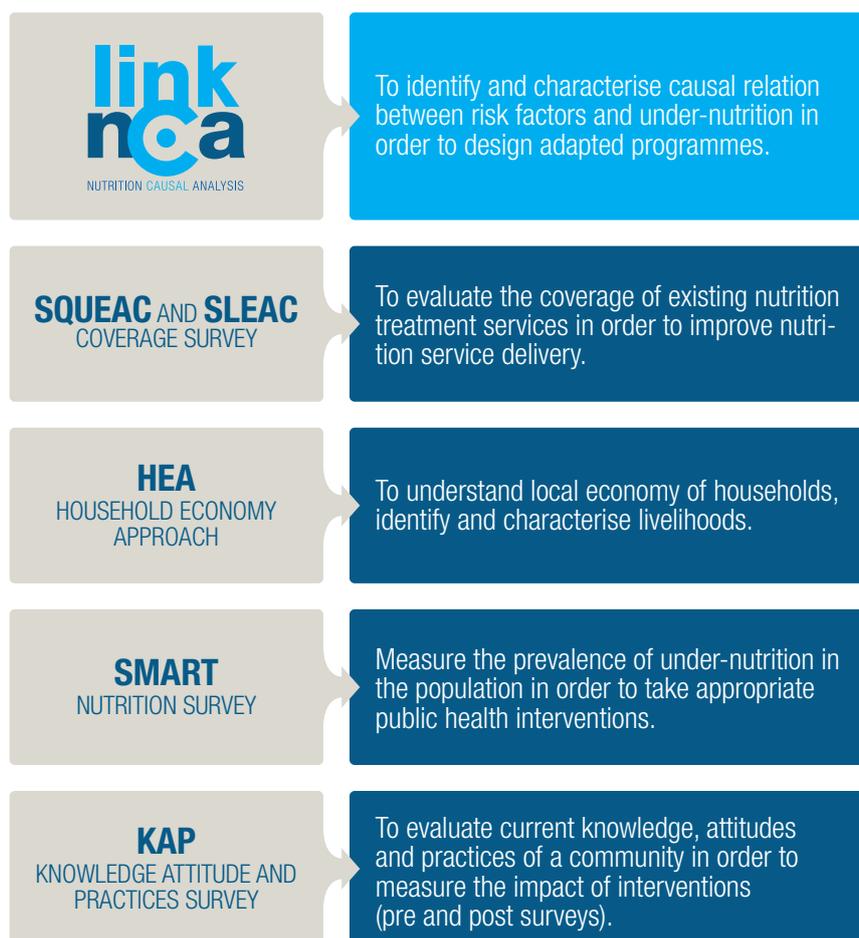
1) Hill described the 9 criteria for establishing a causal relation in “The environment and disease: association or causation?” Hill BA. Proc R soc Med 1965;58;295-300.



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.

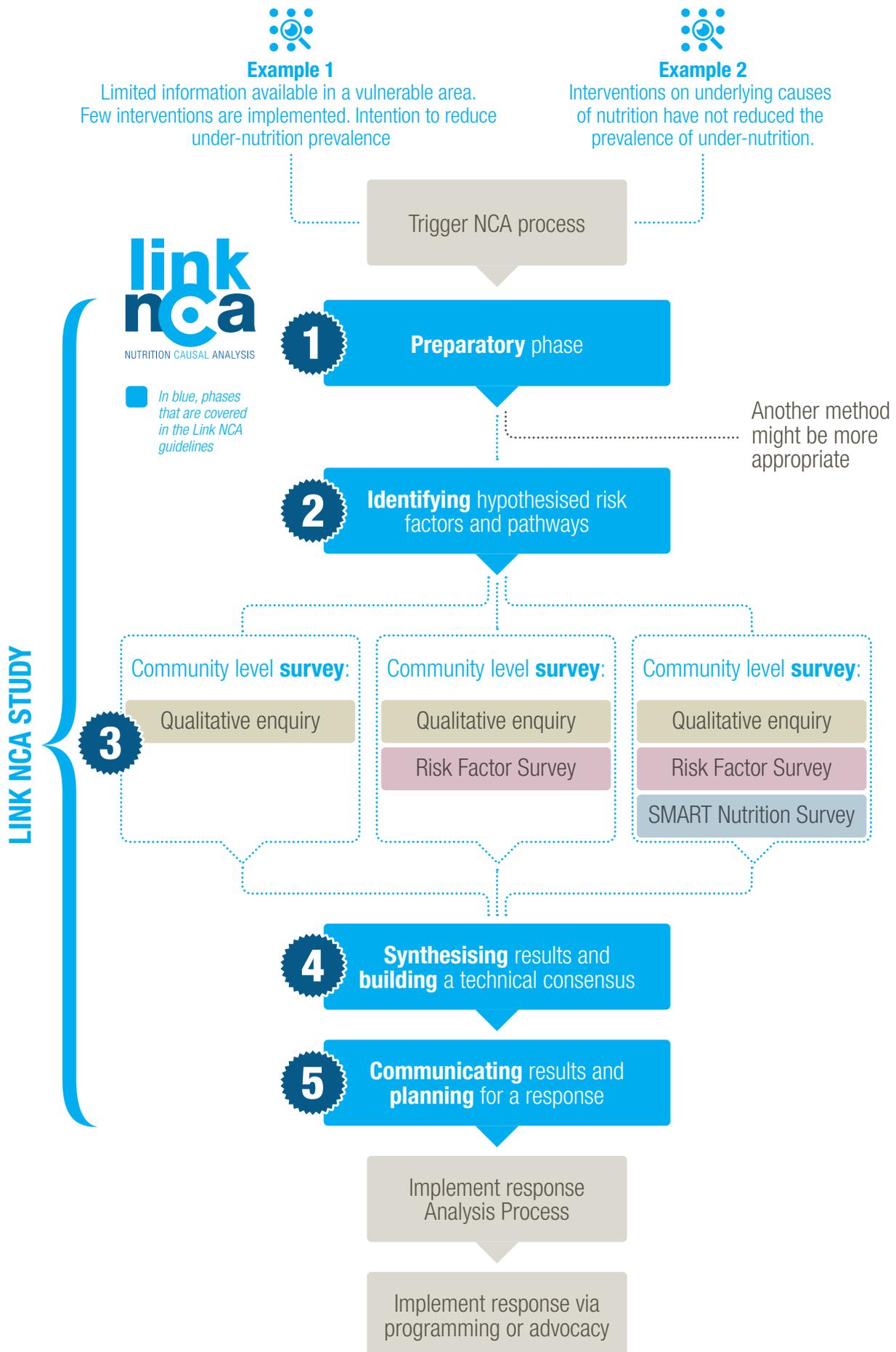
FIGURE 1.3 COMPARISON OF ASSESSMENT METHODS



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 part 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

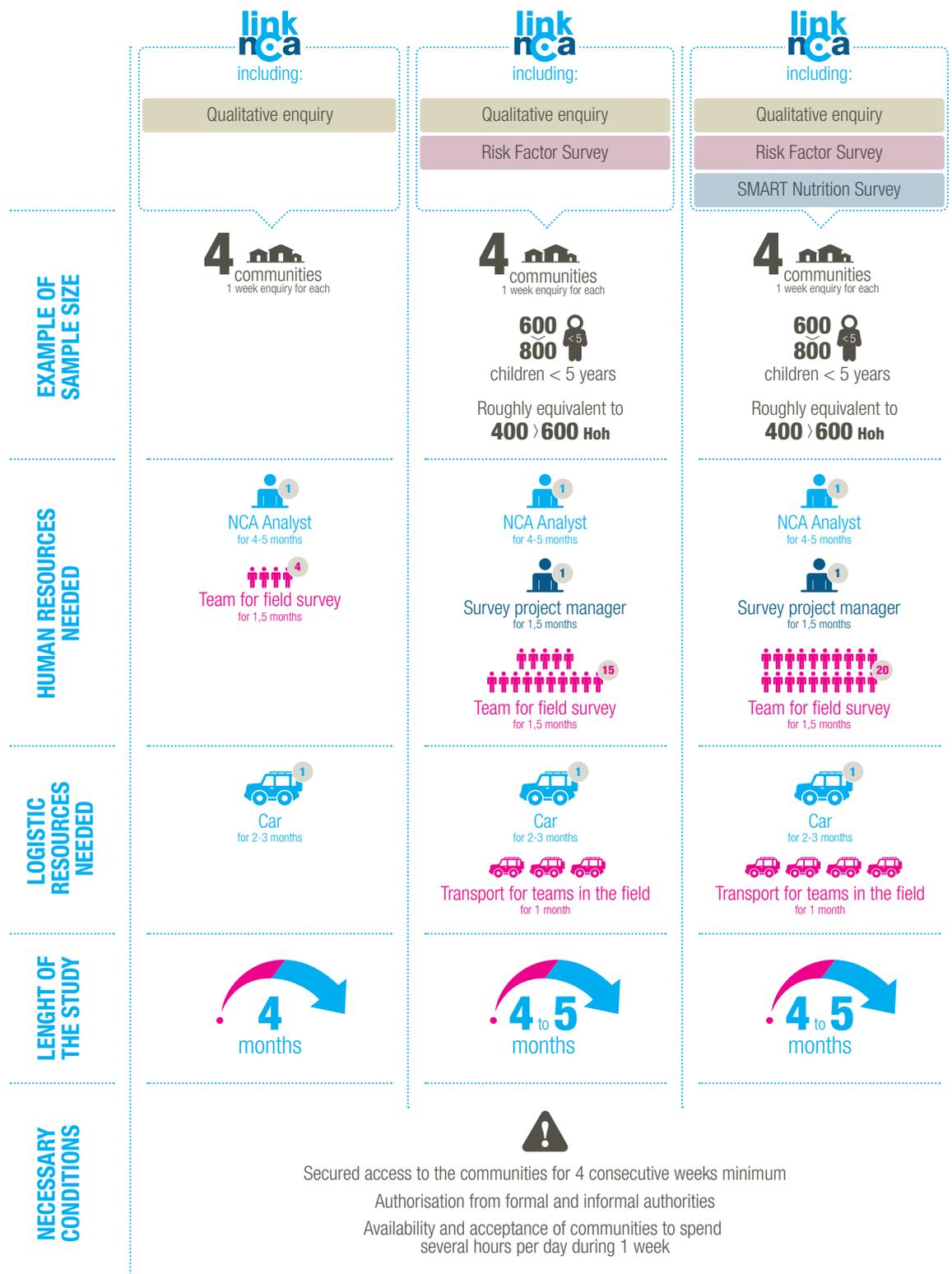
Communicating results and planning for a response

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.

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





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:

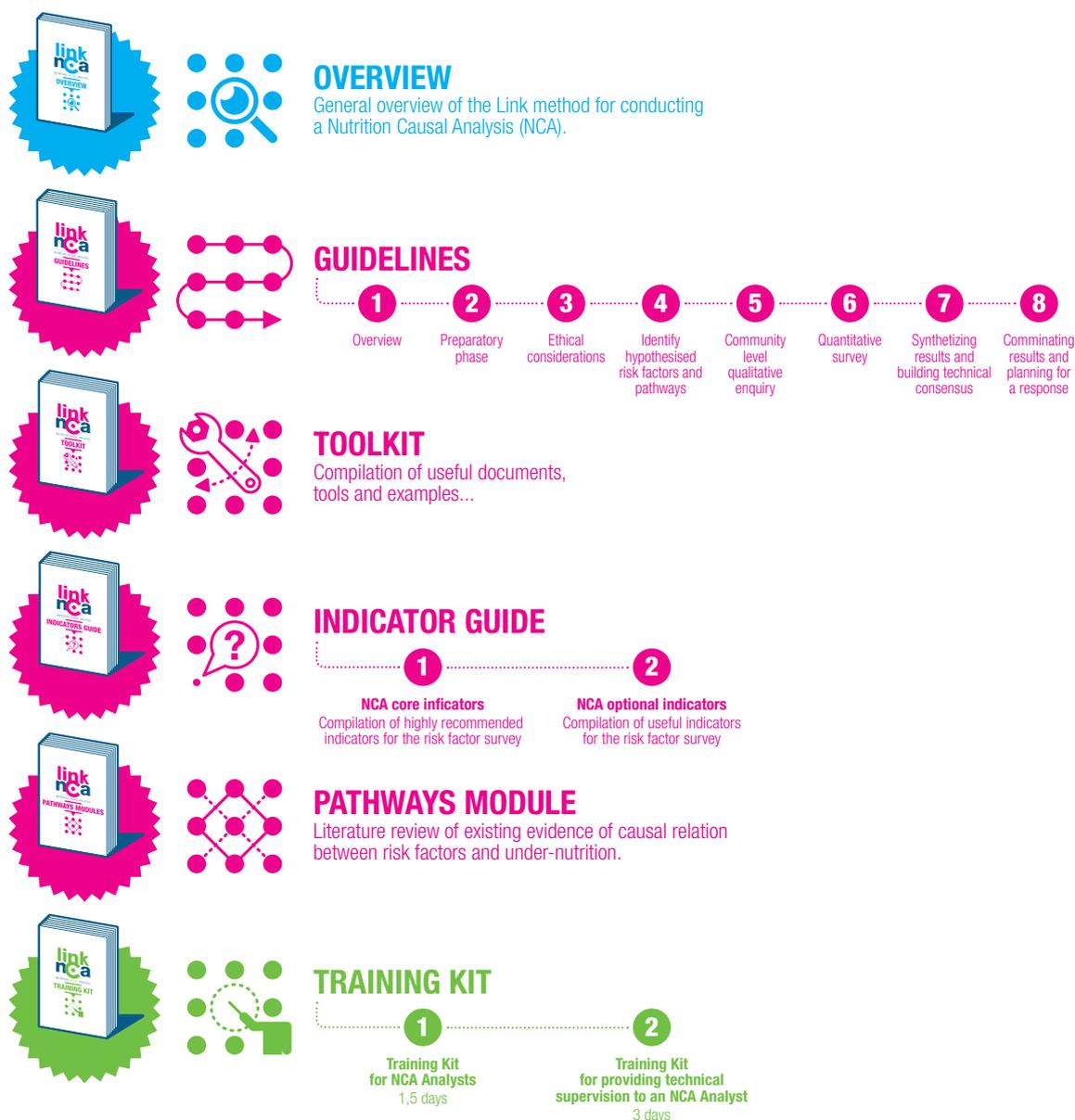
- **Information on the context:** a qualitative description of the factors that communities and other stakeholders perceive to be key causes of under-nutrition; an analysis of the temporal dynamics of under-nutrition; a summary of relevant secondary data (from nutrition surveys over several years, admissions 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.

5 LINK NCA GUIDELINES, TOOLS AND OTHER RESOURCES

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





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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NUTRITION CAUSAL ANALYSIS

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
analysis to a
programmatic
response



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