A Collaboration Between:

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Nutrition International
Nourish Life

GTFN* Insights Series

Applying the GTFN: A Systems-Based Approach to Defining Nutrition Challenges

With financial support from:

In partnership with Canada

CanWaCH
Canadian Partnership for Women and Children's Health

*Gender-Transformative Framework for Nutrition

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Acronyms

GTFN	Gender-Transformative Framework for Nutrition
SBT	Systems-based thinking
NGO	Non-Governmental Organization
CLD	Causal loop diagram
SRHR	Sexual and Reproductive Health and Rights
SGBV	Sexual and gender-based violence
WASH	Water, sanitation and hygiene

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Introduction

While there is growing recognition that gender equality and good nutrition are mutually reinforcing (GTFN, 2020) how to translate this recognition into practice is not always evident. The Gender-Transformative Framework for Nutrition (GTFN) seeks to address this gap (GTFN, 2020). The GTFN is a comprehensive approach to integrating gender considerations into nutrition programs. Developed by a coalition of Canadian organizations, the framework (Figure 1) is grounded in the belief that gender equality and nutrition are mutually reinforcing; gender equality enhances nutritional outcomes, and in turn, improved nutrition fosters gender equality. The GTFN aims to ensure that nutrition policies and programs are inclusive, equitable, and effective in meeting the diverse needs of all genders.

Figure 1: GTFN Conceptual Model

The GTFN modularizes the multisectoral dimensions of malnutrition and provides an analysis of each domain using the three empowerment components: agency, resources, and opportunity structure. The seven domains outline the relationship between diet and disease, as it relates to nutrition (GTFN, 2020).

The GTFN acknowledges that unequal power structures and systemic inequalities disproportionately impact the health and nutrition of women and girls worldwide. It also recognizes that other priority population(s)—such as those facing discrimination based on race, ethnicity, socio-economic status, disability, or other intersecting factors—experience heightened vulnerability. While addressing these inequalities, the GTFN also emphasizes that men and boys have distinct nutritional needs that must be considered, and their engagement is crucial in achieving optimal health outcomes for all. It is designed to drive transformative change and foster more equitable systems where everyone can thrive.

This guidance document is the first in a series dedicated to supporting organizations in designing, delivering, monitoring, and evaluating gender-transformative nutrition programming using the GTFN. Its focus is on **guiding organizations to uncover the gendered root causes of nutrition challenges** within a specific context and prioritize targeted interventions using **systems-based thinking (SBT)**.

SBT is an approach that explores nutrition problems and solutions within a broader system. It recognizes that various interconnected factors, including gender-related factors, contribute to these challenges. **By examining how diverse factors interact, SBT can help organizations identify and address the root causes of malnutrition**.

Who Is This Guidance For?

This guidance is designed for **organizations developing and implementing nutrition programs**, particularly in low-resource settings. It is relevant to international and national non-governmental organizations, development agencies, national and local governments, civil society, and community-based organizations (including women-led and youth-led organizations). Appendix A provides more details on the primary and secondary target audiences.

This guidance is designed to complement and enhance an organization's existing planning and design processes.

How Should This Guidance Be Used?

This guidance is intended for use at the **earliest stages of the project cycle**, ideally during the initial planning and design phases of a new nutrition intervention, alongside a gender analysis. It is designed to complement and enhance an organization's existing planning and design processes.

Engaging a diverse group of stakeholders throughout the process is essential to maximizing this approach's impact. Stakeholders include local communities, women's groups, health workers, government representatives, youth groups, experts in gender and nutrition, and others who are affected by or have the capacity to influence the project being developed. Their insights can provide valuable context, highlight unique challenges, and ensure that the solutions developed are comprehensive and responsive to the needs of those most affected.

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Guidance Overview

The guidance is organized into four sections. We recommend users set aside two full days to allow for collaborative work in a focused, distraction-free environment to get the most out of the guidance. This will allow enough time for reflection, iteration, and shared understanding among team members.

The **first section** provides the necessary background on **key concepts and definitions** to assist the user in applying systems-based thinking using the GTFN.

The **second section** helps users **identify key factors related to gender and nutrition**. It introduces key questions exploring the GTFN's core concepts of agency, resources, and opportunity structure across its seven domains: equitable education; equitable food systems; gender- and adolescent-responsive health and nutrition systems; economic inclusion; safe and equitable water, sanitation, and hygiene; social protection; and environmental and political resilience. These questions can be integrated into an organization's existing gender analysis framework to ensure comprehensive analysis and intervention planning.

The **third section** guides users in **producing a causal loop diagram (CLD)**. A CLD is a tool used in SBT to visually represent and analyze the interconnections and feedback loops within a system. CLDs enable organizations to map out the complex relationships between gender disparities, malnutrition, and other contributing factors, providing insights into root causes and guiding the design of targeted interventions.

The **final section** helps users **identify areas for intervention** based on the CLD by pinpointing key loops, bottlenecks, and high-impact factors within the system. This process allows organizations to focus on areas where targeted actions can create positive change.

The core of the GTFN is the promotion of agency for women, girls, and other priority population(s)—empowering them to define and pursue their own goals.

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1

Understanding Key Concepts

Priority Population(s)

Priority population(s) are groups that experience heightened vulnerability or face systemic barriers that impact their health and nutrition outcomes. While this guidance emphasizes the importance of prioritizing **women and girls**, it also recognizes that other groups—including women and men who are marginalized based on race, ethnicity, socio-economic status, disability, and other intersecting factors—may face significant disadvantages. Additionally, this term acknowledges that men and boys may have distinct nutritional needs and can play essential roles in advancing gender equality and improving nutrition outcomes.

The Gender-Transformative Framework for Nutrition

The Gender-Transformative Framework for Nutrition is a research- and practice-based model that supports stronger gender analysis, solution design, and monitoring of nutrition programs aimed at advancing gender equality and empowering women and girls. It uses systems-based thinking to help users examine the multisectoral drivers of malnutrition through a gender equality and empowerment lens.

The core of the GTFN is the promotion of ***agency*** for women, girls, and other priority population(s)—empowering them to define and pursue their own goals. Strengthening agency is key to achieving gender equality and driving lasting, transformative change. When people have agency, they can influence decisions that affect their lives, leading to better health, nutrition, and overall well-being.

Women, girls, and other priority population(s) need access to a wide range of ***resources*** to achieve their goals. These resources include not only material assets like income and property but also social support, knowledge, information, and essential services.

However, their ability to act is shaped by the broader ***opportunity structure***—a system of formal and informal institutions such as laws, policies, social norms, and cultural practices. These factors influence the extent to which women, girls, and priority population(s) can exercise their agency.

These resources include not only material assets like income and property but also social support, knowledge, information, and essential services.

The GTFN emphasizes that achieving meaningful progress in both nutrition and gender equality requires coordinated action across multiple sectors, known as ***domains***. The seven domains are equitable education; equitable food systems; gender- and adolescent-responsive health and nutrition systems; economic inclusion; safe and equitable water, sanitation, and hygiene; social protection; and environmental and political resilience.

Systems-Based Thinking

The GTFN applies systems-based thinking (SBT) to illustrate how various factors interact to shape development and nutrition outcomes. Unlike linear approaches that look at isolated cause-and-effect relationships, SBT considers how multiple elements influence one another within a system and create feedback loops that can reinforce or reduce problems and solutions.

This approach is instrumental in tackling malnutrition, which is rarely caused by a single factor. Instead, it stems from a complex web of drivers including economic conditions, food security, health care, education, social and gender norms, and environmental factors. SBT helps organizations move beyond surface-level symptoms to uncover root causes and systemic barriers that traditional analyses may overlook.

SBT is also critical for addressing gender inequality. It highlights how power dynamics, social structures, and institutions influence the access that women, girls, and other priority population(s) have to resources and opportunities. This broader view supports more effective solutions that tackle both malnutrition and gender inequality at their core.

Causal Loop Diagrams

Causal loop diagrams (CLDs) are tools used in SBT to visually represent and analyze the interconnections and feedback loops within a system. CLDs enable organizations to map the complex relationships between gender disparities, malnutrition, and other contributing factors, providing insights into root causes and guiding the design of targeted interventions.

CLDs have four primary components, as shown in Figure 2 and described below.

1. **Variables** are the essential factors in the system (e.g., Child stunting or Income).
2. **Arrows** show the direction of the relationship between variables in the system.
3. **Signs** indicate whether the relationship between two variables is positive or negative. A positive relationship is one in which an increase in one variable leads to an increase in another, and a negative relationship is one in which a decrease in one variable leads to a decrease in another.
4. **Loops** form when variables influence each other in a circle. Loops can reinforce (strengthen) a situation or balance (stabilize) the system.
    a. ***Reinforcing feedback*:** In a reinforcing feedback process, a variable continually feeds back upon itself to reinforce its own growth or collapse. Reinforcing loops generate exponential growth. For example, Figure 3 demonstrates how caregivers' attendance at gender-responsive health and nutrition services increases their literacy and nutrition knowledge and involvement in household decision-making and child feeding.
    b. ***Balancing feedback*:** Balancing loops stabilize a system by counteracting change and pushing it toward equilibrium. They resist disruptions, which can help or hurt depending on whether they support or block the system's goals. Figure 4 shows how this feedback could arise in a health clinic offering nutrition services: If more caregivers start coming, staff get overwhelmed, leading to long wait times and less attention for each person. This frustrates caregivers, and fewer of them come back to the clinic. This is a balancing loop—the system reacts to the increase by creating conditions that slow it down and bring it back to a lower level.

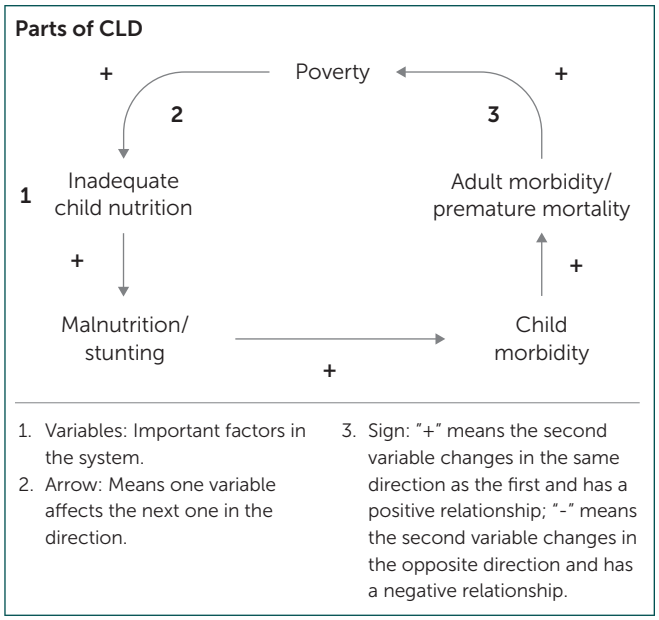

Figure 2. Example of a Causal Loop Diagram That Integrates the Four Key Components

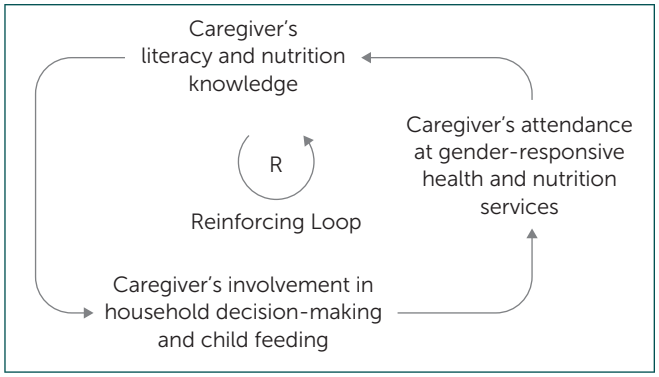

Figure 3: Example of a Reinforcing Loop

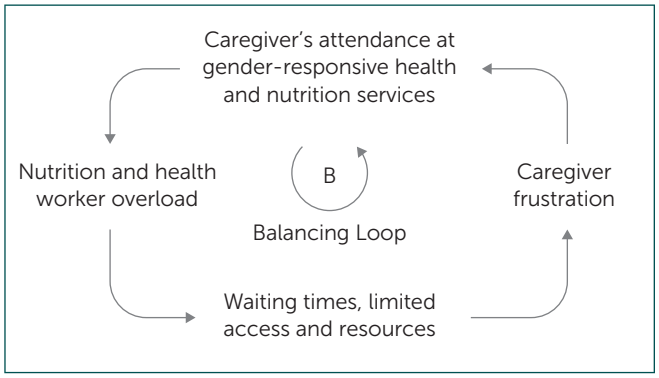

Figure 4: Example of a Balancing Loop

The GTFN provides a structured way to explore three core components—agency, resources, and opportunity structure—across seven domains.

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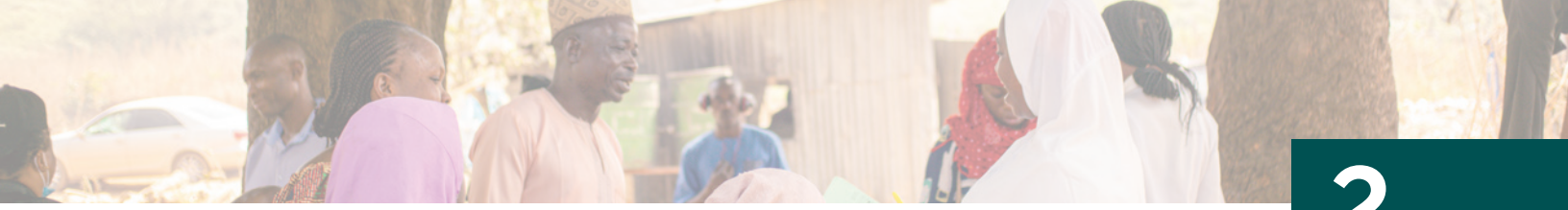

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2

Identifying Gender and Nutrition Variables

The first step in system mapping is identifying the key variables that shape the system. The GTFN provides a structured way to explore three core components—**agency, resources,** and **opportunity structure**—across seven domains. This section includes tables with guiding questions to support the process of identifying key variables.

The first step in system mapping is identifying the key variables that shape the system.

- **What:** The goal is to identify the most important gender- and nutrition-related variables in your context (e.g., country, district, community) to guide system mapping and inform program design.
- **When:** This step should be completed during the planning phase of a new nutrition intervention. Ideally, the questions and concepts here should be integrated into a gender analysis to ensure a thorough understanding of how gender dynamics influence nutrition outcomes.
- **Who:** Involve stakeholders with expertise in gender and nutrition. Stakeholders may include internal staff (such as program managers or gender and M&E experts) and external partners (such as community groups, women's organizations, health workers, and government representatives). Meetings can be held virtually or in person.

Instructions

1. **Define the focus area.** Confirm the nutrition-related problem you want to address and the focus area around which you will create a map for program development.
2. **Review the variables** and questions in Table 1 related to the identified problem, ensuring you understand the content of the table. If working in a group, discuss any areas of confusion to ensure everyone understands what each question is intended to explore.

   When applying the variable-based questions, it is important to ensure they are age-appropriate and contextually adapted to reflect the lived realities of different sub-groups. Some questions—particularly those related to topics such as contraception or safe abortion—may not be relevant for younger age groups, and should be tailored accordingly. As such, please note that questions should be adapted to account for intersecting identities such as age, gender identity, marital status, disability, and other social determinants, to ensure relevance, sensitivity, and ethical integrity in data collection and interpretation.
3. **Select relevant variables.** Determine which variables are most pertinent to your context and explore any nuances or local specifics that may influence their interpretation. These variables will form the basis for your system mapping. Note: Include all variables that are pertinent to the program design. Not all are essential, but broad thinking is encouraged to expand perspectives beyond the conventional program pathways.

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4. **Assess available information.** Determine whether the group has sufficient information to answer each question. Utilize existing reports (secondary data) and the group's expertise. Document the evidence that supports your responses to each question.
5. **Identify information gaps.** Compile a list of information gaps for variables where data is insufficient.
6. **Plan to fill gaps.** Develop a strategy to address information gaps. This may involve collecting primary data or reviewing additional secondary sources.
7. **Finalize variables for mapping.** Review and confirm the final list of variables to include in your system map. Make sure they reflect the most relevant factors and relationships in your specific context.

Table 1. Agency: Variables and Key Questions

Variable	Question
Knowledge and skills	
Health & nutrition knowledge	Do women, girls, and priority populations have the knowledge and skills to understand how nutrition affects their health and well-being?
Sexual Reproductive Health and Rights (SRHR) knowledge	Do they know about their sexual and reproductive health and rights, including contraception, safe abortion, and menstrual hygiene management?
Rights knowledge	To what extent do they understand their rights—including legal, health, education, and land rights—and how to exercise them in practice?
Digital literacy	Do they have access to clear, relevant, and actionable information about their rights, including how to claim them and seek redress when those rights are denied?
Decision-making power	
Dietary decision-making	Do women, girls, and other priority populations take part in decisions regarding what food is prepared and consumed in their household, including what, when, and how much they eat?
Food purchase decision-making	Do they participate in decisions about how household income is spent on food and nutrition?
Time and energy autonomy	Can they choose how to spend their time, including time for self-care, rest, or seeking health care?
Freedom of movement	Can they move freely to access food, health care, education, and other services without fear or restriction?

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Variable	Question
SRHR decision-making	Do they have a say in decisions about their own sexual and reproductive health—for example, whether to have children, when to have them, how many to have, how far apart to space them, and what form of contraception to use?
Income control	Do they control their own income and have a say in how household finances are used?
Motivation and self-efficacy	
Nutritional self-efficacy	Do women, girls, and other priority populations feel confident in their ability to make and sustain healthy nutrition choices, including using skills like meal planning, cooking, and managing a food budget?
SRHR self-efficacy	Do they feel confident accessing and using SRHR services?
Sexual- and Gender-Based Violence (SGBV) beliefs	What beliefs exist around survivors of sexual and gender-based violence? How do these beliefs affect their access to services and support?
Collective agency	
Engagement opportunities	Do women, girls, and other priority populations have opportunities to engage in civic or community organizations that influence health and nutrition?
Meaningful participation	Can they meaningfully engage and influence community groups, networks, and committees?
Collective action	Can they organize collectively to influence social norms or policies related to nutrition and health?

Table 2. Resources: Variables and Key Questions

Variable	Question
Food and nutrition access	
Dietary resources	Do women, girls, and other priority populations consistently have access to the food, time, and income needed to obtain and prepare a healthy diet?
Climate impact	How do climate, environmental, or political conditions impact their ability to access and afford healthy food?
Access to food markets	Are healthy and affordable food options physically and economically accessible in their area?
Food preparation and storage	Do they have access to essential food storage and preparation resources, such as refrigeration, cooking equipment, clean water, and safe food storage spaces?
Support and subsidies	Are food assistance, cash transfers, or subsidies available and accessible in times of need?
Health and SRHR resources and services	
Water Sanitation & Hygiene (WASH) resources	Do women, girls, and other priority populations have access to clean water, functioning sanitation, and hygiene facilities close to their homes, schools, or workplaces?
SRHR resources	Can they access high-quality, affordable sexual and reproductive health commodities and services without discrimination?
Mental health services	Do they have access to mental health services? Are those services gender-responsive and confidential?
Gender-responsive health services	Do they have access to health services that are safe, respectful, and tailored to address gender-specific needs and inequalities?
Adolescent & youth-friendly health services	Are health and nutrition services designed in ways that respond to the specific needs of adolescents and youth?
Legal documents	Do they have the identification and documentation needed to access services and entitlements?
Income and economic resources	
Income	Do women, girls, and other priority populations have regular sources of income, either through formal or informal work?
Economic opportunities	Do they have decent economic opportunities, including those that align with their caregiving roles?

Variable	Question
Access to productive assets	Do they have access to land, tools, livestock, or credit that can help them earn income or produce food?
Market access	Do they have equitable access to markets to sell their agricultural or other products, along with the ability to set prices, negotiate sales, and benefit from profits?
Crisis support	What resources or support systems are available during emergencies or periods of economic stress?
Education and information	
Health & nutrition information	Where do women, girls, and other priority populations get information about healthy eating and nutrition? Is it trustworthy and easy to understand?
SRHR information	Do they have access to information on SRHR, including from schools, clinics, or community programs?
Rights information	Do they have access to clear, accurate, and relevant information about their rights, including how to exercise and claim them?
Time and workload	
Responsibilities & workload	How do the work, caregiving, and community responsibilities of women, girls, and other priority populations impact their time for self-care, health, and nutrition?
Flexibility	Can they adjust their daily schedule to attend health or nutrition services?
Travel time	How much time do they spend travelling to access essential services like health care or food markets?
Time-saving resources	Do they have access to services or tools (e.g., childcare, water sources, fuel-efficient stoves) that reduce the time burden of daily tasks?
Perceived time burden	Do they feel overwhelmed by their daily responsibilities? What would they prioritize if they had more free time?
Social capital and support	
Social networks	Do women, girls, and other priority populations have family, friends, or neighbours who support them with health, nutrition, or caregiving tasks?
Community participation	Are they part of community or savings groups offering support, information, or advocacy for nutrition and health?
Ability to mobilize support	Can they access help—emotional, financial, or practical—during crises like illness, food shortages, or emergencies?

Table 3. Opportunity Structure: Variables and Key Questions

Variable	Question
Norms and social attitudes	
Community norms and stigma	How do household community norms influence what women, girls, and other priority populations are expected to eat, how they seek care, or how they engage in community life?
Food-related cultural practices	How do traditional food practices support or limit their healthy eating?
Gender roles and responsibilities	How are caregiving, cooking, and income-earning responsibilities divided within households? What impact does this have on nutrition?
Social attitudes toward SGBV and child marriage	What are prevailing community beliefs about sexual and gender-based violence and child marriage? How do these beliefs shape survivors' access to help and justice?
Time-related social expectations	Do societal expectations prevent women, girls, and other priority populations from prioritizing their own health and nutrition?
Influence of male household members	How do men and boys influence the dietary choices and health practices of women, girls, and other priority populations—whether through support, decision-making, or control?
Institutional and community support	
Institutional nutrition support	Do local institutions (schools, clinics, religious centers) actively support the nutrition and health of women, girls and other priority populations?
Peer support programs	Are peer support groups or mentoring programs available and inclusive?
Targeted health and nutrition services	Are targeted programs that address women's and girls' nutrition and health needs available?
Health service quality	Are health services accessible, timely, and of high quality—meaning they are adequately staffed, consistently stocked with necessary supplies, and delivered by well-trained, respectful providers?
Health and nutrition education in schools	Is comprehensive gender-responsive health and nutrition education included in school curricula?
Community-based food and health initiatives	Are there local or community-led initiatives to improve food security, access, and awareness?
SGBV prevention and response programs	Are services available to prevent and respond to sexual and gender-based violence, including safe reporting channels and survivor support?
Food security programs	Do food assistance or nutrition programs consistently reach vulnerable populations?

Variable	Question
Governance	
Health and nutrition policies	Are there health and nutrition policies that address the specific needs of women, girls, and other priority populations?
Inclusive policy-making	How are women, girls, and other priority populations involved in shaping or reviewing policies related to health and nutrition?
Political stability	How does political stability affect access to and continuity of health and nutrition services?
Employment and labour protection	How do workplace policies like leave and childcare affect women's abilities to manage work, health, and nutrition?
SGBV prevention policies	Are there policies to prevent SGBV and support survivors? How well are they implemented?
Environmental policies	Are gender-responsive policies in place to support disaster risk reduction, address human impacts on the environment, and strengthen the resilience of women, girls, and other priority populations in the face of shocks and crises?
Agriculture and food systems	Are gender-responsive policies in place to promote equitable access to and control over land and other productive resources within agriculture and food systems, support climate-resilient practices, and strengthen the food security and livelihoods of women, girls, and other priority populations?

CLDs can have multiple loops. In many cases, changing one variable will impact another variable, which will then loop back to affect the original variable.

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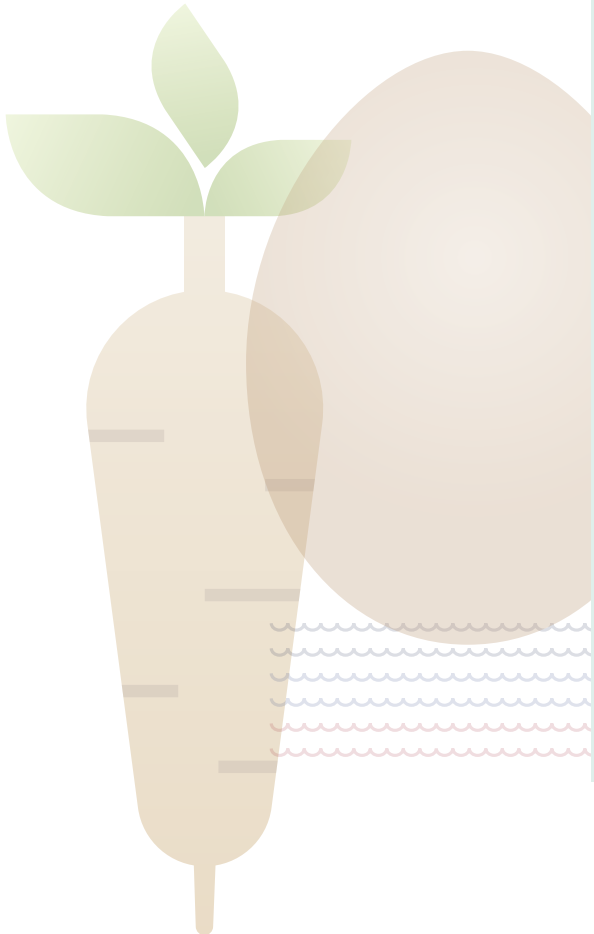
3

Mapping the System

This section guides you through the steps of creating a **causal loop diagram using the variables you selected and identified in the variable tables in Section 2.** Section 1 and Appendices B, C, D, and E describe CLDs and their components and provide examples. Please review those sections before creating your own CLD.

CLDs can have multiple loops (see Appendix C). In many cases, changing one variable will impact another variable, which will then loop back to affect the original variable. Feedback will either reduce or amplify the impact of the change.

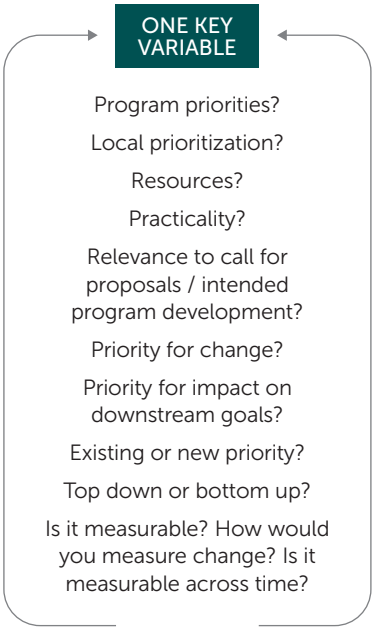


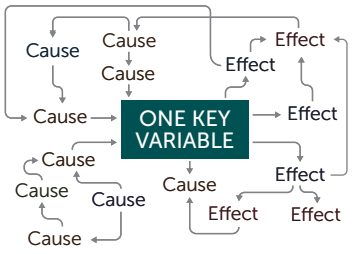
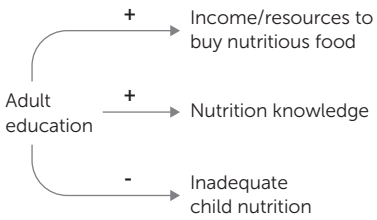
What: The objective of this section is to create a causal loop diagram using the gender and nutrition variables you selected in Section 2.

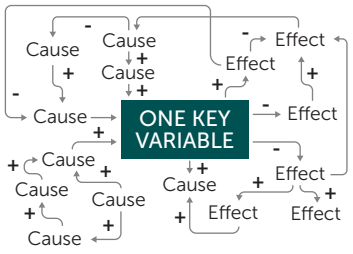
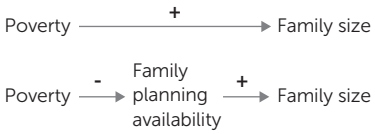
When: This section should be completed after finalizing the list of variables in Section 2 and addressing the information gaps identified in that section. This will ensure you have a clear understanding of the factors at play and possess all the necessary information to create an accurate and comprehensive system map.

Who: We recommend bringing together the same group who contributed to the identification of gender and nutrition variables in Section 2. Their familiarity with the variables will help to streamline the process of creating the system map.

Instructions

Step	Description	Guidelines & tips
1	**Review the concept and components of causal loop diagrams and their components** with the same group of stakeholders from Section 1. Ensure that everyone understands how variables, arrows, signs, and loops work within the system. Before proceeding, address any areas of confusion and facilitate discussion to ensure all participants are aligned on the purpose and function of CLDs.	See Appendix D for more detailed information on CLD construction. ***TIP:*** *Consider using a diagramming tool or process for creating a CLD to encourage collaboration and engagement. Digital tools like MIRO enable real-time remote teamwork, while physical methods like sticky notes on a wall offer a more tactile, interactive experience. Choose a format that best fits your team's needs, balancing flexibility, accessibility, and ease of iteration.*
2	**Write your core problem** or problem title at the top of your mapping area.	Having the problem title or core issue front and centre in the mapping area will allow teams to continually re-focus on the problem at hand.
3	**Select one variable** as your starting or key indicator. This variable should be strongly linked to the nutrition problem you are examining with the CLD. Once identified, add this key variable to your diagram, as it will serve as the focal point for mapping related variables and understanding their interactions within the system.	When naming a variable, **use nouns** rather than verbs or action phrases. This keeps the focus on the elements within the system, while the arrows in the loop convey the actions or interactions between them. For example, use *Nutrition access* instead of *Improving nutrition access*. Choose variables that represent quantities or factors that can change over time. For instance, *Loss of life* does not make sense as a variable because it does not increase or decrease, but a term like *Mortality* works because it can fluctuate. Ensure the variables are measurable and capable of changing as part of the system's dynamics. Choosing the key variable may be difficult, as there will be many options. The example image highlights some key questions to guide the selection of your key variable. 

Step	Description	Guidelines & tips	
4	**Continue adding variables** that are directly linked to the key indicator, including both causes that influence it and outcomes that result from it. These variables should represent factors that either lead to or are affected by changes in the key variable, helping to build a complete picture of the system and how different elements interact.	The variables you add should primarily come from the finalized list you developed in Section 1.	
5	**Draw arrows between the variables** you have added to the CLD to show how one variable affects another. As you work through this process, you may realize some variables were missed in earlier steps. Be sure to add these additional variables to ensure your CLD accurately reflects all the key factors and their relationships within the system.	Consider both the expected outcomes and any potential unintended consequences for every variable and action in the diagram. For example, increasing *Adult education* might not only improve *Income/access to resources to buy nutritious food*, but could also boost *Nutrition knowledge and skills* and reduce *Inadequate child nutrition*. By thinking through these possibilities, you can better capture the complex interactions and broader effects of each variable within the system. If a variable has multiple consequences, start by lumping them into one term while completing the rest of the loop. For example, *Coping strategies* can represent many different ways we respond to food insecurity (consuming cheaper or lower-quality food, stopping schooling of household members, etc.).	 **Ex. 1**  **Ex. 2**

Step	Description	Guidelines & tips	
6	**Determine whether the relationship between each pair of variables is positive ("+") or negative ("-").** A positive sign means that as one variable increases, the other also increases. A negative sign means that as one variable increases, the other decreases. Place these signs above the arrows connecting the variables in your diagram to clarify the nature of each relationship	If a link between two variables needs extensive explanation to be clear, consider redefining the variables or inserting an intermediate term that represents a short-term effect or event. For instance, the relationship between *Poverty* and *Family size* may become clearer by adding *Family planning availability* as a step in between. In this case, poverty reduces access to family planning, which then leads to an increase in family size.	 **Ex. 1**  **Ex. 2**
7	**Repeat this process** until all the variables identified in Section 1 have been incorporated into the CLD. **Continue refining the diagram** until the group agrees that it accurately represents the system and feels complete for addressing the specific problem at hand.		

Recommendations for Streamlining the CLD Creation Process

The suggestions and recommendations below support a streamlined process of creating a CLD. Complexity can arise when multiple high-priority variables are included.

Clustering and thematic grouping: When possible, group similar variables under overarching themes (e.g., economic factors, social norms, institutional barriers) before mapping. This will help to consolidate variables with overlapping influence and reduce redundancy and volume, while maintaining complexity where needed.

Tiering for prioritization: To minimize the challenge of working with a large number of variables, consider using the tiering process below to retain a comprehensive representation while making the mapping process more manageable.

- ***Essential variables (n: 8–10):*** Key drivers that have the most significant influence on the system's dynamics. These should be the focus of the core CLD.
- ***Moderating variables (n: 15–25):*** Factors that shape or mediate the essential variables but may not need to be mapped in full detail initially.
- ***Contextual variables (n: optional, but consider a soft cap of 30–40):*** Background or secondary influences that provide additional context but may not need direct representation in the first iteration of the CLD.

Iterative approach: To balance complexity and practicality, while ensuring the system's key dynamics are well-captured, we recommend starting with a simplified CLD using essential variables only, and then expanding iteratively to incorporate moderating variables (recommended range for a robust but manageable representation of the system) and contextual variables (if necessary). This approach will allow for a progressive buildup, making the process more accessible while still permitting comprehensive mapping.

Photo courtesy of Nutrition International

The next step is to identify and prioritize intervention areas that have the greatest potential for impact.

Photo courtesy of Nutrition International

Photo courtesy of Nutrition International

4

Selecting Tailored Interventions Likely To Be Most Impactful

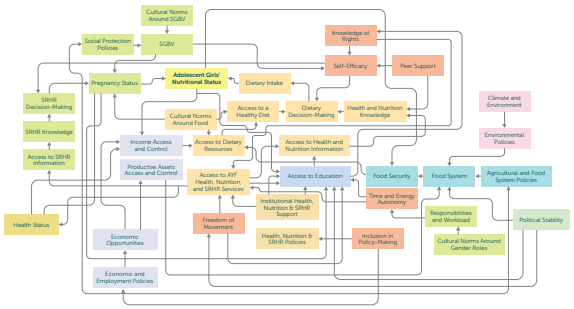
Now that the system is fully mapped, the next step is to identify and prioritize intervention areas that have the greatest potential for impact. A CLD facilitates this process by revealing leverage points and bottlenecks within the system. These critical areas are where focused actions can yield significant, system-wide changes. This section will guide you through the process of analyzing the CLD to pinpoint the most strategic intervention opportunities.

What: The objective of this section is to identify and prioritize intervention areas that have the greatest potential to improve nutrition outcomes, advance gender equality, and empower women and girls.

When: This section can be completed once the system is fully mapped as per the instructions in Section 3.

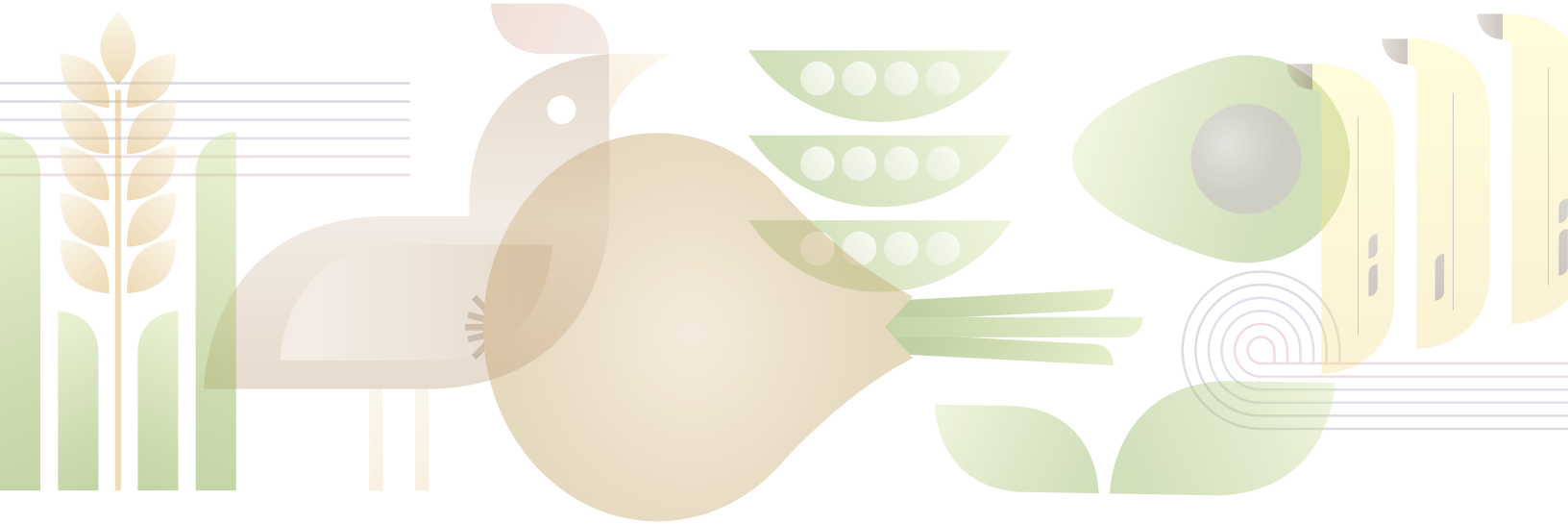
Who: We recommend reconvening the same group that developed the system map, as their familiarity with the variables and interactions will streamline the process of spotting leverage points and selecting impactful strategies.

Instructions

Step	Description	Guidelines & tips	Example
1	**Review the system map** to ensure that everyone in the group fully understands its contents.	Revisit the key concepts related to CLDs covered in Section 1 and Appendix D as needed to solidify understanding before moving forward with identifying intervention areas.	 **Example of CLD**
2	**Identify the key loops.**	Recall that loops are formed when variables influence each other in a circle. Loops can either reinforce (strengthen) or balance (stabilize) a situation. Review the system map and identify all the complete loops.	**Key reinforcing loop: Nutritional empowerment loop** • *Self-efficacy* → improved *Health and nutrition knowledge* → better *Dietary decision-making* → enhanced *Nutritional status* → increased *Self-efficacy* • **Explanation:** This reinforcing loop is key as it fosters a continuous improvement in both nutrition and self-confidence. Adolescent girls and priority population(s) with higher self-efficacy are empowered to make healthier choices, creating a cycle of improved health and empowerment. OR **Key balancing loop: Workload and nutritional autonomy loop** • *Responsibilities and workload* → reduced *Time for self-care and autonomy* → diminished *Nutritional status* → lower *Energy and capacity for work* → reduced *Responsibilities and workload* • **Explanation:** This balancing loop stabilizes the system. Increased workload initially decreases time for self-care and nutrition, but as energy drops, so does the ability to maintain high workloads. This loop represents a feedback mechanism that limits excessive demands on the time and energy of adolescent girls and priority populations.

Step	Description	Guidelines & tips	Example
3	**Identify the "high-influence" variables.**	These variables have many connections to other parts of the system, making them highly influential. Some tips to identify high influence variables are as follows: • Count connections • Identify centrality (variables that frequently appear in different loops or connect with other influential variables) • Consider influence on core outcomes These variables may also be included in the 8 to 10 ***essential variables***, which are described above in the Recommendations for Streamlining the CLD Creation Process section.	**Self-efficacy** • **Connections:** Likely connected to *Health and nutrition knowledge*, *Dietary decision-making, Mental well-being,* and *Social support networks.* • **Influence:** Self-efficacy is pivotal for making informed dietary and health choices, informing not only nutrition, but also holistic (psychological and social) health outcomes for women, girls, and priority populations. OR **Economic opportunities** • **Connections:** Tied to *Income access and control, Access to dietary resources, Educational attainment,* and potentially *Responsibilities and workload.* • **Influence:** Economic opportunities impact both material resources and empowerment, affecting access to food, health care, and broader educational and career opportunities for women, girls, and priority populations. Other variables likely to be high-influence include: 1) *Health and nutrition knowledge,* 2) *Responsibilities and workload,* 3) *Access to support networks,* and 4) *Nutritional status.*

Step	Description	Guidelines & tips	Example
4	**Identify reinforcing loops.**	Reinforcing loops positively influence gender and nutrition and can be very impactful. You can identify them by looking for loops where an increase in one variable leads to an increase in another. This process continues along the cycle, with each variable strengthening the next.	**Nutritional status loop** • *Adolescent girls' nutritional status* → improved *Dietary intake* → better *Access to a healthy diet* → higher *Nutritional status* • This loop reinforces itself because better nutritional status of women, girls, and priority population(s) leads to better dietary habits, which further improves nutritional status—creating a cycle of improvement for this population. OR **Self-efficacy and health knowledge loop** • *Knowledge of rights* → increased *Self-efficacy* → improved *Health and nutrition knowledge* → better *Dietary decision-making* → higher *Nutritional status* → increased *Self-efficacy* • This loop reinforces itself because as adolescent girls and priority population(s) gain knowledge and feel empowered, they make better decisions, reinforcing their self-efficacy and contributing to a positive cycle of health and empowerment.



Step	Description	Guidelines & tips	Example
5	**Identify balancing loops, bottlenecks, or constraints.**	Some variables can have a negative or limiting impact on the system, often slowing down or restricting positive outcomes. Bottlenecks cause delays or disruptions in loops, but their removal can positively affect the system. ***TIP:*** *A key tip for identifying balancing loops is to check whether the overall loop has an odd number of negative signs (-) in its causal relationships. Since balancing loops always work to stabilize a system, if you follow the loop around and count an odd number of negative signs, the loop is likely balancing.*	**Nutritional status and workload** • *Adolescent girls' nutritional status* → higher *Responsibilities and workload* → less *Time and energy autonomy* → lower *Nutritional status* • This loop balances out because as the nutritional status of women, girls, and priority populations improves, their workload might increase, leading to less autonomy in time, which could then reduce nutritional status. OR **Food security and economic opportunities** • *Food security* → increased *Economic opportunities* → better *Income access and control* → better *Access to dietary resources* → improved *Food security* • This loop balances itself because as the food security of women, girls, and priority populations increases, it leads to better economic opportunities and access to food resources, which could initially improve food security for these same groups, but could also reach a stabilizing point.
6	**Identify loops that span multiple sectors.**	These loops tend to be very impactful because they connect different parts of the system, allowing for interventions in one area to create ripple effects across sectors.	Several loops in the examples above span multiple sectors. One example is the Economic empowerment and health loop. **Loop:** *Economic opportunities* → increased *Income access and control* → improved *Access to healthy dietary resources (economic and health sectors)* → enhanced *Nutritional status* → improved *Workload capacity (economic sector)* → greater *Economic opportunities* **Impact:** This loop illustrates how improvements in economic access can lead to better nutrition and health, which in turn increases work capacity, further improving economic opportunities. Intervening here could elevate both economic and health outcomes, especially for those facing barriers in access to income and nutrition, including women, girls, and priority populations.

Step	Description	Guidelines & tips	Example
7	**Select the key loops, "high-influence" variables, and bottlenecks you wish to target.**	The list of options will likely be long and beyond the scope of what your organization can address. The loops and variables your organization focuses on can vary depending on its priorities and capacities. *A set of additional considerations to help organizations make informed choices about which areas to focus on is provided in the section following this table.* Discuss these considerations as a group to decide which are most relevant and will guide your decision-making.	This list will be organization-specific.
8	**Once key areas of intervention are identified for the problem, refer to your technical experts to begin program planning accordingly.**	Once you've identified the key components of your CLD, the next step is to examine the contextual evidence specific to your setting. Draw on your experience, knowledge, and available data to refine your contextual and technical understanding related to the area of intervention. Consult technical experts—such as gender or nutrition specialists—to validate assumptions, obtain relevant research, and ensure key dynamics are accurately represented. This process strengthens the diagram's credibility and applicability to real-world challenges.	The CLD will likely serve as an effective theory of change. Once areas of intervention are selected, the ideas and considerations brought forth throughout Section 4 are meant to transpose well into logic models and other programmatic requirements. Note: As implementation progresses and situations that were not in your original map arise, you may want to return to your mapping and adjust with your technical experts as needed. Keep in mind that unintended consequences can be both positive and negative!

Additional Considerations for Selecting Intervention Areas

Organizational mission alignment

- Identify aspects of the organization's mission, strategic goals, and core competencies that align with the identified loops and variables. Prioritize those that are best aligned.

Potential impact

- Identify loops or variables where small changes can lead to significant, long-term improvements in gender and nutrition outcomes.
  - › Visualize feedback loops that may perpetuate gender inequality or malnutrition
  - › Identify leverage points: places where a small intervention can have a large impact
  - › Understand and visualize the complex web of factors that influence and affect gender and nutrition
- CLDs serve as a starting point to understand the complexity and interrelatedness of the variables at play. Once potential high-impact areas are highlighted via the diagram, further analysis will be needed to estimate the impact/outcome potential.
- Identify loops and variables that can build on your organization's existing programming and partnerships to maximize impact.

Stakeholder needs and contextual relevance

- Evaluate the needs and priorities of local, national, and international stakeholders when considering areas for intervention.
- Consider local knowledge, cultural dynamics, and community engagement to ensure that the intervention areas being considered are contextually appropriate, relevant, and timely for the affected communities.

Feasibility and resource availability

- Assess the necessary resources, including funding, staffing, local capacity, time, and logistics, to address the various loops.
- Consider political, environmental, and security factors that could impact the potential area of intervention.
- Ensure that the area in which you may intervene is achievable within the organization's capacity and does not present an unrealistic or insurmountable challenge.

Risks and unintended consequences

- Identify any possible negative feedback loops or unforeseen outcomes associated with the selected intervention.
- Consider political, social, and economic risks, as well as the potential for reinforcing harmful dynamics.
- Assess whether the area of intervention could unintentionally worsen existing problems or create new challenges.

Synergies with other actors

- Consider the activities of other actors to avoid confusion or duplication and to maximize collective impact within a potential intervention area.
- Identify opportunities to collaborate, align, or partner with existing organizations and interventions for greater scale and influence.
- Be mindful of any limitations due to competing stakeholder interests or existing partnerships and priorities that could affect the ability to intervene in certain areas.

Long-term sustainability

- Focus on selecting intervention areas that local governments, communities, or organizations can maintain after the program's completion.
- Focus on selecting intervention areas for which a clear exit strategy or handover plan can be developed to ensure the sustainability and continued impact of the intervention beyond the implementation period.

Photo courtesy of Nutrition International

Equity and inclusiveness

- Ensure the intervention area being considered will benefit the priority population(s) and does not worsen existing inequalities.
- Assess how the intervention area may differently impact various demographic groups (e.g., gender, age, ethnicity) and consider its potential effects on each.
- Prioritize intervention areas that can mainstream approaches that promote fairness and inclusivity, aiming to reduce disparities and improve outcomes for all segments of the population(s).

Monitoring and accountability

- Ensure that organizations have, or can implement, mechanisms to measure and track selected indicators/variables.
- Plan for adaptive management, allowing adjustments to the intervention strategy in response to real-time data and feedback.
- Ensure the intervention is flexible enough to respond to evolving circumstances, making necessary changes based on emerging information and outcomes.

External funding and donor alignment

- Ensure the proposed intervention aligns with donor interests while also addressing community and organizational priorities.
- If donor priorities and community needs are misaligned, discuss these differences with the donor and propose a strategy to balance both.
- If any adjustments are made, highlight their importance to ensuring sustainability and effectively addressing community needs, while maintaining a strong partnership with the donor.

Conclusion

This document provides practical guidance on how to integrate systems-based thinking into the early stages of problem definition through the use of the GTFN to identify and address the gendered factors that contribute to nutritional status and promote gender equality. By applying systems-based thinking to analyze and understand the complex interactions between gender and nutrition in different contexts, organizations will be able to use this guidance to systematically map the gendered root causes and define multi-solutions strategies and interventions for maximum impact.

SBT is an approach that explores nutrition problems and solutions within a broader system. It recognizes that various interconnected factors, including gender-related factors, contribute to these challenges.

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Appendices

Appendix A: Audience

The primary target audiences are:

- **Nutrition program managers:** Individuals responsible for designing, implementing, and overseeing nutrition programs at various levels (local, national, international)
- **Health and nutrition practitioners:** Health professionals, dietitians, and community health workers who directly interact with the population(s) affected by malnutrition
- **Gender specialists:** Experts focused on integrating gender perspectives into health and nutrition programs and policies
- **Non-governmental organizations:** Organizations working on nutrition and health initiatives, particularly those that focus on gender equality and women's empowerment
- **International development agencies:** Agencies and organizations involved in global health and nutrition projects, such as UNICEF, WHO, and other UN bodies
- **Community-based organizations:** Local organizations and grassroots groups that work directly with communities to address nutrition and gender-related issues.
- **Civil society organizations:** Diverse non-profit groups including women-led organizations (WLOs) and youth-led organizations (YLOs) that help ensure nutrition programs and policies represent and reach all community members to achieve impact
- **Training and capacity-building institutions:** Organizations responsible for training health and nutrition professionals, including universities and specialized training institutes

Secondary target users are:

- **Policy-makers and government officials:** Officials involved in creating and enforcing policies and decision-making related to health, nutrition, and gender equality
- **Researchers and academics:** Individuals conducting research on nutrition, gender issues, and systems-based approaches to health
- **Donors and funding agencies:** Organizations and institutions that fund health and nutrition programs and require guidelines for effective implementation

Appendix B: CLD Examples

Example of same-way and opposite relationships in a CLD

An example of a same-way relationship is between the variables Child education and Adult educational attainment. As child education increases, adult educational attainment increases as well (Figure B1).

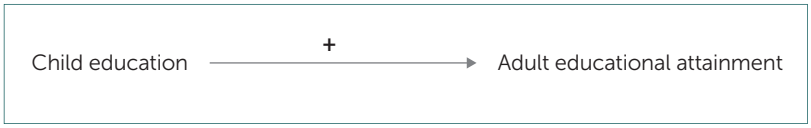

Figure B1: Simple Same-way Relationship
In a simple same-way relationship between two variables, the directions of change are similar and have positive polarity.

Figure B2 showcases another example of same-way relationships between three variables. As the variable Caregiver's attendance at gender-responsive health and nutrition services increases, Literacy and nutrition knowledge increases, which in turn increases Caregiver's involvement in household decision-making and child feeding.

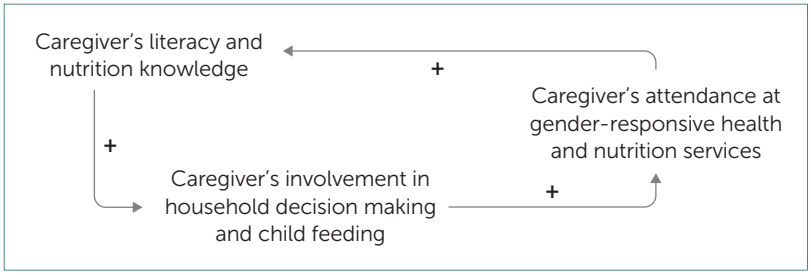

Figure B2: Simple Same-way Relationship Between Multiple Variables
In a simple same-way relationship between multiple variables, the directions of change are similar and have positive polarity.

An opposite relationship example is exemplified between the two variables Child stunting and Child educational outcome. As child stunting increases, children's educational outcomes will decrease.

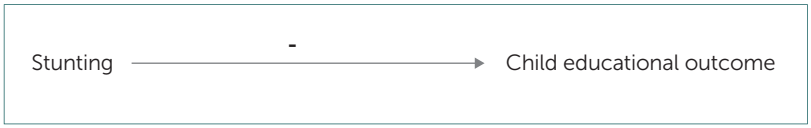

Figure B3: Opposite Relationship Between Variables
In an opposite relationship between variables, the directions of change are opposite and have negative polarity.

A loop may also have both positive and negative polarities (Figure B4). For example, more caregivers attending nutrition services increases worker overload, which leads to increased wait times and limited access and resources. This increases caregiver frustration and decreases future attendance at nutrition-related services.

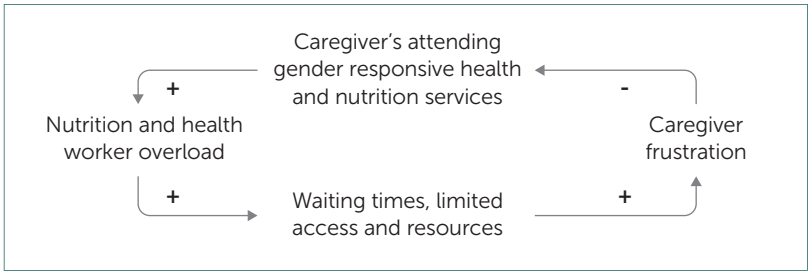

Figure B4: Loop with Both Positive and Negative Polarity (Both "+" and "-" Signs)

Appendix C: Diagrams Can Have Multiple Loops

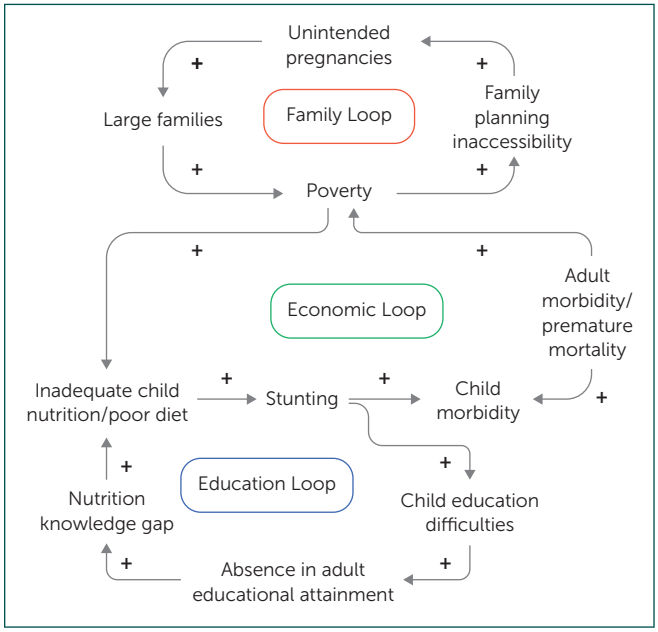

Figure C1: Loops Influencing Inadequate Child Nutrition

A description of the CLD loop in Figure C1 is below:

- **Economic loop:** If we start with the variable of Poverty, we can follow the arrow to increased Inadequate child nutrition or poor diet, which then leads to increased Stunting, increased Child morbidity, and increased Adult morbidity/premature mortality. These variables all lead back to increased Poverty, creating a feedback loop.
- **Family loop:** Starting with the variable of Poverty, the arrow leads to increased Inaccessibility to family planning resources, which increases Unintended pregnancies. This factor increases Family size, leading to increased Poverty, and eventually increasing Inadequate child nutrition.
- **Education loop:** In this loop, the beginning variable is Inadequate child nutrition. This leads to increased Stunting and increased Child education difficulties. These variables then increase Absence in adult educational attainment, leading to an increased Nutrition knowledge gap and increased Inadequate child nutrition.

Appendix D: General guidelines for CLD Construction

- **Theme selection:** Select a CLD theme or issue that you wish to understand better, such as "Gender equity in reducing malnutrition in India."
- **Time horizon:** Determine an appropriate time horizon for the issue to identify what is actually driving the change. For example, to observe a change in gender role and nutritional status in a specific state of India, the time horizon may span several years. This time horizon will need to be remembered while constructing a CLD for the issue.
- **Key variable identification:** Identify key variables that are part of the system (e.g., gendered variables in the nutrition-gender system), as well as the variable's ability to contribute to the overall problem by either exacerbating or improving it. Step 1 of this guidance will help identify these gendered variables focusing on agency, resources, and opportunity structure.
- **Behaviour-over-Time charts:** Identify and draw out the behaviour of key variables over time to articulate the current understanding of the system.
- **Significant delays:** Identify which (if any) links have significant delays relative to the rest of the diagram (e.g., child morbidity has a delayed effect on adult morbidity/premature mortality). Delays are important because they are often the source of imbalances that accumulate in the system.
- **Boundary issue:** Knowing when to stop adding variables to your diagram might be challenging. Be mindful that you are not trying to draw out the whole system—only identify what is critical to the specific nutrition problem being investigated. When you are unsure about including a variable, ask yourself and the team members, "If I were to double or halve this variable, would that have a significant effect on the issue I am mapping?" If the answer is no, the variable can likely be omitted.

Appendix E: Example of CLD Process for Good Child Nutrition Cause and Effects

Figure E1 shows an example of a CLD using gender variables identified in Step 1. We will start the CLD process with the key indicator *Good child nutrition*. Factors positively connected with good child nutrition are denoted as the "+" sign (same direction), and factors that are negatively connected with good child nutrition are denoted as the "-" sign (opposite direction).

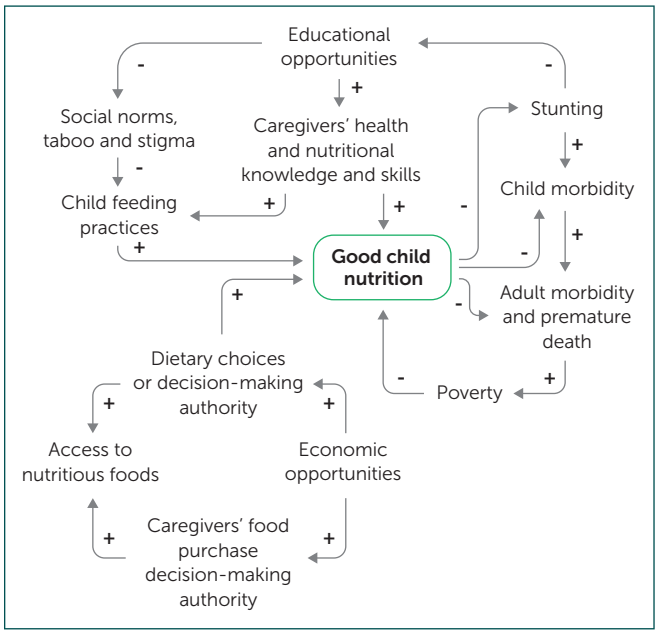

Figure E1: Causal Loop Diagram of Child Nutrition

Child nutrition is influenced by various interconnected factors. *Educational opportunities* empower caregivers with the knowledge and skills (+) to promote healthy child feeding practices (+), reduce harmful social norms and taboos (-), and improve nutritional outcomes for children (+). Additionally, dietary decision-making authority, often linked to economic opportunities for women (+), positively impacts food purchasing decision-making (+), and improves access to nutritious foods (+) and dietary choices (+), ultimately contributing to better child nutrition (+). The benefits of good child nutrition are substantial, including reduced stunting, morbidity, and premature death (all denoted as "-" sign). Conversely, stunting can lead to increased poverty (+), which further compromises child nutrition (-).

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