MEAL DPro

Monitoring, Evaluation, Accountability and Learning for Development Professionals Guide

Publisher

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The tools and diagrams featured in MEAL DPro are a selection of those already used widely in the development, humanitarian and environmental sectors. The Delta River IDP Project case study used throughout the guide was created using an amalgam of cases and examples developed by Humentum, PM4NGOs, Catholic Relief Services, Mercy Corps, WHO and UNICEF.

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Acronyms and Abbreviations

CAQDAS	computer-assisted qualitative data analysis software
CoP	community of practice
CRS	Catholic Relief Services
FRM	feedback-and-response mechanism
GDPR	General Data Protection Regulation
ICT	information and communications technology
ICT4D	information and communications technology for development
IDP	internally displaced person
IR	intermediate result
IT	information technology
LAD	learning-to-action discussion
Logframe	Logical Framework
MEAL	monitoring, evaluation, accountability and learning
MOOC	massive open online course
NGO	nongovernmental organization
OECD	Organization for Economic Cooperation and Development
PHAP	Professionals in Humanitarian Assistance and Protection
PIRS	Performance Indicator Reference Sheet
PMP	performance management plan
PSEAH	preventing sexual exploitation, abuse and harassment
RF	results framework
SET	summary evaluation table
SMART	specific, measurable, achievable, relevant, time-bound
SO	strategic objective
ToC	theory of change
ToR	terms of reference
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WASH	water, sanitation and hygiene
WHO	World Health Organization

Table of Contents

Notes:

Introduction

MEAL: A key contributor to project success

Development, conservation and humanitarian relief organizations manage their work through projects. Their offices are staffed by project teams that write project proposals, develop plans, implement activities, and track progress and impact. To thrive and succeed, these organizations need to develop the knowledge and skills to manage their projects well.

Every organization's project management process is unique, reflecting its culture, systems, policies and programmatic activities. Nevertheless, all project management models have at least one thing in common:

Strong monitoring, evaluation, accountability and learning (MEAL) is critical to project success.

The Guide to the MEAL DPro helps teams design, plan and implement MEAL in their projects. It provides clear, practical guidance and tools that can immediately be applied to their work.

The guide is written for project team members working in the development, humanitarian and conservation sector who are not specialists in MEAL. It is intended to benefit project officers, project administrators, project coordinators and other team members. It will also help MEAL officers who may be new to the sector or their responsibilities.

As a project team member, you might ask: *"Am I responsible for MEAL? Isn't that why we have MEAL specialists?"* While project teams often have MEAL technical specialists that support their projects, good MEAL is the responsibility of everyone involved in the design, planning and implementation of a project.

You will need to understand the fundamental skills and tools that enable you to contribute to designing and planning MEAL systems, as well as collecting, analyzing and using your MEAL data. You won't have to do all this alone. As a project manager or project team member, you will collaborate with MEAL technical specialists to ensure that your systems are strong and that your MEAL data are timely and accurate.

Remember, however, that while the role of MEAL specialists is important, your role is indispensable, because you have the practical knowledge to apply MEAL at the project level. This understanding will help you identify strong or weak systems and data, and where there are opportunities for improvement. This practical, pragmatic knowledge is critical to project success.

The good news is that if you are reading this introduction, you have already taken the first step toward improving your MEAL skills.

Chapter 1: MEAL in Projects

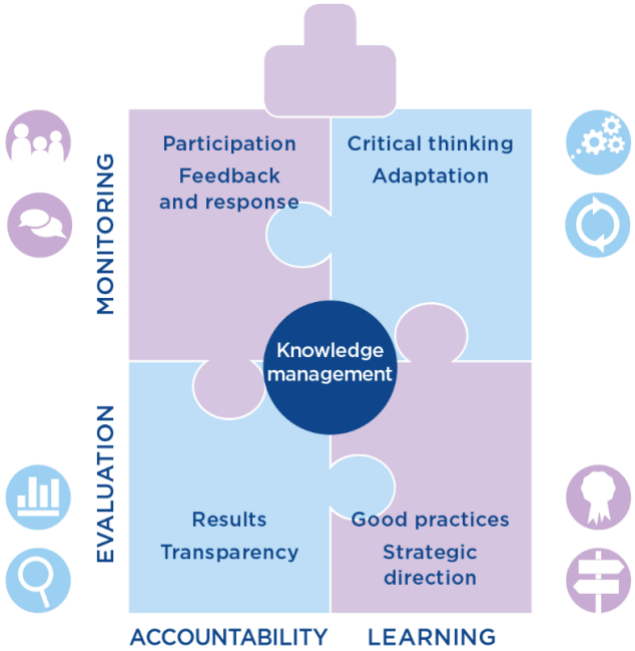
By the end of this chapter, you will be able to:

- ✓ Define the components, structure and purpose of MEAL
- ✓ Explain the benefits of a strong MEAL system
- ✓ Describe the relationship between MEAL and project management
- ✓ Identify the five phases of MEAL
- ✓ Describe the ethical standards and principles relevant to MEAL
- ✓ Understand the importance of participation and critical thinking in MEAL processes

1.1 What is MEAL?

Picture MEAL as a puzzle made up of four pieces. Each piece—monitoring, evaluation, accountability and learning—has its unique place and purpose, but the MEAL system is only effective when the pieces are aligned, connected and working together.

Figure 1: The MEAL puzzle[1]



[1] Catholic Relief Services. 2015. *ProPack I: The CRS Project Package;* project design guidance for *CRS* project and program managers.

Let's begin answering the question "*What is MEAL?*" by exploring the first two letters, namely M&E, for monitoring and evaluation.

Monitoring and Evaluation

Monitoring and evaluation are often discussed together as if they were a single, inseparable concept. They are not. They each have distinct purposes and processes:

> ***Monitoring*** The continual and systematic collection of data to provide information about project progress.
>
> ***Evaluation*** The user-focused, systematic assessment of the design, implementation and results of an ongoing or completed project.

One of the ways monitoring and evaluation differ is related to the questions they ask (and answer). For example, most projects are interested in measuring their progress and accomplishments in the following three areas: project coverage, project process and project results. These three areas can be explored through monitoring and evaluation activities. However, the questions asked to explore these areas through monitoring will be very different from the questions asked during evaluation.

Figure 2: Monitoring questions versus evaluation questions

Area of interest	Monitoring questions	Evaluation questions
Project coverage	*"How many people or communities were reached?"*	*"Is the project reaching (or did it reach) those with greatest need? If not, why not?"*
Project process	*"Did project processes complete activities on time and on budget?"*	*"Did the project effectively and appropriately invest its time and budget to conduct its activities?"*
Project results	*"Was the project successful in achieving the targets set for its intended outcomes?"*	*"How have outcomes achieved varied by different groups within the target area?"*

However, the difference between monitoring and evaluation activities is not limited to the questions asked. Monitoring and evaluation activities also differ in terms of purpose, frequency, timing and use of data.

Figure 3: Comparing the purpose and process of monitoring and evaluation

	Monitoring	Evaluation
Purpose	Tracking inputs, activities and progress toward achievement of agreed outcomes and impacts	A systematic and objective assessment of the merit, value or worth of an ongoing or completed project
Frequency	Regular and ongoing during project implementation	Periodic, one-off events during and, if funding permits, after project implementation
Responsibility	Activities are conducted by members of the project team	Activities are often externally led, although they should involve the active participation of project staff
Use of data	Informs timely decision-making and short-term corrective action in support of adaptive management	Identifies potential course corrections Contributes to longer-term organizational learning

While monitoring and evaluation differ in terms of purpose and process, it is important to recognize the connections between them. For example, monitoring activities can generate data that can be used to help answer evaluation questions. Conversely, if a project conducts a midterm evaluation and recommends changes intended to improve the project, monitoring activities can track whether the evaluation recommendations are improving the project and its outcomes.

Accountability and Learning

While collecting and analyzing monitoring and evaluation information is critically important, a MEAL system is only effective when project teams **use** data to demonstrate and improve the effectiveness, efficiency and, ultimately, the outcomes and impact of their projects. In short, monitoring and evaluation data should always be used to inform management decisions, which, in turn, promote accountability and learning.

Accountability is a term used widely within and outside of the MEAL field and is sometimes defined differently depending on the context. This guide uses the following definition:

> ***Accountability*** A commitment to balance and respond to the needs of all stakeholders (including project participants, donors, partners and the organization itself) in the activities of the project.

Accountable projects are more relevant, are more likely to be supported by stakeholders, and ultimately will have a greater impact. A commitment to accountability requires that project teams take proactive and reactive steps to address the needs of the project's key stakeholders while delivering project results.

Projects embrace accountability by promoting:

- **Transparent communications:** Sharing monitoring and evaluation information and results with communities, partners, donors and other stakeholders.
- **Alignment with standards:** Demonstrating that project work has been conducted in compliance with agreed donor requirements and MEAL best practices.
- **Responsiveness:** Establishing channels through which stakeholders can voice feedback, ideas, suggestions and complaints; and committing to provide an appropriate response on how their input is informing project decisions.
- **Participation:** Encouraging varying degrees of contributions from different types of stakeholders in initiating, defining the parameters for, and conducting MEAL.

Learning requires that you engage different stakeholders in thoughtful discussion of what is working and what is not working, in your efforts to achieve your stated objectives.

> ***Learning*** Having a culture and processes in place that enable intentional reflection. The aim of learning is to make smarter decisions.

These thoughtful discussions should use monitoring and evaluation data to inform their structure and content.

Projects learn by:

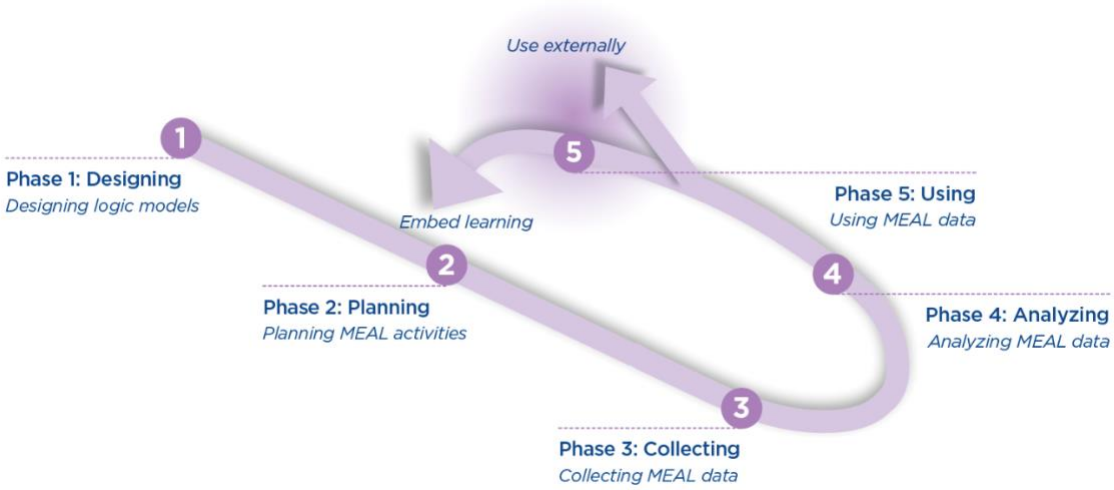
- **Incentivizing learning:** Framing all project work as a learning opportunity by encouraging, modeling and rewarding learning.
- **Encouraging a spirit of curiosity:** Establishing a workplace that supports the asking of questions, curiosity, and the challenging of assumptions in the spirit of learning.
- **Embedding learning processes:** Including concrete learning elements—such as the use of checklists to prompt learning—and learning questions in meeting agendas.
- **Promoting adaptive management:** Analyzing monitoring and evaluation data promptly and frequently, actively seeking to understand project data, and using evidence to inform decisions and adjustments to project design, planning and implementation.
- **Sharing information:** Using project learning to inform organizational and sectoral best practices.

1.2 The MEAL phase model

So, what does strong MEAL look like in practice? The remainder of this guide is devoted to answering this question. However, we can start to answer it by exploring how MEAL interacts with the larger project life cycle.

MEAL is present and ongoing during every stage of a project: from the earliest steps of project design, to the last activities of project closure. Project MEAL activities are organized into five phases, which are described in Figure 4.

Figure 4: Five phases of the MEAL cycle



Phase 1: Designing project logic models

The first phase of the MEAL cycle involves designing logic models—theory of change, results framework and Logical Framework—that show how the desired change will happen. These models establish the strong foundations of MEAL because they explain the change the project is seeking to achieve, the steps through which change will occur, and how change will be measured.

Phase 2: Planning MEAL activities

Working from the foundations of MEAL established in the logic models, you will need to develop more detailed and comprehensive plans for MEAL. There are a number of tools to help you plan for MEAL. The ones you use will depend on the size and complexity of the project. Nevertheless, regardless of your project's size and complexity, it is important that MEAL activities, budgets and calendars are integrated and aligned with the larger project plan.

Phase 3: Collecting MEAL data

Once MEAL planning is complete, you will need to develop and use tools to collect high-quality data that measure progress, and help you make decisions and learn in a timely manner.

Phase 4: Analyzing MEAL data

Data analysis is conducted during and after project implementation according to the analysis plans established during the MEAL planning phase.

Phase 5: Using MEAL data

To be of value, MEAL data need to be used. Data are used internally to inform management decisions, and externally to inform communications and promote accountability.

Together, the five phases of MEAL form a loop that promotes continual, intentional accountability and learning. Your project should use MEAL data to periodically revisit the logic, design and implementation

of the project and its MEAL system. Furthermore, based on your learning, you should update the original project design and adjust the MEAL system accordingly, if needed.

1.3 Ethical standards in MEAL

When MEAL systems are designed and implemented correctly, projects have the capacity to track progress, make informed decisions, and increase project impact.

If done poorly, however, MEAL activities can have a number of adverse effects, including (but not limited to):

- Wasting project resources and participants' time by asking the wrong questions or collecting data that won't be used.
- Compromising the security and social welfare of participants by failing to respect standards of confidentiality and anonymity.
- Reducing the project's impact—and even risking taking the project in the wrong direction—by failing to collect and analyze the MEAL data needed to improve the project operations and strategy.

Recognizing that poorly implemented MEAL has the potential to cause serious problems, many organizations have created ethical principles that must be followed to assure high levels of professional conduct. While these will vary by organization, most include the following themes:[2]

Representation All populations, including the vulnerable and marginalized, have the right to be counted and adequately represented in the data.

Informed consent Participation in data collection activities must be voluntary. Participants have the right to be informed about the process, how data will be used, and to be provided with the results of that activity. When working with children and some adults, participants may be unable to provide legal consent; in these cases you might be required to obtain the consent of the parent or legal guardian and the assent of the subject.

Privacy and confidentiality Data collection and storage practices should keep the participant and their opinions private and confidential.

Participant safety Participants should not face any security risk as a result of participating in data collection efforts.

Data minimization The project team should ensure that the MEAL data collected are immediately relevant to the project needs, keeping the scope of MEAL activities as simple as possible and focused only on the specific data needed to answer MEAL questions.

[2] Adapted from: Oxfam. February 17, 2015. Responsible program data policy.

Responsible data usage Projects should establish and follow policies to protect the data they collect; establishing procedures to ensure data is used appropriately, stored securely and destroyed when no longer needed.

1.4 Cross-cutting themes in MEAL

Throughout the guide, you will find references to two cross-cutting themes that should be integrated into the design, development and implementation of MEAL activities: participation and critical thinking. When teams encourage participation and critical thinking, in effect they are investing in sustainable impact and addressing some of the most challenging issues that arise when conducting MEAL activities. Thus, throughout each phase of the MEAL cycle, the guide uses call-out boxes to highlight opportunities to improve MEAL processes through participation and critical thinking.

Participation

Good MEAL processes, from beginning to end, incorporate a variety of external stakeholder perspectives.

Stakeholder Someone who, because of their position or role, has an interest in and/or influence on the project.

Stakeholders can engage at various levels of participation, from very limited provision of advice or feedback to extensive, active involvement in the design and implementation of data collection methods and tools. A stakeholder could be a project partner organization or a project participant. A stakeholder could also be a local government office or the project's donor institution. Relevant stakeholders will vary depending on the local setting.

There are many advantages of stakeholder participation in MEAL planning and implementation. Participatory MEAL helps to:

- Ensure that MEAL findings are relevant to the local context.
- Increase stakeholders' understanding and ownership of their own program strategy and processes; what works, does not work, and why.
- Increase local-level capacity in MEAL.
- Contribute to improved communication and collaboration between project actors that are working at different levels of project implementation.
- Promote a more efficient allocation of resources.[3]

Critical thinking

Good MEAL processes, from beginning to end, require a consistent commitment to critical thinking.

Critical thinking A process of thinking that is clear, rational, open to different opinions, and informed by evidence.

[3] Adapted from: Aubel J. 1999. *Participatory program evaluation manual*. CRS and the Child Survival Technical Support Project.

In practice, critical thinking requires that project teams apply the following behaviors as they design, plan and implement MEAL activities:

- A willingness to identify the assumptions that shape your thinking and influence your actions.
- A desire to test the extent to which your assumptions are correct and well-founded.
- A capacity to ask thoughtful questions to pursue deeper understanding.
- An openness to multiple, sometimes conflicting, perspectives reflecting different expertise, experiences and evidence.
- A commitment to reflection and analysis to inform actions.[4]

One of the advantages of applying critical thinking to your MEAL activities is that it helps reduce the risk of bias in your data by uncovering some of the assumptions that may underpin your approach.

Bias Any systematic trend or deviation from the true value.

Seasoned MEAL experts understand that they will never be able to eliminate all bias from their data. People are not machines, and no system will be perfect at collecting, analyzing, interpreting and communicating data. However, by adopting the critical thinking behaviors above, teams can act deliberately to reduce bias and improve the quality of project data.

There are many types of bias that can influence your data; some researchers have identified as many as 50 categories of bias! It is outside of the scope of this guide to explore all those categories. However, we will revisit this topic throughout the guide. As we introduce MEAL tools and processes, we will identify potential areas of bias that should be acknowledged and managed to ensure you are working with the highest quality data possible.

1.5 Adapting the MEAL DPro

Every project is different and its MEAL systems will reflect any number of factors, including an organization's policies and culture in support of MEAL, the project context, the project value and duration, donor MEAL requirements, and the project's complexity and associated risks.

Use and adapt the MEAL DPro tools and processes to suit your context. For example, if you are managing a large, complex project, you might choose to develop a full analysis plan for MEAL. However, smaller projects might forego developing a separate MEAL analysis plan and include analysis activities as a component of their performance management plan (see chapter 3).

As part of the effort to help you adapt the MEAL DPro, the guide introduces a case study, the Delta River Internally Displaced People's (IDP) Project. The case study draws from a number of lessons learned through multiple projects and will be revisited repeatedly throughout the guide to provide practical examples of how to use MEAL models, tools and processes in a project.

[4] Brookfield SD. 2012. *Teaching for critical thinking*. Jossey-Bass.

Figure 5: The Delta River IDP Project case study

Background

UNITAS, a nongovernmental organization (NGO), has worked in the Delta River Region for 10 years. It strives to reduce waterborne disease by working with communities to install latrines and water systems. It has also implemented behavior change campaigns aimed at improving sanitation and nutrition practices. UNITAS has strong relationships in the Delta River Region and has a network of partners that spans government ministries, NGOs and community-based organizations.

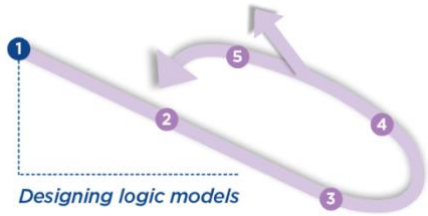
The team has been approached by a donor to participate in an initiative designed to address the needs of internally displaced people who have moved to the region over the past 12 months. Based on a preliminary situation analysis, UNITAS and the donor have identified three central problems that need to be addressed:

1. Internally displaced families lack access to agricultural production opportunities and income-generating activities.
2. Internally displaced women and children lack access to nutritious food.
3. There is an increased incidence of waterborne disease among IDPs compared to families in the surrounding communities.

The donor is funding three implementing partners to address the issues outlined above. UNITAS is one of the three partners and has been asked to focus its efforts on decreasing the incidence of waterborne disease among IDPs.

Chapter 2: Designing Logic Models

2.1 Introduction



The first step in establishing the foundations of your MEAL system is to create logic models for your project.

What is a logic model?

In simple terms, a logic model is a snapshot of how your project is supposed to work. An effective logic model is not intended to be a detailed, comprehensive plan. That comes later. Instead, a logic model provides an overview that addresses questions like:

- What is your desired impact?
- How do you believe change will take place?
- What assumptions need to hold true for the change to occur?
- How will you measure and track progress?

Do these questions sound familiar? They should, because they are also the fundamental questions you should ask when designing the MEAL system for your project.

In practice, a project develops more than one logic model. Together, the models align to map out how your project is supposed to work. This chapter explores three commonly used project logic models: the theory of change (ToC), the results framework (RF) and the Logical Framework (Logframe).

By the end of this chapter, you will be able to:

- ✓ Describe how project logic models contribute to establishing a strong foundation for MEAL
- ✓ Compare and contrast the components, structure and purpose of theories of change, results frameworks and Logframes
- ✓ Explain the purpose of identifying assumptions in project logic models
- ✓ Interpret the vertical and horizontal logic of Logframes
- ✓ Understand the characteristics of a SMART[5] indicator
- ✓ Identify the most common measurement methods and when they are used

2.2 What is a logic model?

Logic model A systematic, visual way to present a summarized understanding of a project and how it works.

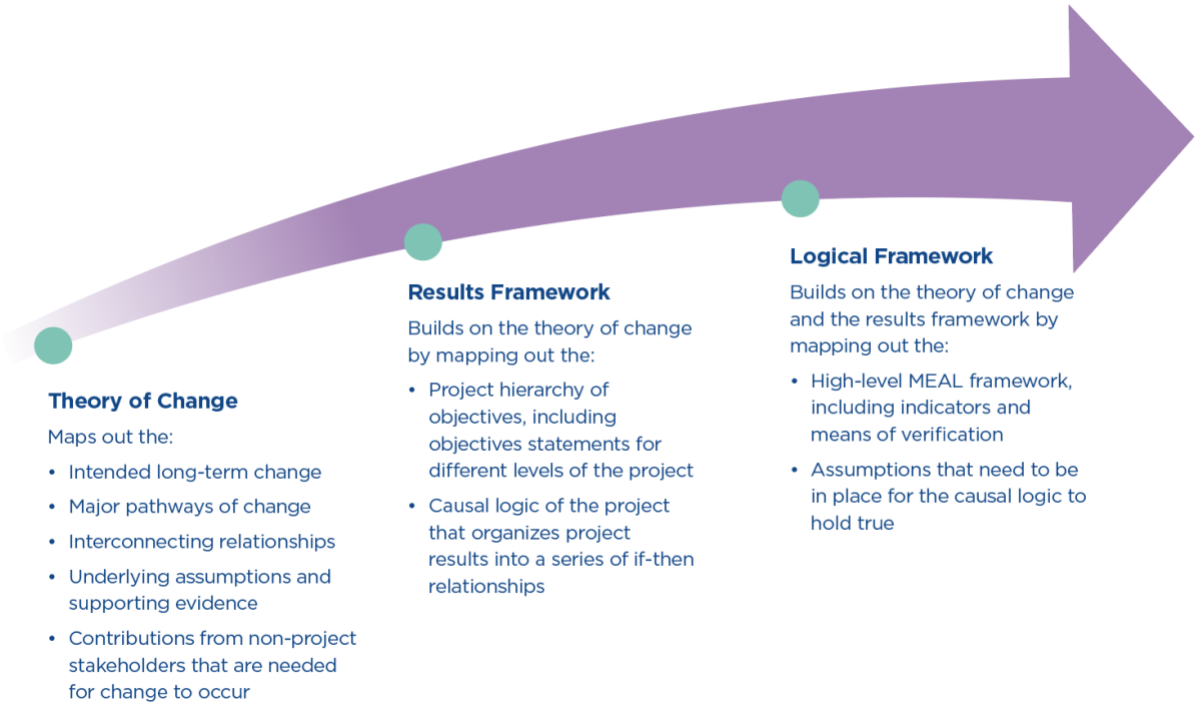
[5] SMART: Specific, measurable, achievable, relevant, time-bound

At their core, logic models identify the project logic. They help teams articulate the desired long-term change and map out what needs to happen for that change to be achieved. However, in practice, logic models do much more. The information contained in logic models is used by many stakeholders for multiple purposes.

- Project proposal writers — Use logic models to prompt discussions about potential activities, resource estimates, calendars and risk management.
- Project managers — Use logic models to communicate with stakeholders (communities, partners and others) to explain what the project will accomplish, and how.
- Business development staff — Use logic models to explain the project logic and results to potential funders.
- Project teams — Revisit logic models during project implementation, updating strategies and processes as they learn from experience, and adapt to unforeseen events.
- ***MEAL teams*** — **Use logic models as principle input of the design of MEAL systems.**

Each logic model (ToC, RF, Logframe) draws and builds on the information found in the previous tools. For this reason, it is best to create them in sequence. Figure 6 explores each of the three logic model tools, identifying the core content of each and comparing the purpose of each.

Figure 6: Progression of logic models



2.3 Theory of change

The theory of change provides the big picture of the intended change. It defines the long-term goal of a project and the broad strategic areas of intervention, and then maps the building blocks or preconditions, that need to be in place for the long-term change to occur. The ToC also identifies the assumptions that need to hold true for the project to succeed, and the evidence that is available to support them.

> ***Theory of change*** A comprehensive and visual description of how and why a desired change is expected to happen.

ToCs come in various formats, some quite simple and others complex. Accompanying descriptions can be written as a text document, but ToCs are more commonly supported with graphics, including flow charts, maps, network diagrams or tables. There are many advantages to presenting the ToC in a visual format. These include the ability to:

- Visualize complex data and ideas in an image that is easier to understand.
- Identify the full range of changes needed to achieve the intended impact. These include changes that are implemented by other stakeholders.
- Recognize non-linear change.
- Make explicit the assumptions, i.e. the potential risks that could disrupt the logic of the project.
- Prompt discussion and participation by opening up space to ask questions, challenge assumptions and suggest alternatives.

The ToC should be based on a wide-reaching, comprehensive analysis of needs, assets, opportunities and the operating environment. This analysis should draw on stakeholder perspectives and local knowledge to ground the conversation in specific, real-life circumstances. The process of developing a ToC should be participatory, involving a cross section of staff (management, technical/sector experts and MEAL) and key stakeholders, to benefit from their many perspectives. There are software products available that generate a digital visualization of a ToC.

ToCs are stronger when they are evidence-based and deliberately informed by and aligned with research, theory, practice and experience. As you begin defining your ToC, identify any existing evidence-based conceptual frameworks that can inform your work.

> ***Conceptual framework*** A tested, evidence-based model for a development or relief intervention.

Review your donor's requirements to see whether those guidelines mandate the use of a specific conceptual framework. For example, the USAID Office of Food for Peace (FFP) program requires that food security activities use its Conceptual Framework for Food and Nutrition Security. Where there is no such requirement, it is advisable to use an existing framework or to create one.

Some of the most commonly used conceptual frameworks for projects address challenges related to food security, nutrition and behavior change. They include:

- Food security: USAID FFP Conceptual Framework for Food and Nutrition Security
- Nutrition: UNICEF Conceptual Framework for Maternal and Child Undernutrition and USAID's Multi-sectoral Nutrition Conceptual Framework

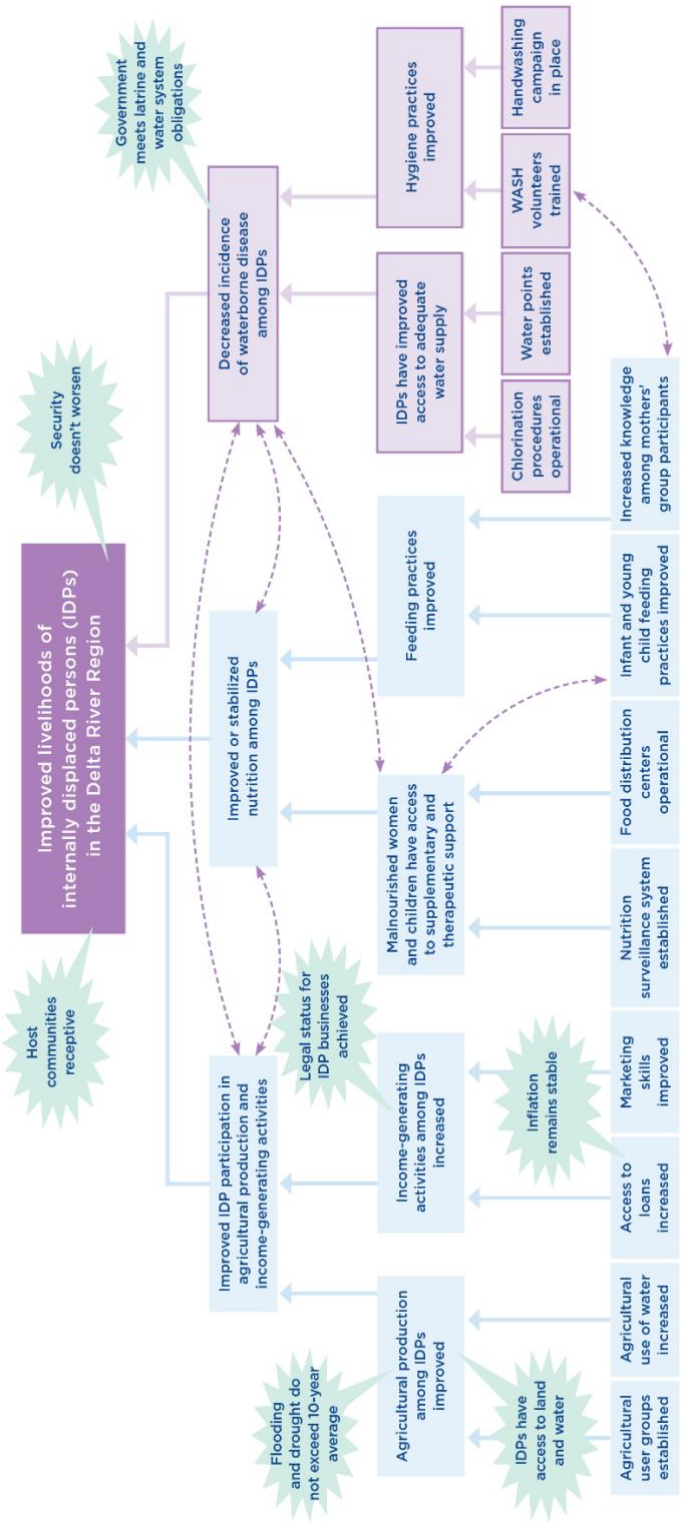
- Behavior change: FHI 360 Social and Behavioral Model for Change

2.4 Components of a theory of change

One of the best ways to understand a theory of change is by exploring and interpreting an example. Let's visit the UNITAS team as it works on the Delta River IDP Project introduced in Chapter 1. The UNITAS team, the project donor and the two other organizations contributing to the IDP response have worked together to conduct a situation analysis.

They have identified the issues that need to be addressed, and have turned the problems that contribute to those issues into possible opportunities for intervention. Next, the donor has asked that UNITAS contribute to the development of a ToC (Figure 7) that maps out its intervention strategy for the proposed IDP initiative.

Figure 7: Theory of Change: Delta River IDP Project



Let's take some time to understand the logic in the UNITAS theory of change.

The long-term change

1. ***Long-term change*** is the desired lasting impact that the intervention aims to support.

   In the case of the Delta River IDP Project, the situation analysis that was conducted earlier gave rise to a possible desirable long-term change. Working together, the team agrees to the following wording for the long-term change and places it at the top of the ToC:

"Improved livelihoods for internally displaced people in the Delta River Region."

2. ***Preconditions and pathways of change***

   Preconditions are the building blocks of the ToC. They are the requirements that must exist for the long-term change to take place.

   Starting with the long-term change, the team engages in a 'backwards mapping' process, asking what preconditions are required for that long-term change to be achieved. At the highest level, the ToC identifies three areas, or domains, of change that will contribute to the long-term change.

   Domains of changes are the broad strategic areas of intervention that most directly contribute to achieving the long-term goal of the ToC.

Increased IDP participation in agricultural production and income-generating activities	Improved or stabilized nutrition among IDPs	Decreased incidence of waterborne disease among IDPs

   Note that the one of the domains, "Decreased incidence of waterborne disease among IDPs," is the intervention area on which the donor has asked UNITAS to focus its efforts (purple-shaded, bordered boxes). The other two domains, represented by blue-shaded boxes in the ToC, will be the responsibility of other collaborating organizations.

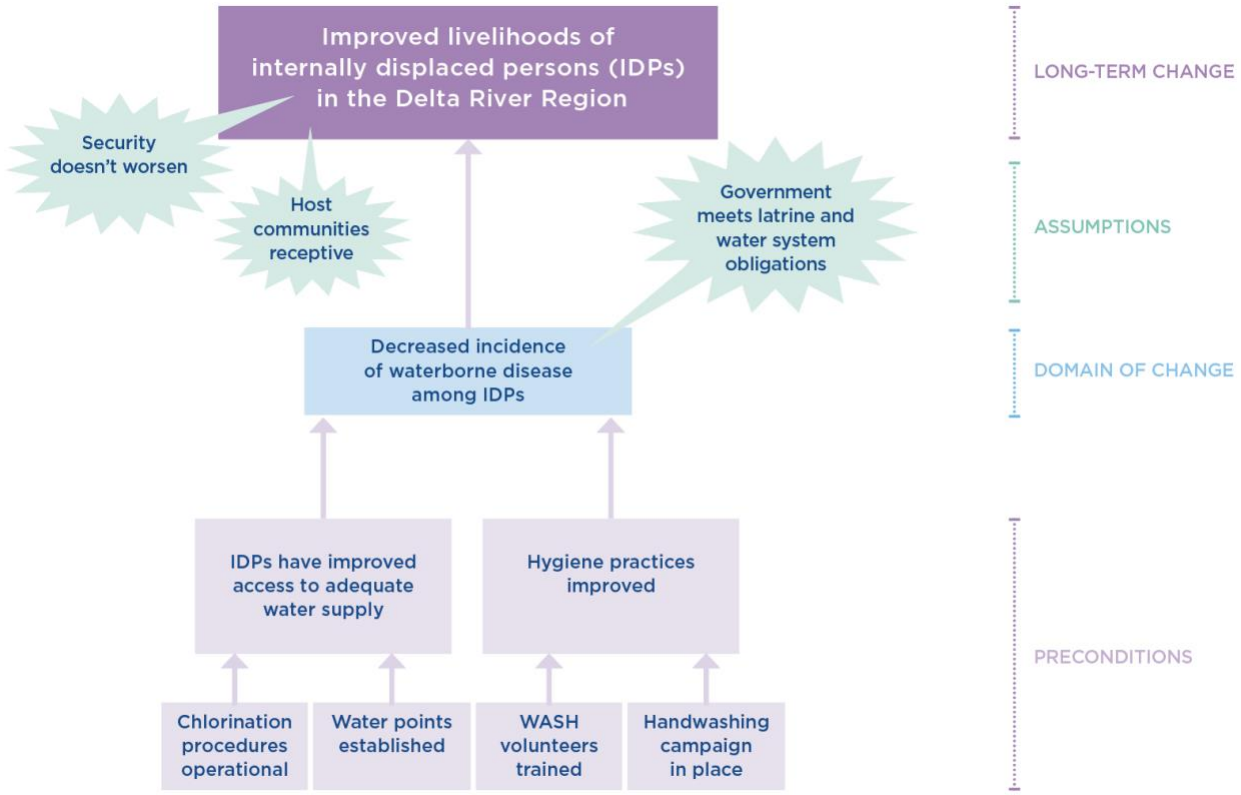
   You might ask, "*Why are these other domains of change that are not the direct responsibility of UNITAS included in the ToC?"* Remember! The ToC provides a big picture of what is needed to achieve the long-term goal. A ToC can include preconditions and pathways of change that are not the direct responsibility of your project. It is important to include them in the ToC because they are fundamentally important to achieving the long-term change; they cannot be ignored! This in turn implies the need to seek partnerships with other organizations to ensure a holistic project that addresses *all* the major preconditions and pathways.

   Once the domains of change have been identified, the team continues to work backwards, identifying the preconditions that will lead to success in each domain, and organizes them into pathways of change.

Pathways of change identify the connections between preconditions, how they relate to each other and in what order. Most initiatives have multiple pathways that contribute to the long-term goal.

The figure below shows the preconditions and pathways of change for the domain of change assigned to UNITAS, namely, "Decreased incidence of waterborne disease among IDPs."

Figure 8: Preconditions and pathways of change that decrease the incidence of waterborne disease



As you review Figure 8, notice that UNITAS will need to manage several pathways of change that it is anticipated will contribute to a decreased incidence of waterborne disease among IDPs. Along the different pathways toward realizing the desired long-term change, a series of preconditions, involving different stakeholders, will need to be met.

3. ***Assumptions***

As you develop your ToC, you will need to determine whether there are any assumptions that will seriously affect your project's ability to deliver on its commitments. Ask yourself, "*What are the top three assumptions that need to be valid for our project to be successful?*"

Assumptions are the conditions or resources outside the direct control of project management, but that nevertheless must be met for progress to be made toward the eventual achievement of the long-term goal.

We all make assumptions when we design and plan our projects. For example, we might assume that:

- Government plans, policies and actions will support our work
- Election results will lead to a stable transfer of power
- Other organizations will continue to operate in the same area
- Trends in national and international markets will be favorable
- Communities are interested, motivated and have time to engage
- Project staff can operate safely with full freedom of movement

Assumptions provide a reality check for your theory of change. Assumptions point out the potential risks that can interfere with project success. Everything will proceed well if the assumptions you have identified prove correct. However, unfulfilled assumptions can completely alter how, or even if, your project works. Thus, UNITAS needs to identify and analyze those key, or critical, assumptions that are required for the project to succeed, and must carefully verify that they are likely to hold true.

As you identify your ToC assumptions, it will be important to develop a plan to gather the evidence that will confirm whether these assumptions will hold true.

- If evidence indicates that the assumption will almost certainly hold true, then you probably don't need to include it in the ToC.
- If evidence indicates that the assumption is likely to hold true, but there is some risk, then include it in the ToC and commit to monitoring its status.
- If evidence indicates that your assumption will NOT hold true, you will need to redesign this part of the project. Note: If there are no options to redesign the project, then your project may not be viable.

If you are unable to find evidence relating to an important assumption, you may need to decide how best to gather evidence so that you can determine into which of the three categories above the assumption resides.

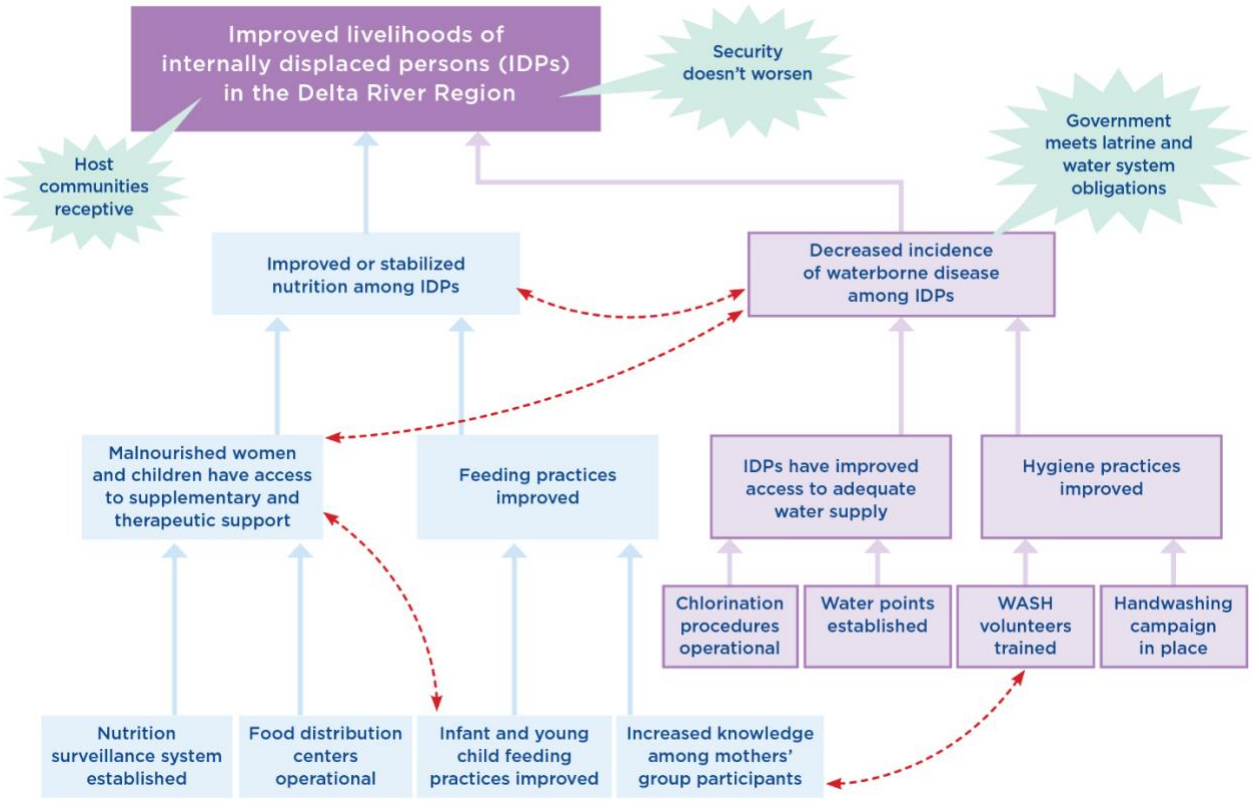
Be careful of any "killer assumptions". These are assumptions that you expect to hold true, but the evidence suggests are unlikely to be realized and could potentially "kill" the project. Returning to the assumptions in Figure 8, note that the success in reducing waterborne disease assumes that the "Government meets latrine and water system obligations." The team developing the ToC needs to confirm that the government will meet its commitment. If it is unlikely that the government will fulfil its obligations, then this becomes a "killer assumption" and an alternative approach must be found for the project to succeed.

4. *Connections between the pathways of change*

Finally, as you review the ToC, you will find that some preconditions contribute to more than one pathway of change. Figure 9 provides a partial elaboration of the ToC, focusing on two domains of change. Notice there are a number of preconditions that contribute to multiple pathways of change. The connections between these preconditions are represented by dashed lines across pathways of change, indicating the need for coordination. It is important to explicitly identify when preconditions feed into multiple pathways of change, because often this requires that you establish strong communication and coordination between the people working on the different change pathways. For example, the water, sanitation and hygiene (WASH) volunteers will be trained as part of the UNITAS

project, but they will also support the work of mothers' groups (which are managed by a different team through a partner project).

Figure 9: Preconditions that contribute to multiple pathways of change



Critical thinking: Treat the theory of change as a living document

If the theory of change is treated as a static document, teams will assume it must be accepted and followed, even after it becomes clear that it does not accurately reflect the project context. Logic models should be considered living documents and updated as needed or when new information is reported.

Revisit and test your logic models throughout the life of the project to ensure they are accurate. Donors are increasingly supportive of this kind of review process. Depending on the project, this could be a ToC reflection event on an annual basis or at the project's midpoint or closure. It is important to document your learning and share it with donors and other stakeholders so that new projects do not inherit an outdated or flawed ToC.

As you reflect on the ToC, keep an eye out for any "blinds spots" and "prevailing myths" that may undermine the validity of your logic models.

> ***Blind spots*** are unintentional omissions in thinking or errors that happen because of habit, snap judgments or overconfidence. Eventually, these blind spots appear in your models because models represent how you think.
>
> ***Prevailing myths*** include misguided assumptions like "access equals use," "knowledge equals action," and "activities equal outcomes."

In practice, good logic models require several rounds of revision before they provide an accurate picture of how your project works.

Think of an experience when your theory of change did not accurately reflect your project context or reflect your intended project logic.

- What do you think led to these weaknesses in your logic model?
- Did you update the ToC to address these weaknesses? Why or why not?
- Given this experience, what would you do differently next time during ToC design?

2.5 Results framework

Now that the UNITAS team has completed its ToC, the next step is to translate its contents into a results framework (RF).

> ***Results framework*** A logic model that organizes the results of a project into a series of if–then relationships. The statements in the RF articulate the project's hierarchy of objectives, describing the causal (or vertical) logic of the project.

The results framework, like the ToC, maps out the logic of the project strategy. The logic underlying a program or project is perhaps easier to understand at a glance in the results framework.

However, the ToC and the results framework differ in one important way. You will recall that the ToC was a big-picture document that identified all the preconditions required to achieve long-term change,

whether they were in or outside of the project's direct control, including the changes that other actors were expected to accomplish. The RF is different: ***it only includes interventions that are the direct responsibility of the project team.***

It is important that the project team clearly identifies and prioritizes the criteria it will use to decide what will be included in the RF, and what will not be included (Figure 10). The discussions that frame these decisions need to be well-managed so that different opinions, perspectives and requirements can be voiced in a way that is respectful and constructive. Don't forget to consider the perspectives and requirements of partners, donors and other stakeholders when making these decisions.

Figure 10: Criteria for determining what is included in project interventions[6]

Category	Illustrative criteria
Needs prioritization	• Which needs received the highest level of emphasis during the assessment/analysis? • Addressing which needs would appear to have the highest potential for impact? • Who stands to benefit the most? • How will the different needs relating to gender, age and socioeconomic status be accommodated?
External program considerations	• Who else is working in the proposed area of intervention? What are their program strengths?
Appropriateness	• Is the proposed approach acceptable to the target population and key stakeholder groups? For example, would a reproductive health program be appropriate and consistent with religious and cultural norms?
Institutional capacity	• What are your organization's strengths and weaknesses? • What are your implementing partners' capacity levels?
Resource availability	• Is funding available? • Is there potential for growth? • What opportunities exist to obtain additional resources?
Financial/economic feasibility	• Is the project investment justified based on the anticipated return?
Technical feasibility and sustainability	• Can the proposed work be realistically accomplished? • Can the work be sustained and maintained?
Strategic considerations	• What are the strategic priorities for your organization in the region? Country? Other?

[6] PM4NGOs. April 2013. *A Guide to the PMD Pro*.

Portfolio considerations	• Does the project fit within the larger portfolio of projects in your organization?

Once these strategic decisions have been made, you will be able to identify what is inside—and outside—of the scope of the results framework, and you can begin mapping content from the ToC to your results framework.

As is the case with all logic models, the RF will vary in terms of the number of levels and the terms used to describe those levels. The RF template used by your project will depend on your donor's requirements or, failing that, those of your organization.

The figure below compares some of the variations—in terms of levels and language—between commonly used RF models in the development sector. With a complicated ToC, there will not necessarily be an obvious alignment between the levels of the ToC and the levels of the RF model you use. You will need to use a certain degree of judgment as you move content between the two logic models.

Figure 11: Variations in results framework models, by level and terminology

Organization	Longer-term change	Mid-higher level change	Mid-lower level change	Tangible deliverables
Kellogg Foundation	Impact(s)	Outcome(s)		Outputs
The Bill & Melinda Gates Foundation	Strategic goal	Primary outcome	Intermediate outcome	
USAID Results Framework	Development objective(s)	Intermediate results	Sub-intermediate results	

A Guide to the MEAL DPro uses a four-level RF model that includes a hierarchy of objectives made up of a goal, strategic objectives, intermediate results and outputs. Note how the inclusion of outputs—often thought of as the project deliverables—clarifies the project's chosen intervention strategy in a tangible way. Particularly with the inclusion of some key outputs, the results framework can be a very useful communication tool, showing what the project intends to achieve, and how, in a simple but not simplistic manner.

Figure 12: The four-level hierarchy of objectives[7]

Level	Description
Goal	The goal describes the longer-term, wider development to which the project contributes. Goal statements are usually aspirational, focusing on states of sustainability, livelihood, well-being, etc.
Strategic objectives (SOs)	The SOs express the central purpose of the project. They describe the significant benefits that are anticipated by the end of the project. In most cases, the SOs address the immediate causes of the core problem.
Intermediate results (IRs)	The IRs express the expected change(s) in behaviors, systems, policies or institutions as a result of project outputs and activities. For example: Project participants adopting new behaviors or skills promoted by the project; expansion of project reach or coverage; new ways of organizing or managing systems; alterations to policy; or anything else that shows project outputs being used by the targeted participants. These are called "intermediate" because progress at this level is a necessary step toward achieving the SOs. There may be more than one IR for each SO.
Outputs	Outputs are the deliverables resulting from project activities. They include products, goods, services, knowledge, skills and attitudes. (e.g., people trained with increased knowledge and skills; quality roads built). There may be more than one output for each IR.

The descriptions of the objectives levels in Figure 12 outline the types of statements found at each level of the RF. Your objectives statements should reflect the scale and complexity of your specific project. For example, a 1-year project can expect to achieve an SO that will be remarkably different from that of a 5-year project. Judgment is required as you write objectives statements.

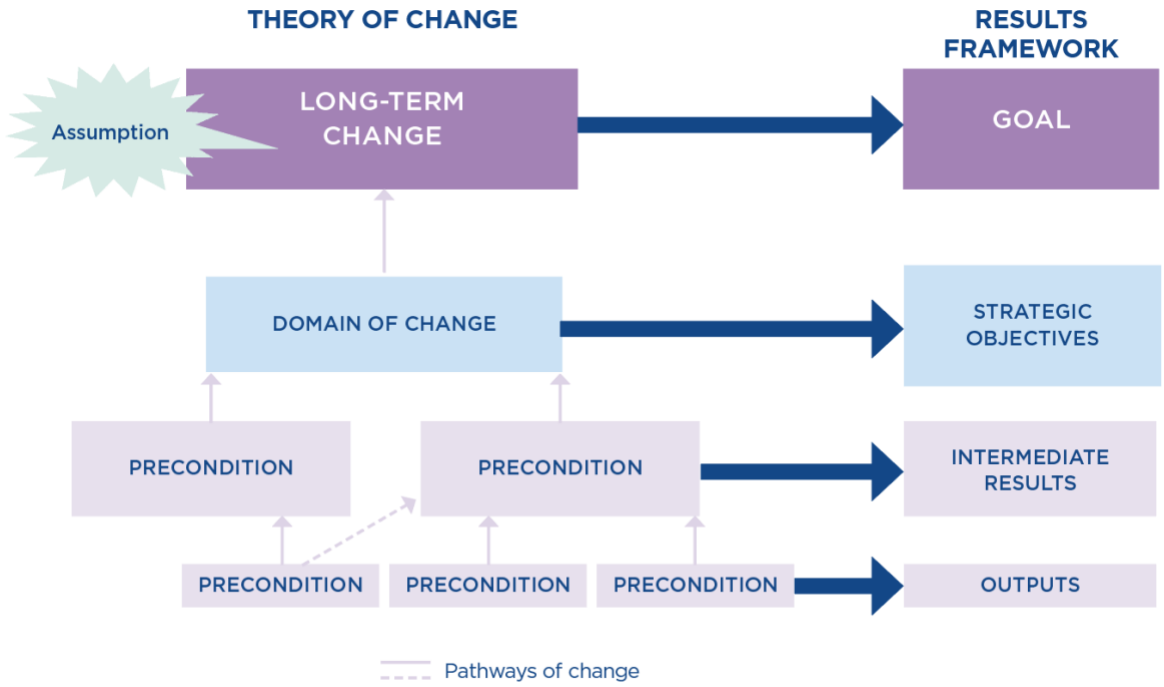
Figure 13 provides an example of translating the contents of a ToC into an RF that uses the MEAL DPro four-level RF template:

- The *goal* level in the RF is consistent with the *long-term change* identified in the ToC.
- The *strategic objectives* level in the RF corresponds with the ToC statements found at the *domains of change* level.
- The *intermediate results* and *outputs* levels correspond with the *preconditions* of the ToC.

Remember, however, that not all preconditions of the ToC are included in the RF, only the ones that are the responsibility of your specific project.

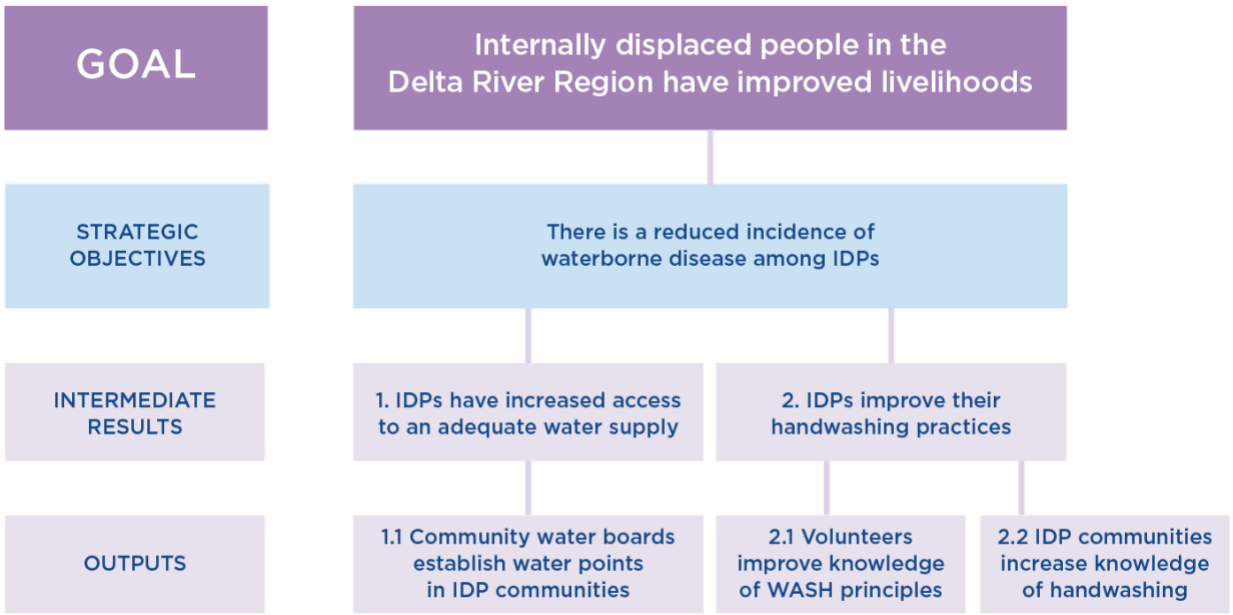
[7] Adapted from: Catholic Relief Services. 2015. *ProPack I: The CRS Project Package; Project design guidance for CRS project and program managers*.

Figure 13: Translating the theory of change content into results framework objectives statements



To better understand the components of the RF, let's return to the UNITAS project. In collaboration with partners, donors and community members, the project team created the following RF.

Figure 14: Results framework for the Delta River IDP Project



Write all objectives statements clearly, using full sentences, and be sure to include information indicating:

- **Who changes?** Individuals? Communities? Populations? Governments? Institutions?
- **What changes?** Coverage? Behavior? Knowledge? Technologies? Models? Data? Systems? Policies?
- **What is the direction or nature of the change?** Increased? Decreased? Improved? Reduced? Adopted? Established? Used? Integrated?

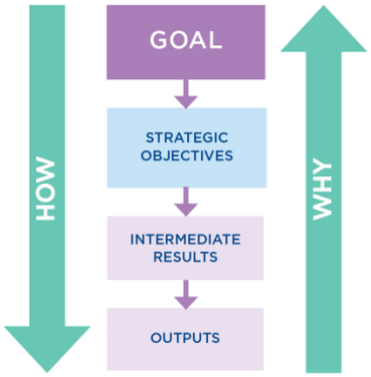
Figure 15 provides additional guidance for writing objectives statements at different levels of the RF.

Figure 15: Writing objectives statements for the results framework

Objective statements	How to write
Goal	*Write as a full sentence, as if already achieved. Make the general communities of the intended participants the subject of the sentence.*
Strategic objectives	*Write as a full sentence, as if already achieved. Make the targeted participant group(s) the subject of the sentence.*
Intermediate results	*Write as a full sentence, as if already achieved. Make the specific individuals or groups whose behavior is expected to change the subject of the sentence.*
Outputs	*Write as a full sentence, as if already achieved. Make the specific individuals or groups receiving the outputs the subject of the sentence.*

The vertical logic of the project becomes clear as you explore the linkages between the levels of the RF. The logic of the hierarchy is organized as follows:

- The long-term change is articulated at the top of the hierarchy.
- Going down the hierarchy of objectives demonstrates *how* a result will be achieved by achieving the result(s) below it.
- Going up the hierarchy of objectives demonstrates *why* a lower-level result is necessary to achieve the next-level result.



2.6 Logical Framework (Logframe)

Once the RF is complete, the next step is to develop the project's Logical Framework or Logframe.

> ***Logframe*** A logic model that describes the key features of the project (objectives, indicators, measurement methods and assumptions) and highlights the logical linkages between them. With

the inclusion of these additional items, the Logframe provides the basis for later developing the MEAL plan.

Like the theory of change and the results framework, the Logframe is intended to communicate the purpose and main components of a project as clearly and simply as possible. However, the Logframe includes information that is missing in the ToC and the RF. More specifically, it includes:

- ***Indicators*** are measures used to track progress, reflect change or assess project performance.
- ***Measurement methods*** identify how the project will gather the data to track the progress of the indicators.

As is the case with all logic models, there are many variations of Logframes. This guide uses a five-level matrix to structure the Logframe.

Figure 16: Logframe template

Objectives statements	Indicators	Measurement methods	Assumptions
Goal			
Strategic objectives			
Intermediate results			
Outputs			
Activities			

2.7 Objectives statements (Column 1)

The first column of the Logframe includes the objectives statements that were first created for the RF. As discussed previously, the objectives statements define the "vertical logic" of the project.

You probably also noticed that the Logframe includes an objectives statement that was not included in the results framework: activities.

Activities describe the work that will be conducted to deliver the project outputs.

The RF did not include any activity-level statements, so you will need to develop those statements to include in the Logframe. Examples of activities for the Delta River IDP Project include:

"UNITAS team develops water board quality report format"

"UNITAS and water board identify and build new water points"

"UNITAS sources and distributes water point materials"

"Community water boards identified, trained and functioning"

"Sanitation team develops handwashing campaign materials and mechanisms."

At the higher levels of the Logframe (the goal and strategic objectives), the objectives statements tend to be more strategic, and focus on articulating the outcomes of the project. Progress against these objectives statements is tracked by conducting evaluation activities. To track progress, you will need to answer evaluation questions such as: *Is the project resulting in the changes we projected? Are the changes sustainable? Have there been changes in behavior? Are new practices being adopted?*

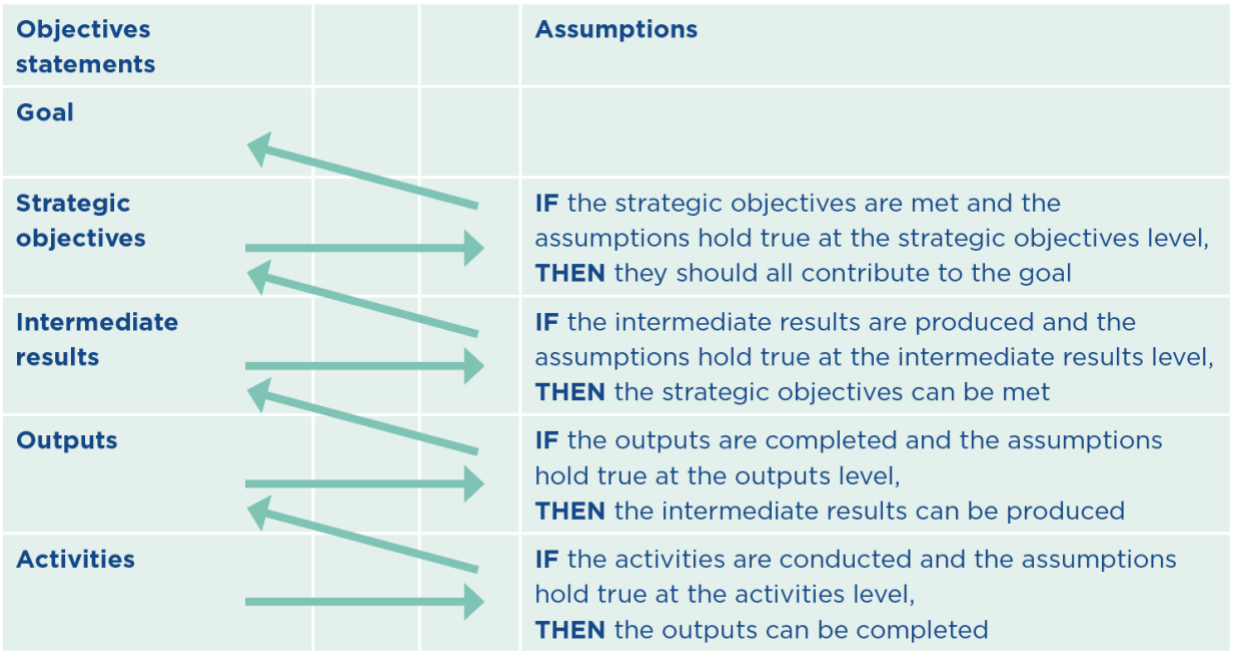
At the lower levels of the Logframe (outputs and activities), the objectives statements tend to be more operational, and focus on articulating the outputs of the project. Progress against these objectives statements is tracked by conducting monitoring activities. To track progress, you will need to answer monitoring questions such as: *Did we do what we said we would? Are we delivering the products and services we indicated?*

2.8 Assumptions (Column 4)

Before completing columns 2 and 3 (indicators and measurement methods), it is helpful to first complete column 4 of the Logframe, the assumptions.

Assumptions are especially important in the Logframe because they complement the "vertical logic" of the hierarchy of objectives by introducing the "horizontal logic" of the project. In an ideal world, the vertical logic would always hold true: activities result in outputs, outputs result in intermediate results, and so on. Making the assumptions explicit provides a reality check by pointing out that vertical logic succeeds *if and only if* the assumptions at each level of the Logframe hold true.

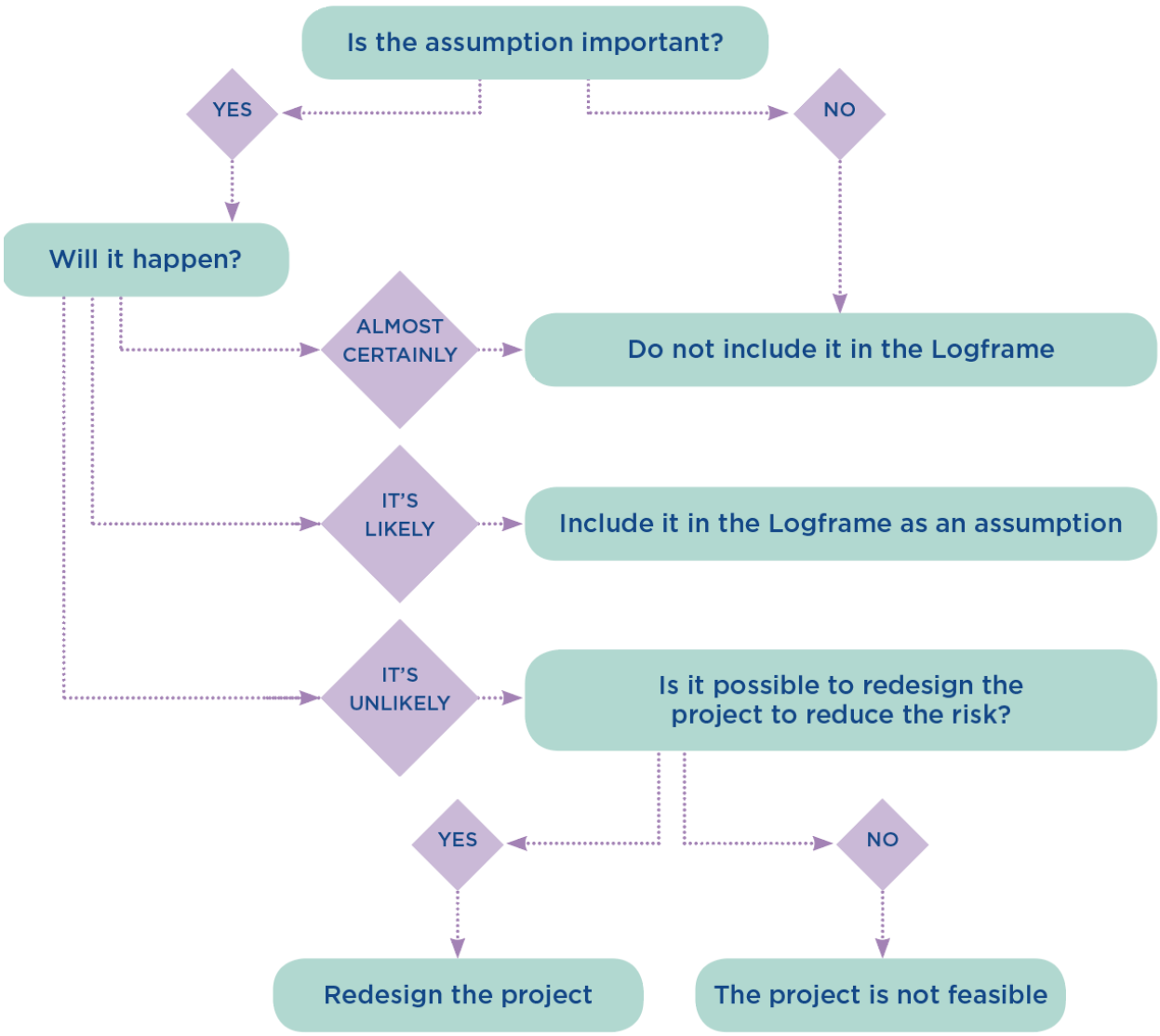
Figure 17: The vertical and horizontal logic of the Logframe



We already learned about assumptions in the earlier discussion of the ToC. In principle, you can copy the ToC assumptions into your Logframe. Remember that the ToC is a much larger view of the entire context of the project, so it includes assumptions that might not directly impact the objectives statements in your Logframe.

The decision tree in the figure below can help your team decide which assumptions to include in the Logframe. Take time to review the assumptions to make sure the project design has done as much as possible to minimize the risk associated with them, and has identified those that will need validating.

Figure 18: Decision tree for selecting Logframe assumptions



2.9 Indicators (Column 2)

Identifying the right indicators is a critical step in the MEAL process, because the indicators become the building blocks of your MEAL planning and implementation.

> ***Indicator*** A measure used to track progress, reflect change or assess project performance.

When identifying indicators for the Logframe, start by asking "*What information do I need and why do I need it?*"

Ask yourself, do I need data to:

- Comply with donor reporting requirements?
- Appreciate the level of project progress and achievement?
- Analyze any variance between expected and actual performance?
- Understand how change is happening? Understand why change is happening?
- Share and discuss results with community groups, government agencies or other organizations?

Your answers to these questions will help you identify which indicators you should use, and the number of indicators you will need. For example, while your donor might require a specific indicator to inform its reports, you might need a different type of indicator to inform your decision-making and to provide updates to communities.

Critical thinking: How many indicators?
Each objectives statement will require at least one indicator, and sometimes more depending on the information you need. However, more is not necessarily better! Remember, collecting data to track indicators takes time and money. The key to a good set of indicators is their quality and usefulness. Be careful not to collect information that you don't need, or won't use.

Think of an experience where you identified more indicators than were needed to track your objectives statements?

- What happened?
- What were the implications and the impact of identifying too many indicators?
- Knowing what you know now, what would you have done differently?

The type of information you need will also depend on the type of objectives statement the indicator is intended to track.

Figure 19: Indicator description by objectives statement level

Objectives statement	Indicator description
Goal	In general, a project Logframe would not include indicators at this level. Goal-level indicators reflect longer-term impacts that are usually not achieved through the completion of a single project. Rather, they may require changes brought about by multiple initiatives.

Strategic objectives	Indicators reflect change that is sought, often from a single initiative, among extended participants, target populations, and partners.
Intermediate results	Indicators reflect the expected change(s) in identifiable behaviors of a specific group or the expected change(s) in systems, policies or institutions required to achieve the higher outcome.
Outputs	Indicators represent tangible goods and services delivered by the initiative. Examples of output-level language include: people trained with increased knowledge and skills, quality roads built, goods delivered and services performed.
Activities	Unless specifically mandated by your organization or a donor, Logframe templates do not typically develop indicators to track completion of activities. This is because: • Activities indicators are often stated in the activity descriptions themselves. • It is increasingly common to manage activities as part of a detailed implementation plan, not in the Logframe.

Once you are clear about the information you need, you can begin to identify your Logframe indicators. As you identify indicators, you can use the SMART indicator checklist (Figure 20) to determine whether they meet quality standards. SMART is an mnemonic that identifies five criteria—specific, measurable, achievable, relevant, time-bound—that together help teams assess the quality of project indicators.

Figure 20: SMART indicator checklist

Specific	Indicators must be very closely related to the desired areas of improvement expressed in the objectives statements that they represent, and should include the following characteristics: • **Quantity** The expected numerical representations of what is to be achieved • **Quality** The expected achievements described using words and/or graphics • **Location** The geographic boundary of the expected achievements • **Target population** The person or people expected to make/experience the anticipated change.
Measurable	Indicators should be written in a way that promotes an accurate assessment of progress.
Achievable	Indicators must be attainable given the budget, time and resources available.
Relevant	Indicators must accurately measure the change you want to track.
Time-bound	Indicators must identify the timeframe within which the change is expected to occur.

To understand the components of strong indicators, let's examine two indicators that were created for the Delta River IDP Project. As you review the two indicators, it is clear they are written in a manner that

is specific, measurable and time-bound. As a final step in assessing the quality of the indicator, the team will need to determine whether the indicators are also achievable and relevant.

Figure 21: Illustrative indicators from the Delta River IDP Project

Indicator statements	***Each quarter, 100 percent of water points managed by community water boards meet WHO water quality standards***	***By Year 3 of the project, 80 percent of IDPs demonstrate knowledge that hands need to be washed with soap after critical events***
What is measured	Water quality	Knowledge that hands need to be washed with soap after critical events
Target population	Water points managed by community water boards	IDPs
Unit of measurement	Percentage	Percentage
Direction, size or magnitude of the change	100 percent	80 percent
Time frame	Quarterly	By Year 3 of the project

What type of indicator best collects the information I need?

Standard or custom indicators?

Before you invest time and money in creating indicators, explore whether there are standard, validated indicators that can be reused or repurposed for your needs. The reasons to use standard indicators that go beyond saving time and money include:

Indicator quality: Standard indicators have been tested in previous projects and in multiple contexts. As a result, they are globally recognized for their quality and have a track record of providing valid and reliable data.

Donor requirements: Always review your funding agreements to confirm whether donors require the use of specific indicators.

Data aggregation: Using standard indicators helps organizations compare data across the organization and across the sector. This makes it possible to compare results and communicate across multiple projects and programs.

Hundreds of standard indicators already exist for projects. These include indicators for food security, nutrition, health, WASH (water, sanitation and hygiene), shelter, education, protection, financial inclusion, gender, governance, agriculture, and maternal and child health. Many resources have been created to support the use of standard indicators. Figure 22 identifies some of the more extensive and exhaustive resources for identifying standard indicators.

Figure 22: Resources for standard indicators

Resource	Description and primary intended use
IndiKit	An online resource for well-formulated initiative indicators, and guidance on how to correctly collect and analyze the data required for each indicator.
Sphere Minimum Standards	An internationally recognized set of common principles and universal minimum standards in humanitarian response.
USAID	A list of recent indicator resources across sectors, including indicator handbooks, databases, tools and indices. The resources are both internal and external to USAID.
Bond Impact Builder	An online hub of outcomes, indicators and data collection tools designed to help organizations monitor and evaluate their initiatives.
Feed the Future Indicator Handbook	A set of performance management indicators for phase 2 of the United States Government's Feed the Future initiative.

In general, standard indicators are recommended and preferred whenever possible, especially for higher-level objectives. However, there will be occasions when standard indicators are not available or do not meet your specific information needs. In those cases, you will need to develop a custom indicator.

Returning to the example of the Delta River IDP Project, the UNITAS team needs to identify an indicator for Intermediate Result 1: "IDPs have improved access to adequate water supply." The team chooses a standard indicator that is based on guidance from WHO for the minimum amount of water needed for drinking, cooking and washing.[8] The indicator states, "By Year 3 of the project, an average of 30 liters of water per person per day is available to IDPs through a water point."

Direct or indirect (proxy) indicators?

Often it is relatively easy to track change by directly examining whatever you are trying to measure. For example, if you want to know how many wells were built, water agents trained or community visits conducted, you can measure the progress using a direct indicator.

Direct indicators track change by directly examining what you are trying to measure.

However, there will be many cases where change cannot be measured directly and you need to identify indirect indicators that approximate change in the absence of a direct measure.

[8] Reed BJ. Water Engineering and Development Center, Loughborough University. *Minimum water quantity needed for domestic uses*. WHO/SEARO Technical Notes for Emergencies, Technical Note No. 9.**Error! Hyperlink reference not valid.**

Indirect or proxy indicators track change by examining markers that are generally accepted as being proxies for what you are trying to measure.

Proxy indicators are especially helpful when the result you are attempting to monitor is difficult to measure or too expensive to measure. For example, the number of group meetings can be used as a proxy measure of group success. Be careful, however, because it is difficult to find proxy indicators that consistently and reliably represent what you are trying to measure.

Returning to the example of the Delta River IDP Project, the UNITAS team needs an indicator for Intermediate Result 2: "IDPs improve their handwashing practices." The team needs to decide whether to use a direct indicator (direct observation) or a proxy indicator (the presence of soap and water at latrine locations). Figure 23 identifies the advantages and disadvantages of each type of indicator when measuring changes in handwashing practices.

Figure 23: Direct and proxy indicators used to measure change in handwashing behavior

Indicator example	Advantages	Disadvantages
Direct indicator: By Year 3 of the project, 80% of IDPs increase handwashing at critical times	• The indicator attempts to directly assess handwashing behavior.	Collecting data requires: • More time and budget • Skilled observers Observing handwashing could change the behavior of community members.
Proxy indicator: Both soap and water are consistently present at latrine locations	• Research shows that the presence of soap and water is associated with increased handwashing. • Collecting this proxy data is easier and less expensive than direct observation of handwashing.	Cannot reveal the frequency, consistency or quality of handwashing by individuals.

Quantitative or qualitative indicators?

Lastly, you will need to decide whether you require a quantitative or a qualitative indicator to measure progress toward your objectives statements.

Quantitative indicators are measures of quantities or amounts. They help you measure project progress in the form of numerical information, such as:

- Numbers
- Percentages
- Rates (e.g., birth rate: births per 1,000 population)
- Ratios (e.g., sex ratio: number of men to number of women)

An example of a quantitative indicator from the Delta River IDP Project Logframe is, "By Year 3 of the project, 85 percent of IDP households are located no more than 500 meters from a water point."

> ***Qualitative indicators*** measure judgments, opinions, perceptions and attitudes toward a given situation or subject.

An example of a qualitative indicator might be "Female IDPs feel safe collecting water from IDP water points." Note that this indicator is much more subjective than the earlier quantitative indicator that measured proximity of IDPs to water points. Data related to feelings of safety are not as easy to analyze statistically. However, qualitative data is invaluable because it helps explain how things are changing, and why.

Because qualitative indicators are often subjective, it is important that they are defined clearly and concisely. For example, what does "safety" mean in the context of this indicator? While it is important to define these subjective terms, it is also important to recognize that the definitions may change over time. This is not necessarily a problem, because qualitative indicators have the advantage of exploring and explaining how definitions and perceptions change over time.

Participation: The SPICED[9] approach to developing indicators[10]
There is an advantage to developing project objectives and indicators, *especially qualitative indicators*, in close collaboration with local communities. Often community members have the best perspective, knowledge and experience to identify what needs to change and how to understand and measure that change.

The SPICED framework was developed to help teams collaborate more effectively with communities to develop indicators. The SPICED approach believes that indicators developed collaboratively are stronger when they are:

Subjective	Community groups and individuals have perspectives and experience that give them unique insights that may yield a very high return on the investigator's time. In this sense, what others see as anecdotal becomes critical data because of the source's value.
Participatory	Indicators should be developed together with those best placed to assess them. This means involving an initiative's ultimate participants, but it can also mean involving local staff and other stakeholders.
Interpreted and communicable	Locally defined objectives/indicators (created through participatory methods) may not be immediately clear to other stakeholders, so they often need to be explained (interpreted) for a wider audience.

[9] Lennie J, Tacchi J, Koirala B, Wilmore M and Skuse A. 2011. *Equal access participatory monitoring and evaluation toolkit, Module 2*.
[10] Roche C. 1999. *Impact assessment for development agencies: Learning to value change*. Oxfam GB.

Cross-checked and compared	The validity of assessments needs to be cross-checked, by comparing different indicators and progress, and by using different informants, methods and researchers.
Empowering	The process of setting and assessing indicators should empower those involved, and allow groups and individuals to reflect critically on their changing situation.
Diverse and disaggregated	There should be a deliberate effort to seek out different indicators from a range of groups, especially men and women. This information needs to be recorded in such a way that these differences can be assessed over time.

Think of a situation where greater participation increased, or would have increased, the quality of your indicators.

- What contributions would community groups and individuals have added that would have improved the indicator quality?
- Were there any challenges that prevented you being more participatory in the development of indicators?
- How would the results of your project improve through the use of indicators that were informed and defined by community groups and individuals?

2.10 Measurement methods (Column 3)

The fourth column of the Logframe identifies the measurement methods that will be used to collect data about your indicators.

> ***Measurement methods*** identify how the project will gather the data to track the indicators.

Measurement methods can be divided into two categories: quantitative and qualitative.

> ***Quantitative methods*** collect data that can be counted and subjected to statistical analysis.

As the term indicates, quantitative methods measure quantities, whether they be pure numbers, ratios or percentages. Quantitative indicators are very widely used in development projects as they give a very clear measurement, and quantitative data are easy to compare over time (or between projects). Examples of quantitative measurement methods include tracking logs, questionnaires, structured observation, knowledge and achievement tests, and physiological health status measures.

> ***Qualitative methods*** capture participants' experiences using words, pictures and stories. This qualitative data is collected through prompting questions that trigger reflection, ideas and discussion. Qualitative data are analyzed by identifying themes, topics and keywords.

Qualitative data track changes in participants' attitudes and perceptions, identify why and how change is happening, and are analyzed by organizing emerging themes. Qualitative measurement methods are especially good at answering the questions "*How is change happening?*" and "*Why is change happening?*" The three most common qualitative methods are semi-structured interviews, focus group discussions, and participant observation.

If you compare quantitative and qualitative measurement methods, you will find that each approach has its own strengths and weaknesses (see Figure 24).

Figure 24: Comparing quantitative and qualitative measurement methods

	Strengths	Weaknesses
Quantitative methods	• **Scalable** Processing results from a larger number of subjects • **Generalizable** Using data gathered from a sample, assumptions can be made about patterns in the general population • **Objective** There is less personal bias in the collection and analysis of data • **Standardized** Data collectors use standard approaches whose results can be compared to other data • **Suited to ICT4D** Well-suited to use of digital devices for data gathering and analysis	• Results from quantitative methods sometimes miss the depth and complexity of an issue • Not suitable for identifying and exploring unanticipated or unexpected factors
Qualitative methods	• **Provide depth and detail** Provide detailed descriptions of situation, providing a rich context • **Create openness** Encourage people to expand on their responses and potentially open up new areas of inquiry • **Simulate people's individual experiences** Provide a detailed picture of why people act in certain ways and the feelings behind these actions • **Identify the unexpected** Helpful for identifying and exploring unanticipated or unexpected factors	• Results from qualitative methods are harder to generalize to a larger population • Data are relatively difficult to collect and analyze • Data are susceptible to the hidden bias of collectors and participants • More difficult to transcribe data directly to digital devices

Using either quantitative or qualitative measures alone may be insufficient for tracking and understanding change. That is why today's MEAL practitioners often advocate for a mixed approach that employs both types of measurement methods.

A mixed-methods approach deepens understanding of the project, providing more comprehensive, integrated data for tracking progress, analyzing results and making decisions. Using both quantitative and qualitative measurement methods offers the potential to answer very different questions about the same indicator. Such an approach can give a sense of the direction and degree of change along with an understanding of what has contributed to, or inhibited, this change.

And, a mixed-methods approach can strengthen your data, analysis and interpretation if you consciously incorporate a process called triangulation.

Triangulation The validation of data through cross-verification of more than two sources.

In other words, teams triangulate by collecting data using a mix of methods. This allows teams to cross-check and reinforce results. Thus, triangulation helps overcome some of the weaknesses of the methods outlined above. Planning and incorporating the concept of triangulation into your data collection and analysis efforts is covered more fully in Chapters 3 and 4.

Critical thinking: Identifying opportunities to use secondary data sources

Generally, primary data sources provide the most reliable and appropriate data for measuring the progress of your project.

> ***Primary data*** come from information collected directly by the project's team and stakeholders.

However, when possible, consider using secondary data sources as well.

> ***Secondary data*** come from information that is already available through other published or unpublished sources.

The advantage of collecting data from secondary sources is that it is more cost effective and it reduces the risk of duplicating effort. Examples of secondary data sources include existing records, statistics and reports.

In practice, however, access to secondary data is often limited and it may be challenging to find data that directly address the precise needs of your project. If you choose to use secondary data, be clear about the criteria you use to confirm that the data are valid, reliable and directly represent your area of interest. For example, if you are using national data to measure poverty rates, you risk misrepresenting the actual rates of poverty in the communities in which you are working, or among the populations you are targeting.

- Have you ever used secondary data sources to report on your project indicators?
- Did you experience challenges related to the data's appropriateness, timeliness or quality?
- Were you able to address these challenges? How?

Returning to the Delta River IDP Project, let's explore how the UNITAS team has chosen to use mixed measurement methods to track the indicators related to Intermediate Result 2: "IDPs improve their handwashing practices." Figure 25 identifies how the project will use a mixed-methods approach to monitor progress against the indicator for this IR.

Figure 25: Strengths and weaknesses of qualitative measurement methods

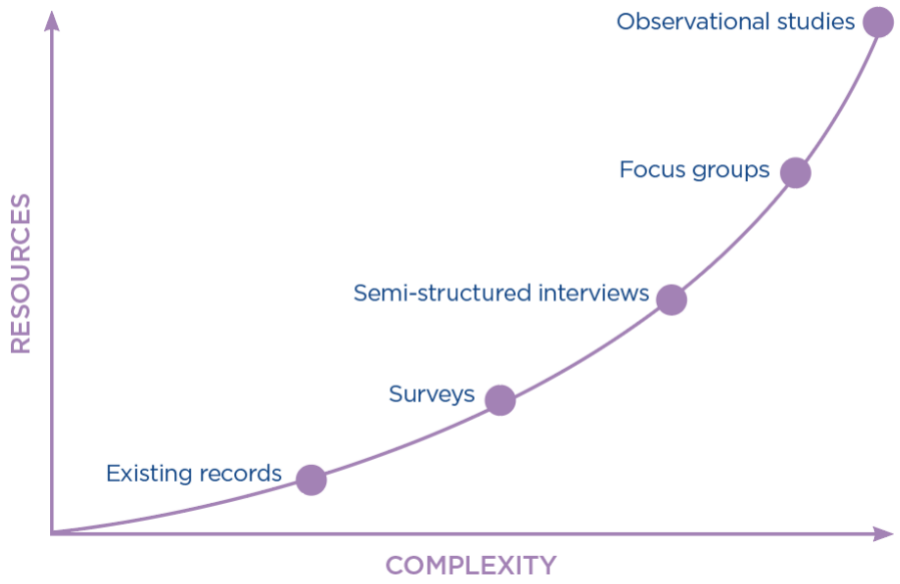
Objectives statement	Indicator	Measurement method	Type of information collected

Intermediate Result 2: "IDPs improve their handwashing practices."	By Year 3 of the project, 80% of IDPs self-report increased handwashing at critical times	Questionnaire (quantitative)	• Has handwashing behavior increased after critical events? • Has knowledge of handwashing behavior increased?
		Focus group(s) (qualitative)	• Which project activities were particularly effective at changing handwashing behavior? • Are there factors preventing the target population from adopting handwashing behavior? • Is improved handwashing behavior resulting in valuable change?

Balancing the cost and complexity of measurement methods

Data collection activities are expensive and often consume a significant portion of a project's MEAL budget. It is important to choose measurement methods that provide quality data, while weighing the trade-offs in terms of effort and cost. The graph below provides an illustration of some data measurement methods in terms of their relative cost and complexity.

Figure 26: Measurement methods cost-complexity comparison



As you identify the measurement methods you will use to collect indicator data, you will need to weigh up the trade-offs between the quality and the cost and complexity of each option. Returning to the Delta

River IDP Project, the UNITAS team needs to track the indicator that states: "By Year 3 of the project, 80 percent of IDPs self-report increased handwashing at critical times."

When deciding which measurement methods to use, the team weighed two options for measuring handwashing frequency:

- An observational study in which data collectors would study IDP behavior at latrine locations, or
- A questionnaire in which IDPs would self-report their handwashing behavior.

Figure 26 identifies the trade-offs between the two options in terms of cost, complexity and quality of data. The team debated the advantages and disadvantages of each approach and documented their findings in Figure 27.

Figure 27: Measuring handwashing behavior through direct observation or questionnaires

Measurement method	Advantages	Disadvantages
Direct observation	• **Data reliability**: Direct observation is often considered the best way to reliably capture data • **Richness of data**: Observers can collect data on frequency of handwashing ***and*** the quality of handwashing.	• **Cost**: Time-consuming • **Cost**: More expensive • **Complexity**: Skilled and validated observers required • **Quality of data**: Direct observation risks influencing the handwashing behavior of latrine users
Questionnaire	• **Cost**: Less expensive • **Complexity**: Fewer data collection skills required	• **Quality of data**: Self-reported data often overestimate true compliance

Based on the advantages and disadvantages listed above, the UNITAS team chose to measure frequency of handwashing using questionnaires.

While the team thought that the quality of data might be better if it used direct observation methods, the cost was prohibitive and the project lacked trained staff to conduct an observation study. The team had also received feedback from local partners indicating that placing observers near latrines would be culturally inappropriate. For that reason, their partners recommended that questionnaires were preferable.

Figure 28: Logframe: Delta River IDP Project

Objectives statements	Indicators	Measurement methods	Assumptions

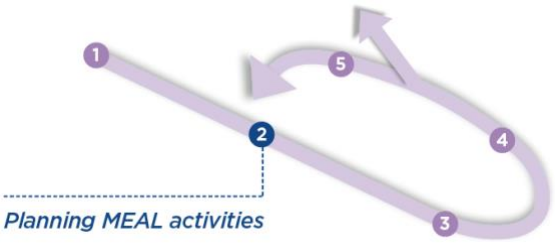
Goal: Internally displaced people (IDPs) in the Delta River Region have improved livelihoods			
Strategic objective: There is reduced incidence of waterborne disease among IDPs	• Incidence of waterborne disease among IDPs is reduced by 30 percent by the end of Year 3.	• Municipal hospital and clinic records collected by mobile health teams	
Intermediate result 1: IDPs have improved access to adequate water supply	• By Year 3, 75 percent of IDPs indicate water access meets their household consumption needs • By Year 3, 85 percent of IDP households are located no more than 500 meters from a water point. • Each quarter, 100 percent of water points managed by community water boards meet WHO water quality standards • By Year 3, an average of 30 liters of water per person per day is available to IDPs through water points	• Questionnaire • Focus group(s) • Water point visits • Quarterly water board reports	• Government meets its water system obligations • IDPs do not obtain water from sources other than the designated water points
Intermediate Result 2: IDPs improve their handwashing practices	• By Year 3, 80 percent of IDPs self-report increased handwashing at critical times • Both soap and water are consistently present at latrine locations	• Questionnaire • Focus group(s) • Latrine visits	• No other sources of waterborne disease increase significantly • IDPs sustain adoption of improved hygiene practices
Output 1.1: Community water boards establish water points in IDP communities	• By Year 3, 40 water points are established (4 per village) • By Year 3, 10 trained community water boards are operational • By Year 3, 100 percent of water points meet water quality standards	• Quarterly water board reports	• Spare parts and trained mechanics are available in the event of water point breakdowns • Water points are established in locations that are safe and secure for women and children
Output 2.1: Volunteers improve knowledge of WASH principles	• 100 percent of WASH volunteers can effectively explain WASH principles to IDPs upon completion of training events • 40 WASH volunteers pass the certification exam each year	• Training workshop attendance sheets • Certification results	• WASH volunteers are trusted by IDPs
Output 2.2: IDP communities increase knowledge of handwashing	• By Year 3, 80 percent of IDPs demonstrate knowledge that hands need to be washed with soap after critical events • By Year 3, 75 percent of IDP women indicate higher levels of confidence preventing waterborne disease	• Questionnaire • Focus group(s)	IDP cultural and religious customs are not violated by the behavior change messages

Activities IR 1: 1.1.1: UNITAS and water board identify new water point locations 1.1.2: UNITAS sources and distributes water point materials 1.1.3: Community water boards identified, trained and functioning 1.1.4: UNITAS team develops water board quality report format
Activities IR 2: 2.1.1 UNITAS sanitation team identifies WASH volunteers and trainers 2.1.2 Sanitation team designs WASH training curricula and materials, and identifies training locations and times 2.1.3 Sanitation team delivers WASH training to volunteers 2.1.4: Sanitation team develops handwashing campaign materials and mechanisms 2.1.5: Community volunteers implement handwashing promotion events

Chapter 3: Planning MEAL Activities

Introduction

While logic models provide a helpful map for your MEAL activities, anyone who has taken a trip knows that a map is not enough. You need a more comprehensive and detailed plan that identifies when you leave, the precise route you will follow, the resources you need, and more.



This chapter is organized into two sections that will support you as you plan for MEAL in your project.

Section A: MEAL planning tools: We introduce planning tools that help you develop a comprehensive, detailed and integrated plan for MEAL in your project.

Section B: MEAL in project management: We introduce best practices for including MEAL components in the larger project plan. These include suggestions on how to ensure MEAL is integrated into budgets, calendars and staffing plans.

By the end of this chapter, you will be able to:

- ✓ Identify and describe the purpose, process and content of key MEAL planning tools
  - Performance management plan
  - Indicator Performance Tracking Table
  - Feedback-and-response mechanism flowchart
  - Learning plan
  - Planning tools for MEAL communications
  - Summary evaluation table
  - Evaluation terms of reference
- ✓ Understand the various types of evaluation and the purpose of each
- ✓ Explain why MEAL planning is important and understand its relationship to broader project planning and project management.

Section A: MEAL planning tools

When you receive the good news that your project has been approved, your project team will need to plan the concrete, comprehensive and detailed activities related to MEAL in your project. You will need to answer the question, "*How will we collect, analyze, interpret, use and communicate MEAL information through the life of the project?*"

This section of Chapter 3 introduces a number of MEAL planning tools that help you answer this question to create a functioning MEAL system.

The size and complexity of your project's MEAL system—and the tools used to plan for MEAL—depend on a number of factors: How big the project is, its complexity, the risk inherent in its operating environment, the number of stakeholders involved, the budget you have to conduct MEAL activities, and the donor's MEAL requirements, if any, with which you must comply?

If a project is relatively small and uncomplicated, planning for MEAL could be as simple as completing several tables. However, as a project increases in value and complexity, the complexity of your MEAL planning tools will also increase. MEAL planning tools help your project meet the information needs of all project stakeholders, including project team members, community members, project participants and donors.

Figure 29: MEAL planning tools

Planning tool	Content
Performance management plan (or a monitoring and evaluation plan)	Builds on the Logframe, providing additional information on indicator definitions, data collection plans, means of analysis, and data use.
Indicator Performance Tracking Table	Helps teams track progress toward a project's indicator targets in an easy-to-read table format.
Feedback-and-response mechanism flowchart	Maps the flow of feedback from stakeholders and identifies how the project will respond to the feedback it receives.
Learning plan	Ensures learning activities are intentionally planned and managed throughout the life of the project.
Planning tools for MEAL communications	Identifies stakeholder information needs and helps ensure that MEAL communications are systematically planned and managed throughout the life of the project .
Summary evaluation table	Describes planned evaluations, including priority questions, timing and budget.
Evaluation terms of reference	Plans the specifics of an evaluation, including concise evaluation questions, proposed methods, and roles and responsibilities.

3.1 Performance management plan

The primary tool used for detailed MEAL planning is the performance management plan (PMP), also referred to as the monitoring and evaluation plan. All projects should have a PMP regardless of their size, complexity or value. PMPs tell you specifically what will be monitored and evaluated, and how these activities will take place.

While PMPs vary in format, regardless of the template you use, your PMP should answer the following questions:

- How are the indicators defined?
- Who is responsible for MEAL activities?
- When will MEAL activities take place?
- How will data be analyzed?
- How will data be used?

The format of the PMP should be simple and clear. It is most often a table, into which is first inserted relevant information pulled directly from the project Logframe, and then completed as the team plans its work in detail. If necessary, written explanations can be added as accompaniments to the PMP table.

Figure 30: Performance management plan template

Performance Management Plan								
Objectives statements	**Indicators (with definitions as needed)**	**Data collection**				**Means of analysis**		**Use of information for communication and decision-making**
		Method	**Frequency**	**Person who will collect data**	**Respondents (who to talk to)**	**Type of analysis**	**Subgroups (strata)**	
Strategic objective 1								
Strategic objective 2								
Intermediate result 1.1								
Intermediate result 2.1								
Output 1.1								
Output 2.1								
Key assumptions								
Assumption 1...								
Assumption 2...								

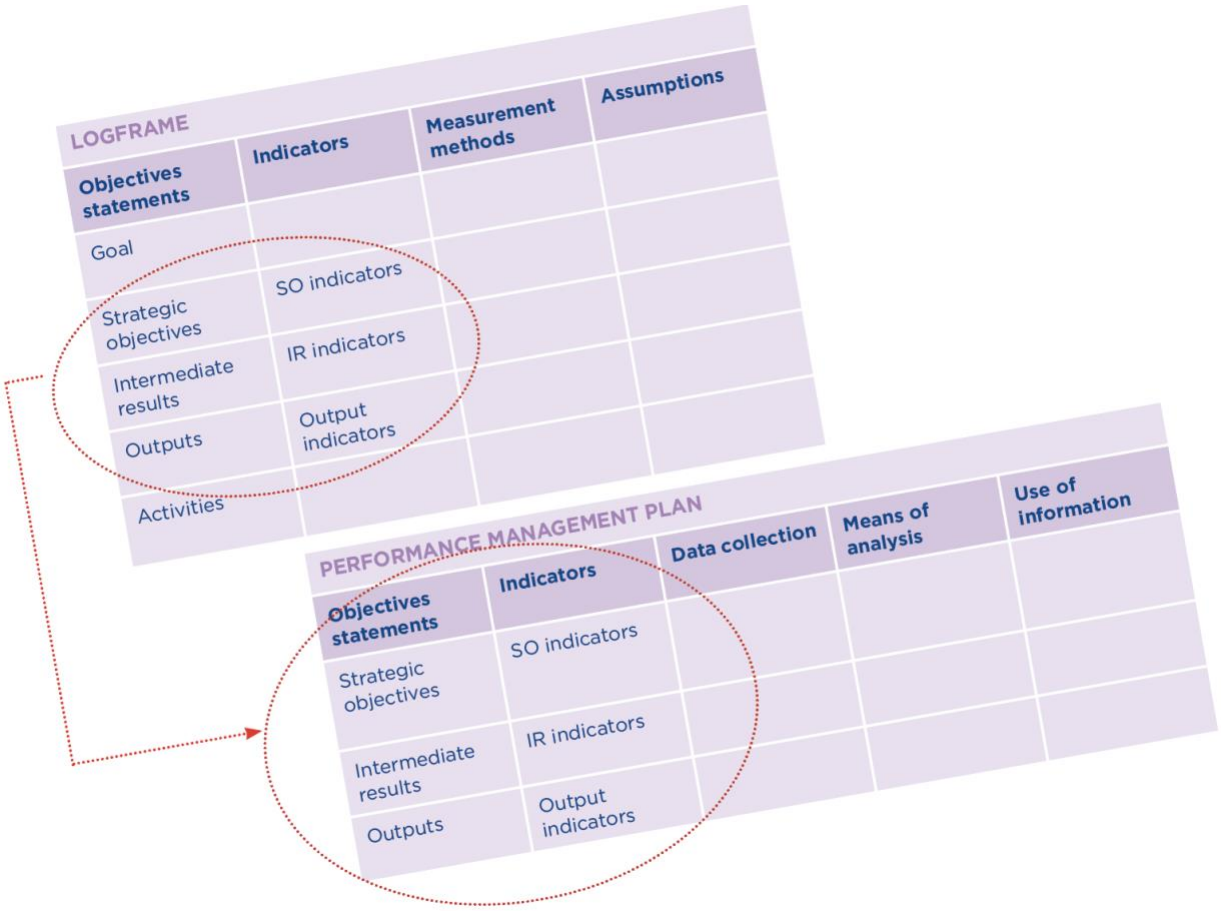
Note that the template above includes all the objectives statements from the Logframe as well as the assumptions. It is important that key assumptions are monitored during the project to check they are still valid. As mentioned previously, if evidence indicates that an assumption is invalid, you will need to explore options to redesign the project to address any resulting risks. Monitoring assumptions makes teams aware of these changes early enough to make project changes on time.

A more recent development across the aid community has been that some donors now require larger projects to include an annual reflection event during which the project's logic models will be revisited, including the assumptions underpinning project success, to determine if any modifications are necessary.

Objectives statements and indicators

The PMP uses the objectives statements and indicators pulled from the Logframe. However, the PMP does not usually include the goal or activities statements, for the same reasons the project Logframe does not include indicators for these statements: because it is unlikely your project will track progress against the goal or activities.

Figure 31: Translating the Logframe content into PMP objectives statements and indicators



When completing a PMP, first copy the results statements into the template from the Logframe. Next, import the indicators from your Logframe. As you import your indicators, review each one to confirm that the indicator is clearly defined. For example, the UNITAS Logframe includes several indicators that need to be further defined in the PMP. The example PMP in Figure 31 includes a small amount of space for these definitions. In practice, it is preferable to add definitions as an attachment to the PMP. Some donors require specific templates to be used for this purpose, such as the Performance Indicator Reference Sheet, or PIRS, requested by USAID.

Figure 32: Examples of PMP indicator definitions

Objectives statement	Logframe indicator	Indicator definition
IR 1: IDPs have improved access to adequate water supply	By Year 3, an average of 30 liters of water per person per day is available to IDPs through water points	The "30 liters of water per person per day" indicator is intended for domestic use only. Water use categories include: • 10 liters for drinking • 10 liters for cooking • 10 liters for personal washing The 30 liters is not intended to include water required for washing clothes, cleaning the home or growing food.
	Each quarter, 100 percent of water points managed by community water boards meet WHO water quality standards	The target for water quality should comply with national standards for the type and size of water point. Water quality is assessed by means of sanitary inspections and appropriate analytical measurements of total coliform and fecal coliform levels.
IR 2: IDPs improve their handwashing practices	By Year 3, 80 percent of IDPs self-report increased handwashing at critical times	Critical times include before handling food and after using the toilet.

Data collection: Methods, frequency, responsibility and respondents

The next step in the process is to complete the columns related to data collection.

- **Methods:** Measurement methods were identified when the Logframe was developed, so that information could be pulled directly into the PMP.
- **Timing and frequency:** You will now need to determine when and how often to collect data. The timing and frequency of data collection will be based on different factors, including:
    - Management and decision-making needs
    - Donor reporting requirements

- Seasonal considerations (this might include planting and harvest calendars, school schedules, weather patterns, and religious holidays)
- Estimates of how quickly change is expected to occur
- Resource availability

As you plan the timing and frequency of your data collection activities, it is also a good idea to think about how swiftly you expect change to occur. This will help you plan your data collection process strategically so that you can capture the change.

- **Responsibility:** Identify who is primarily responsible for collecting the data in question. As always, this allocation of responsibilities must be done in coordination with the general project implementation team and with any external stakeholders involved in the process.
- **Respondents:** Finally, identify and list your respondents. These are the people who can give you the most reliable data for each indicator. The PMP has space for a general statement of who you will interview to gather data for each indicator, such as "heads of households" or "women." The more detailed process of identifying these respondents is called sampling, which requires the support of an experienced MEAL practitioner with statistical knowledge. This process is covered more fully in Chapter 4.

Means of analysis

The next step in the process is to complete the columns related to the means of analysis.

- **Type of analysis:** This section of the PMP table asks you to think clearly about how you will analyze the data you collect. Different types of data are analyzed differently. Quantitative data are analyzed statistically, calculating cumulative numbers, averages, percentages, etc. Depending on the complexity of your project, you may need to indicate in your PMP what level or kind of statistical analysis you will conduct for each indicator.

  Qualitative data are analyzed using what is called "content analysis." This is a process of reviewing notes from focus groups and interviews to develop themes. Your PMP should indicate this type of analysis when your measurement method is a qualitative method.

- **Subgroups:** As you plan your data analysis, determine whether your information needs require the comparison of data from different groups of people taking part in your project. When you identify these different groups, or "strata," during your data collection design, you are then able to disaggregate the data each group gives you during analysis.

  > ***Disaggregation*** is the practice of dividing data collected from a population into groups according to key characteristics: gender, religion, age, etc. Disaggregation allows for the identification of trends, patterns or insights that would not be evident if the data was examined as a whole.

  Disaggregation improves the utility of data by increasing the ability to make meaningful comparisons. When analyzing disaggregated data, there are three simple comparisons you can make that can significantly improve your ability to use the data.

- Comparing across subgroups: Disaggregation can reveal how results for one subgroup compare with other subgroups.
- Comparing with previous periods of performance: Disaggregation can reveal if the trend of results for a disaggregated subgroup is moving in the expected direction.
- Comparing with targets: Disaggregation enables the setting of targets specific to each disaggregated subgroup.

Which subgroups do you need and when do you disaggregate data as part of your analysis? The answers to these questions are determined by what you need to know. Start by examining your indicators. They will help you understand whether you need subgroups. Depending on the indicator, you might choose to break down your population into subgroups related to class, educational attainment, ethnic affiliation, or community location.

For example, one of the UNITAS indicators states: "By Year 3 of the project, 75 percent of IDPs indicate water access meets their household consumption needs." The UNITAS team has decided that it needs to know more about the different kinds of households participating in the project and their different consumption needs. Thus, the subgroups incorporate household size, comparing data collected from large households (with 5 or more members) and small households (with 4 or fewer members.)

Decisions about subgroups must also be made with an understanding of the resources you have available for data collection and analysis. Adding subgroups to your collection and analysis plans can possibly double the time needed, given that you must ensure that you are completely representing each group in your data. Accordingly, these subgroups must be factored into the decisions you make about how to select the people from whom you collect data. Given the increase in resource requirements, make sure your subgroups are really needed to provide critical information, and that you are not collecting data that is simply "nice to know."

Note that some teams, depending on the size and complexity of the project, choose to create a separate analysis plan. This plan goes into much greater detail than the PMP, specifying critical questions (including monitoring, evaluation and learning questions), all the subgroups they need to study, and any special reporting requirements. Alternatively, if the team chooses not to make a separate analysis plan, they may simply elaborate on analysis activities in an attachment to the PMP.

Participation: Identifying respondents and subgroups?

Implementing partners and local contacts are often best-placed to identify the most appropriate respondents when collecting MEAL data. They are the ones that can answer questions like, "*Are respondents hard to reach?*", "*Do respondents provide as balanced, fair and accurate a perspective as possible on the indicators?*", "*What characteristics describe the typical respondent?*"

These considerations impact decisions you will make later in the planning process. For example, when you design your data collection tools, you will need to know whether your respondents are literate enough to complete a survey without support. If not, you must think about a different way to collect data from those respondents. They are also a factor in your decision-making about analysis, the next section of the PMP.

Furthermore, the selection of subgroups you will compare should reflect an understanding of the local context and the people your project is seeking to support. Project stakeholders can be an invaluable resource to help the team determine what comparisons are important in the context of the project?

Think of a time when you were challenged to identify the "right" respondents and subgroups to provide MEAL data.

- How would the process have been improved if you had involved community stakeholders?
- What would have been the best process to solicit community input?

Data use

Next, you complete the PMP table by adding details about how the collected data will be used. This section may be relatively straightforward if your project has simple needs regarding accountability and learning. In this case, the column can include simple statements such as "quarterly reporting," or "evaluation report," which meet your stakeholder information needs.

However, don't limit your data use only to reporting. Be sure to include uses related to learning, management decision-making, and communications. Ask yourself how your data will be used to inform decisions in regular management or project monitoring meetings, and how it will be regularly communicated to communities and other stakeholders.

Critical thinking: Using data flow maps to improve data use

When you begin a project, you make commitments to your stakeholders to report on certain indicators. These commitments define your information needs. By creating a data flow map, you identify the forms, collection processes and reports that will help you collect the data you need and meet your information-sharing commitments.

> ***Data flow maps*** illustrate the flow of data from each data collection form to the corresponding report.

Visualization will engage your team in the process and help you find gaps in your system; places where you may need to create a new form or report. And, it can help you find efficiencies; places where you can use one form to complete two reports.

The design of your data flow map largely depends on the complexity of the project. A single map may be sufficient for representing all the data flow relationships of less complex projects. But a complex project may require a separate map for each of its components.

To create a data flow map, follow these steps:

1. Identify all of your reporting requirements—internal and external—using the information in your PMP.
2. Document which indicators will be included in each report.
3. Map the data collection processes associated with each report, identifying which sources inform which reports.
4. Include who is responsible for data collection and reporting based on the information in your PMP.
5. Ensure that all reporting needs are met by the current data collection process and indicators, identifying opportunities to simplify the system where possible.

It is possible that the process of creating your data flow map will generate ideas to update reporting and data collection processes. This is not a problem. Instead, you have demonstrated how the PMP should be a living document, something that is updated as your understanding of the project and your information needs changes and grows.

The figure below shows a sample data flow map for the UNITAS project.

Figure 33: UNITAS data flow map

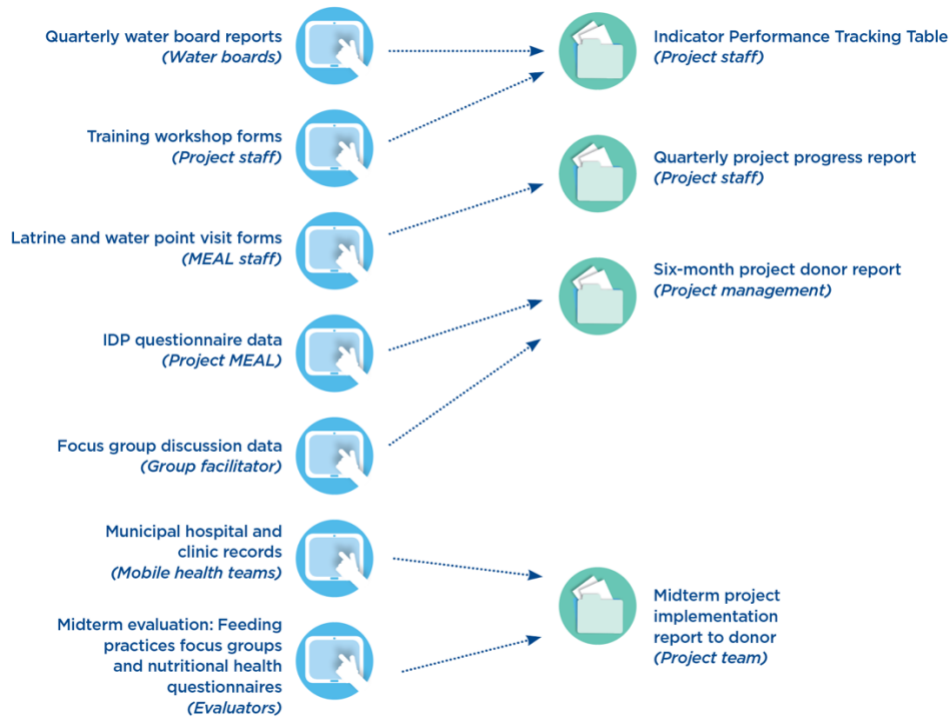


Figure 34: Delta River IDP Project performance management plan (partially populated)

UNITAS performance management plan								
Objectives statements	**Indicators (with definitions as needed)**	**Data collection**				**Means of analysis**		**Use of information**
		Method	**Timing and frequency**	**Who collects data**	**Respondents (who to engage?)**	**Type of analysis**	**Subgroups (strata)**	**Communications and decision-making**
IR 1: IDPs have improved access to adequate water supply	By Year 3 of the project, 75% of IDPs indicate water access meets their household consumption needs*	Question-naire	Annual	MEAL team leader	IDPs	Quantitative: Statistical analysis of satisfaction survey	Female- and male-headed households; large households (5+) and small households (4 or less)	Annual report to donor, annual implementing partner meeting, annual community information and feedback meeting
		Focus groups	Annual	Consultant	IDP household heads	Qualitative: Content analysis of focus group information	None	Annual report to donor, annual implementing partner meeting, annual community information and feedback meeting

* "meets consumption needs" is defined as enough for drinking, cooking and washing for the entire household.

3.2 Indicator Performance Tracking Table

Once your PMP is complete, the next challenge is to complete a tool that allows you to track the performance of your project by regularly documenting progress against project targets.

> ***The Indicator Performance Tracking Table (IPTT)*** distills the project's information into a short concise table format. It shows where the project stands with regard to its original and revised indicators, and shows progress achieved toward the indicator targets.[11]

The strength of the IPTT lies in its ability to:

- Provide a simple format to establish indicator targets and track progress against them over time.

[11] McMillan DE, Sharrock G and Willard A. 2008. *IPTT guidelines: Guidelines and tools for the preparation and use of Indicator Performance Tracking Tables*. CRS and American Red Cross.

- Improve accountability for tracking and reporting project progress.
- Compare the project's progress to other projects inside (or outside of) the organization.
- Compare actual versus expected performance and apply critical thinking to properly understand the evidence.

As with all MEAL tools, IPTTs can vary in format and content. Many donors require specific formats so that they can easily upload standardized information into their own analysis systems. Thus, it is important to comply with any donor requirements for your IPTT. Figure 35 shows a partially populated IPTT used for the Delta River IDP Project. It shows one or two indicators from each level of the Logframe for comparison purposes. A full IPTT should include all indicators for the project.

Figure 35: Sample IPTT for the Delta River IDP Project (partially populated)

	Indicator	**Baseline**	**Year 1**			**Year 2**			**Year 3**		
			Target	Actual	Variance*	Target	Actual	Variance	Target	Actual	Variance
Strategic objective: There is a reduced incidence of waterborne disease among IDPs	Incidence of waterborne disease among IDPs is reduced by 30% by end of Year 3.	1,200 patients treated for waterborne disease in calendar year 0.	↓10%			↓20%			↓30%		
Intermediate result 1: IDPs have improved access to adequate water supply	By Year 3, 85% of IDP households are located no more than 500 meters from a water point.	0%	20%			50%			85%		
Intermediate result 2: IDPs improve their handwashing practices	By Year 3, 80% of IDPs self-report increased handwashing at critical times	30% report washing hands at critical times	50%			65%			80%		0
Output 1.1: Community water boards establish water points in IDP communities	By Year 3, 40 water points established (4 per village)	0	10 Yr1 2-q1 2-q2 3-q3 4-q4			30 Yr2 5-q1 5-q1 5-q1 5-q1			40 Y 2-q1 2-q2 3-q3 4-q4		

Output 2.1: Volunteers improve knowledge of WASH principles	40 WASH volunteers pass the certification exam each year	0	40 Yr1 10-q1 10-q2 10-q3 10-q4			40 Yr2 10-q1 10-q2 10-q3 10-q4			40 Yr3 10-q1 10-q2 10-q3 10-q4		

* To what extent actual performance varies from expected level of performance.

As illustrated in Figure 35, the IPTT lists the indicators vertically, in the same order as the PMP. Horizontally, the columns include initial baseline measurements for each indicator and then provide progress status updates by reporting period, including targets, actual status and the difference (or variance) between expected and actual performance.

Note, that targets at different levels of the IPTT have different frequencies of data collection. At the output level, the annual indicator targets are broken down by quarterly metrics. This reflects that change happens more quickly at the output level and should be monitored more frequently for that reason.

Two key components of the IPTT are baselines and targets.

> ***Baseline*** The value of an indicator before the implementation of an activity, against which subsequent progress can be assessed.
>
> ***Target*** The specific, planned level of change to be achieved during the life of the project.

Ideally, all project indicators should have baseline data. Baseline data should be collected before implementation of an intervention and can be used to define targets. If performance indicator baseline data cannot be collected until later in a strategy, project or activity, the IPTT should document when and how the baseline data will be collected.

Baseline data can be generated from primary or secondary sources. Collecting primary source baseline data (where the project team does the collecting) is a complicated and time-consuming process. Not all projects are able to do this. Thus, it may be necessary to work with partners and stakeholders to construct baseline figures using secondary sources. In this case, data could be gathered using government statistics, information from a different project or partner, etc. The UNITAS project was able to conduct limited baseline data collection; secondary sources were also used to develop the baseline figures shown in the IPTT table above. Note that some of the baseline data for the UNITAS project will be zero, for example, “By Year 3, 40 water points established (4 per village).”

Targets identify the planned level of change—stated as a number or a percentage—you expect to see as a result of project implementation. All SMART indicators will have a target figure associated with them. Setting such targets requires collaboration among project staff and stakeholders.

Once the IPTT is completed, it should serve as an agenda point for implementation meetings, partner reflection activities, and management team meetings. For example, if you schedule a monthly meeting with partners to discuss implementation issues, one of your agenda items can be a review of the IPTT in which the latest monitoring figures have been entered.

3.3 Feedback-and-response mechanism flowchart

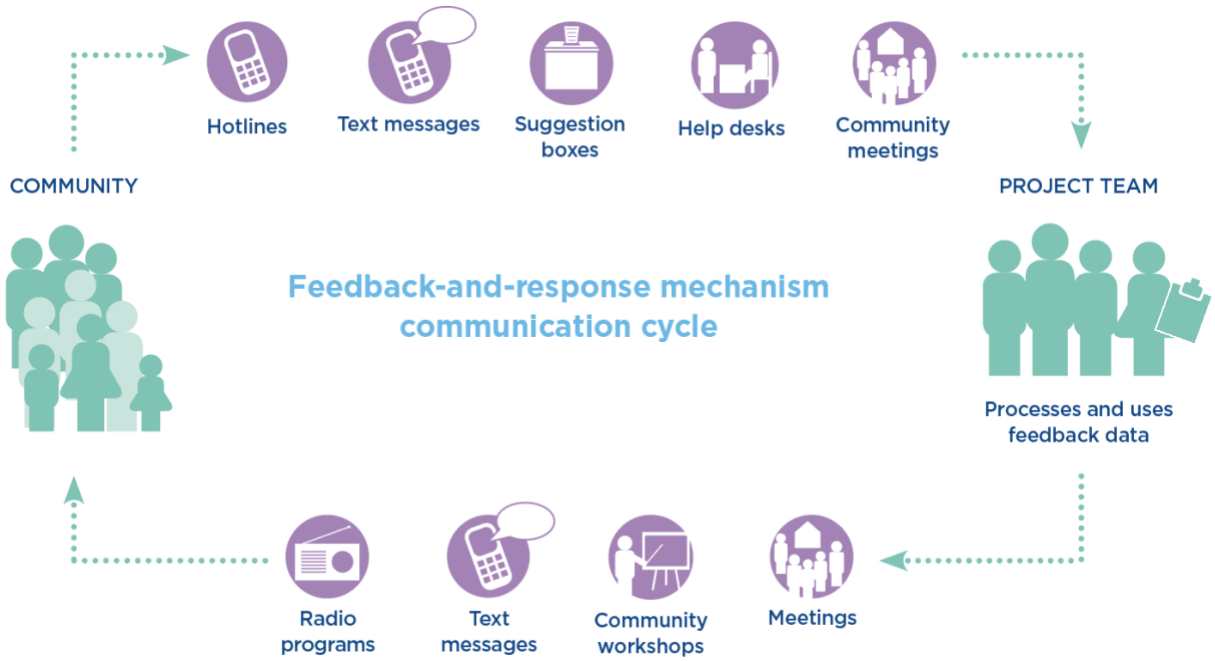
Feedback-and-response mechanisms, or FRMs, create communication loops that enable teams to receive feedback from the project participants and to respond in a timely way to their suggestions and concerns.

> ***Feedback-and-response mechanisms*** are two-way communications mechanisms designed specifically to gather and respond to feedback from your project participants and other community stakeholders.

The key to a strong FRM is ensuring that communication is flowing in two directions:

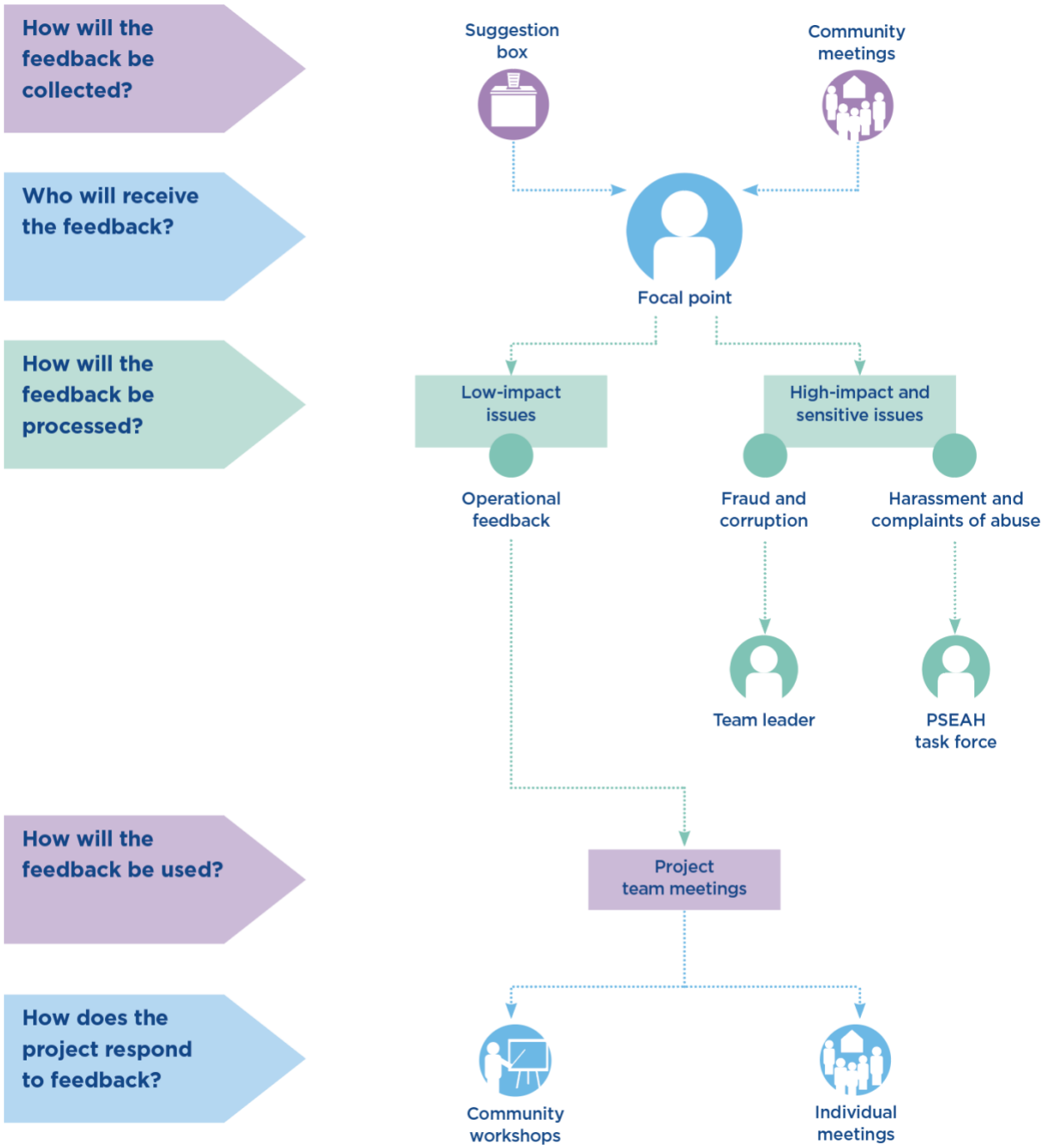
- **Feedback mechanisms** Communities provide feedback to the project team through channels that include meetings, suggestion boxes, hotlines and others.
- **Response mechanisms** The project team acknowledges receipt of the feedback and provides appropriate responses to the community.

Figure 36: Feedback-and-response mechanism communication cycle



To better understand how to design an FRM system, it is helpful to review an example. Figure 37 is an FRM flowchart for the Delta River IDP Project. It shows how the project collects feedback using community suggestion boxes and community meetings. It then maps out how the information is processed and used, and then how the project responds to communities and individuals.

Figure 37: Delta River IDP Project feedback-and-response mechanism flowchart[12]



[12] Adapted from: World Vision. *Process for handling community feedback: WVDF Typhoon Haiyan Response*.

As you review the flowchart, notice that it explicitly answers five critical questions about the design of the Delta River IDP Project feedback-and-response mechanism system.

1. **How will feedback be collected?**

   The Delta River IDP Project uses two mechanisms to collect feedback: suggestion boxes and regularly scheduled community meetings.

   When designing FRMs for your project, be sure to:

   a. Consult with community members to identify collection mechanisms that are appropriate to your project context and effective at collecting useful feedback.
   b. Ensure that feedback shared informally during field visits is also documented. For example, if a community member shares feedback outside of the context of a community meeting, it still needs to be documented.

2. **Who receives feedback?**

   The Delta River IDP Project identifies a project team member who serves as a focal point for the FRM system. The focal point is responsible for managing the FRM process.

   When designing FRMs for your project, be sure to:

   a. Identify and train one person to be the FRM focal point. Make sure that they are a strong supporter of the process.
   b. Ensure that the FRM focal point has FRM management included as an explicit responsibility in their job description.

3. **How is feedback processed?**

   The Delta River IDP Project uses various procedures for processing FRM data, depending on whether the feedback is sensitive or not. For example, low-impact issues and general operational feedback are processed by the FRM focal point. However, sensitive issues are escalated to a higher level. Issues related to fraud and corruption are processed by the team leader, and any feedback related to harassment or sexual exploitation are escalated to the UNITAS leadership and managed by a preventing sexual exploitation, abuse and harassment (PSEAH) task force.

   Document clear, formal and transparent internal procedures for processing feedback. Procedures should include guidance on which team members have the authority to act on feedback received and when. For example, the procedures should define which team members have the authority to respond to requests for information, investigate a complaint, refer a complaint, etc. The procedures should also include an appeals process for those who believe their complaint has not been appropriately handled.

   When designing FRMs for your project, be sure to:

   a. Identify and train the people responsible for processing different types of feedback. Note that the focal point dealing with low-impact issues will need one level of training,

while those processing high-impact, sensitive issues related to fraud, harassment and exploitation will need more advanced training.

b. Define how frequently feedback will be processed and by whom.
c. Identify where and how FRM data will be stored. An internal database should be created to help the team track feedback received and responses provided, and to monitor subsequent changes to the project.
d. Establish clear guidance on when and how to remove and destroy sensitive information to protect respondent privacy.

4. **How is feedback used?**
   The UNITAS team intends to use feedback received from communities through the FRMs alongside monitoring data as part of ongoing project coordination and planning meetings. This data is used to analyze trends, disaggregate feedback by gender, check on how vulnerable groups are impacted by the project, and more.
5. **How does the project respond to feedback?**
   Figure 37 maps out two response mechanisms that the Delta River IDP Project will use to respond to feedback. These include community workshops and meetings with individuals.

   When designing FRMs for your project, be sure to:

   a. Respond to all feedback received. In some cases, this will only require an acknowledgement of receipt, in other cases the response could be ongoing and complex.
   b. Ensure that response mechanisms are appropriate to your project context and the type of feedback received. This is especially true when feedback relates to fraud, corruption, harassment or sexual exploitation. In those cases, it is critical that the rights of the stakeholders be respected with regard to due process, safety, anonymity and confidentiality.
   c. Identify an appeals process in case you receive a second round of feedback from the community indicating that additional follow-up is required.

Once the FRM design is complete and procedures are documented, create specific, clear instructions on how communities can access and use the FRM. The instructions should be shared with communities through orientation sessions and with staff through training events so that everyone understands the process and use of the FRM.

3.4 Learning plan

As defined in Chapter 1, learning in the context of MEAL is about having a culture that encourages intentional reflection and processes that support this culture. All teams learn as they implement project activities. But to take advantage of this learning and consistently translate it into improved practice for your project, your organization and your sector, learning must be planned and managed.

One of the reasons why learning is especially important in development and humanitarian relief projects is because frequently the work takes place in dynamic environments of instability and transition. Even in

more stable contexts, conditions change and may affect programs in unpredictable ways. For projects to be effective, teams must be able to adapt in response to changing contexts and new information. The ability to adapt requires an environment that promotes intentional learning and flexible project design, minimizes the obstacles to modifying projects and creates incentives for adaptive management.

> ***Adaptive management*** is an intentional approach to making decisions and adjustments to the project in response to new information and changes in context.[13]

While adaptive management focuses primarily on project learning, the information you generate from project MEAL systems can also be used to help the larger organization learn and change.

> ***Organizational learning*** is the process by which an organization discovers and adapts to new knowledge.

There are three concepts that contribute to organizational learning, all of which are intrinsically linked to your MEAL processes.

- **Knowledge creation:** New knowledge is created by combining new information (the data you are collecting through your MEAL processes) with existing knowledge, or by discovering new ways of organizing existing knowledge.
- **Knowledge transfer:** An organization doesn't learn until knowledge is transferred agency-wide. Knowledge transfer can be person-to-person and through knowledge platforms that are used to share information across programs, offices and locations.
- **Knowledge retention:** Organizational learning happens when new knowledge is embedded into processes and activities, at the project, organizational and sectoral levels.[14] This is why the MEAL cycle is circular, to support a process of embedding learning into the work of the organization.

Project MEAL systems have the potential to be a foundational input into the organization's learning strategy. The data collected, analyzed and communicated through your project are an invaluable input to inform organizational learning. However, for this to happen, you need to make connections between your project MEAL plans and the learning needs of the larger organization. Questions to ask as you make these connections include:

- Are there learning questions that the organization is trying to answer as part of a larger organizational learning agenda that could be informed using evidence from our project?
- Are there standard organizational indicators that we need to include in our MEAL system design to ensure that our data are consistent and comparable to data from other projects?
- If so, are those activities in our project PMP, communications plan, and summary evaluation matrix?

[13] USAID Bureau for Policy, Planning and Learning. 2018. *Discussion note: What is adaptive management?*
[14] USAID. 2015. *Measuring impact. Making use of the portfolio: Organizational learning at USAID*.

Critical thinking: Organizational learning agendas

Often the terms *learning plan* and *learning agenda* are used interchangeably. However, the two concepts have different meanings.

A **learning plan** is focused on learning processes at the project level and how they might be supported by improvements in knowledge creation, capture, management and sharing.

A **learning agenda** is a set of broad questions directly related to the work that an organization conducts that, when answered, enable the organization to work more effectively and efficiently. A learning agenda includes:

1. A set of questions addressing critical knowledge gaps.
2. A set of associated activities to answer them.
3. Products aimed at disseminating findings and designed with usage and application in mind.

- Do you work with an organization or donor that has a learning agenda?
- How do you align and integrate your MEAL systems to contribute to the larger learning agenda?

Finally, project MEAL can also contribute to sectoral learning, i.e. learning within a particular subject area, or sector.

Traditionally, organizations have shared project learning with the sector through activities that include making evaluation reports available publicly; documenting best practices in cases studies and white papers; publishing academic papers; and presenting results and lessons learned at conferences. More recently, with the advent of the internet, organizations share sectoral knowledge through a variety of digital platforms. For example:[15]

- Practitioner networks can gather in online communities of practice to exchange the latest findings from research and practical experiences. (This guide encourages all project staff to join such online MEAL communities, for example, to keep abreast of the latest developments in MEAL.)
- Massive open online courses, or MOOCs, and open learning platforms increasingly provide advanced opportunities for learning and sharing at scale.
- Social media have become powerful conduits for knowledge sharing.

Planning for learning means that you are intentional about how and when you will learn and contribute to sharing that learning across the organization and sector. As you do this planning, include investment in, and activities related to, the following four areas:

- A culture of learning

[15] Janus SS. 2016. *Becoming a knowledge-sharing organization: A handbook for scaling up solutions through knowledge capturing and sharing*. International Bank for Reconstruction and Development/The World Bank: Washington DC. License: Creative Commons Attribution CC BY 3.0 IGO.

- Embedded learning processes
- The capacity of staff and partners to learn
- Sharing learning

Figure 38: Practical examples of how to plan for and invest in learning

A culture of learning	• Promote an environment that encourages open, honest relationships and a commitment to continual learning and improvement. • Create a safe space to constructively challenge assumptions. • Identify and support critical thinkers and encourage their active participation in MEAL processes. • Identify the specific learning attitudes, skills and knowledge that your project needs to promote continual learning.
Embedded learning processes	• Include "learning and reflection" as an agenda item for all MEAL team and project-related meetings. Your MEAL tools, such as the IPTT, are a good starting point for these discussions. • Include learning prompts in regular monitoring tools designed as part of your MEAL data gathering system. • Incorporate after action reviews, learning-to-action discussions and other learning events as part of key implementation activities.[16]
The capacity of staff and partners to learn	• Identify specific training activities for staff, partners and other stakeholders in basic principles and practices of learning and adaptive management. • Ensure that staff are trained in facilitating intentional group learning processes.
Sharing learning	• Coordinate sharing activities with wider communications planning so that learning is included in meetings or conferences, published reports, or information-sharing tools that are appropriate to your context.

Critical thinking: Learning-to-action discussions

One way to practice adaptive management and plan for learning is to include learning-to-action discussions, or LADs, as part of project activities.

> ***Learning-to-action discussions*** are specifically planned discussions that bring staff together to reflect on data and understand project progress. They take place throughout the data collection process.

When LADs are explicitly integrated into the MEAL system, project teams and their partners can proactively use MEAL data to understand how well the project is proceeding, to identify the factors

[16] For more information on after action reviews, see USAID. 2013. After-action review guidance.

enabling or inhibiting progress, and to inform decisions about future direction. Teams do not need to wait for a full sample of MEAL data to be collected before conducting a LAD. Ongoing checks are useful to spot early signals of opportunity or risk while they can still be addressed.

It can sometimes be difficult to introduce a culture of adaptive management into projects. At times, the project funding and donor environment can inhibit the kind of flexibility that may be needed. It can be challenging to negotiate changes to project deliverables, indicators, approaches and logic models. Furthermore, learning activities—and MEAL in general—can be viewed as an overhead expense that lacks resources in the project budget.

While many donors are now recognizing the need to be more flexible in the way they work with implementing partners to design and fund projects, change in this regard will take some time to be fully realized.

Documenting your plans for learning is critical to making sure learning happens. Documentation helps you turn good intentions into practical action. As with many of the tools described above, the tool you use to document your learning planning varies depending on your context (resources, requirements, etc.). No matter what tool you use, your learning plan should include:

- **Activity or process:** A concise description of the specific activity or process.
- **Roles and responsibilities:** The roles and responsibilities of the office or staff member responsible for leading the activity or process.
- **Expected outcomes:** The intended outcome for each action item describing the anticipated changes resulting from implementing the identified activity or process.
- **Timeline:** The key milestones and deadlines for the activity or process. This timeline should be linked to project implementation calendars.
- **Resources:** The resources (including staff time, mechanisms, implementing partners, funding, etc.) needed to implement the action item. This planning should be completed in coordination with overall project planning to make sure these resources are made available.

Figure 39: Learning plan template

Activity or process	Responsible	Expected outcomes	Timeline	Resources
Improving the learning culture				
Embedding learning processes				

Investing in the capacity to learn				
Encouraging the sharing of learning				

3.5 Planning tools for MEAL communications

Ideally, all projects will create a communications plan that serves as the principle tool for bringing greater intentionality to meeting stakeholder information needs.

> ***Communication plan*** Defines who needs to be aware of and informed about the project MEAL activities, what they need to know, how and how often information will be distributed, and who will be responsible for the distribution.

Your communication with communities and partners should reflect the information needs of the audience you are trying to reach and the channels and formats tailored to their context. The general contents of a communications plan should include the following information: target stakeholder, information needs, communications methods and timing.

> ***Target stakeholder:*** Who needs to receive MEAL communications? It is not unusual for a project to have many stakeholders, some more pivotal than others. Stakeholders have different information needs and different communication preferences. Each will require information provided in a way or ways that are appropriate to them.
>
> ***Information needs*** What does each audience need to know? Good communication requires an understanding of the stakeholder and their information needs. Some examples of stakeholder information needs include:

- Project goals and objectives, including project targets and who will receive support
- Access to and use of feedback-and-response mechanisms
- Project progress, changes and updates
- Results of learning efforts

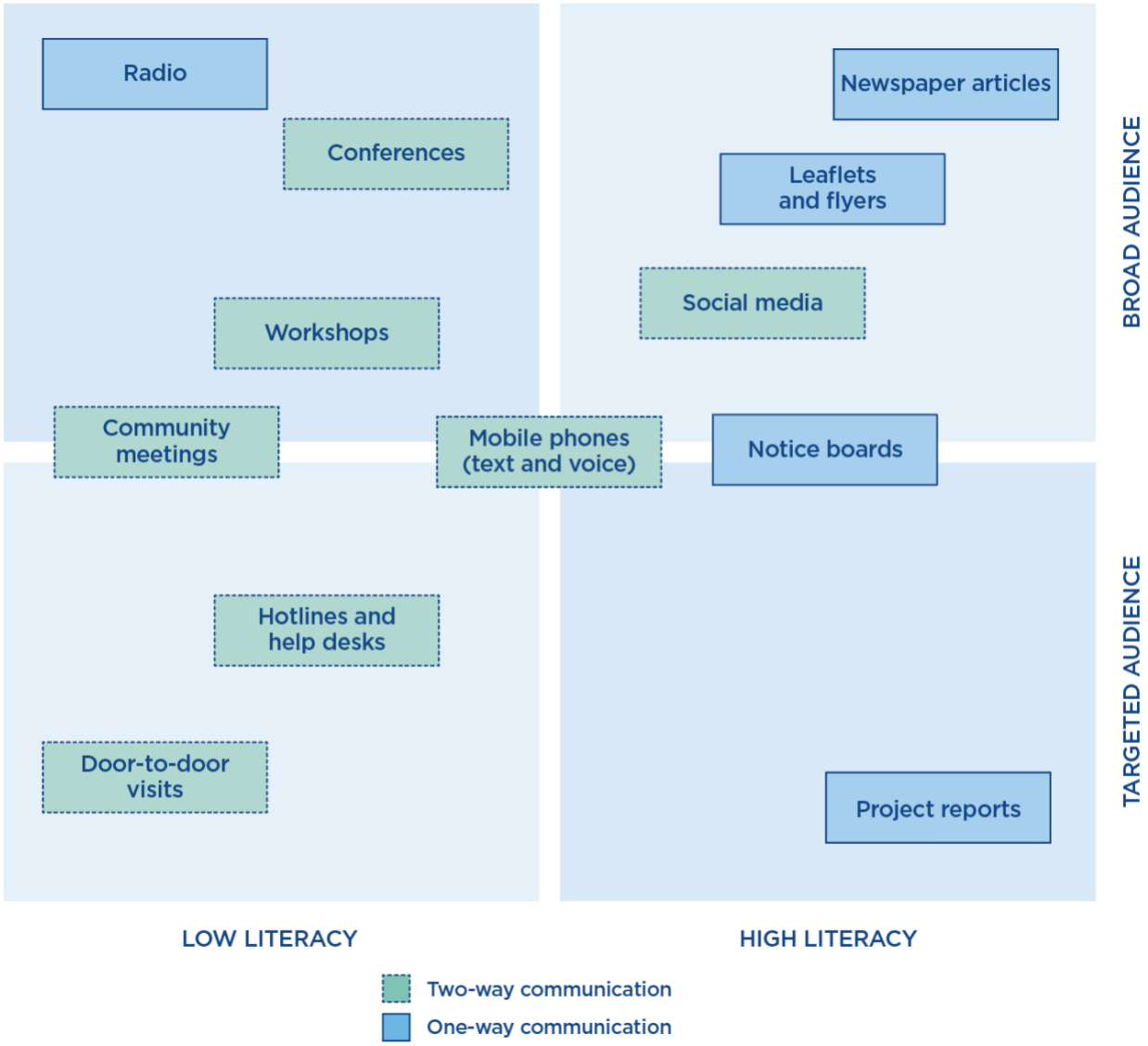
Communications methods: Information should be as accessible as possible. The most effective communications methods will be designed with the stakeholders' preferences in mind. It can be very helpful to consider issues such as "*What are the literacy levels and preferred language?*" "*Do stakeholders have access to technology?*" "*How broad an audience are we trying to reach?*"

Don't assume that a single communication method will work for all stakeholders. For example, your donor will require information through written reports. However, the format used for written donor reports will often be inappropriate for other audiences due to their language, length, level of detail, etc. So, be creative when identifying the best ways to communicate. For example, community members who cannot read or write will require information using diagrams at community meetings, whereas youth in the community may prefer to receive the same information in mobile text messages.

Figure 40 identifies possible communication methods, categorized by:

- Literacy requirements (low literacy/high literacy)
- Size of the audience (broad/targeted)
- Whether they promote one-way presentation of information, or two-way exchange of information.

Figure 40: Project communication methods



Timing and frequency: All communications should be planned in accordance with the overall implementation team and calendar. This will allow for enough time to communicate effectively.

Figure 41 shows the communications plan for the MEAL components of the Delta River IDP Project.

Figure 41: Communication plan (MEAL components)

Target stakeholder	Information needs	Communications methods	Timing and frequency
Donor	• Updates on progress against objectives and requirements identified in the donor contract.	• Donor update report • Evaluation report	Twice yearly (March and October)
Regional technical office	• Share learning. • Report progress against standardized WASH indicators.	• WASH reporting template	Yearly (June)
Ministry of Health	• Updates on progress against strategic objectives and intermediate results.	• Quarterly meetings • Information sheets	Quarterly (March, June, Sep, Dec)
Project team and implementing partners	• Monthly updates on status of indicator performance. This information is used to monitor progress and inform decisions.	• Indicator Performance Tracking Table • Monthly meetings	Monthly
IDPs	• Project initiation information related to scope, targeting and exit strategy. • Project MEAL updates related to progress against objectives, participation opportunities, and feedback-and-response mechanisms. • Project close-out information.	• Community visits • Community meetings and related materials	Quarterly (Jan, Apr, Jul, Oct)
Host community members	• Information related to project goals and objectives. • Project participant criteria.	Radio programs	Yearly

As you review your communications plan, be sure that it addresses all of the stakeholders that need information from the project. The communications plan should not only focus on promoting accountability to funders and others in the organizational hierarchy (by generating reports and scheduling events), but also ensure that you are communicating in ways that promote accountability to communities, implementing partners and other stakeholders, by updating them on the progress of your project activities. Remember those who are at the center of what you do. It is important to communicate with stakeholders to ensure that your projects are:

- **Transparent:** Effective communication with communities ensures they have access to timely, accurate and relevant information in languages and formats and on relevant channels that are culturally appropriate and accessible to different groups.
- **Participatory:** Establishing and sustaining multiple inclusive channels for sustained dialogue strengthens the engagement of communities in programming.
- **Responsive:** Projects need to be responsive to the information needs of communities, partners and other stakeholders. Be sure to consult with your primary users and stakeholders to determine when and in what form they want to receive information.

3.6 Evaluation planning

All projects should include some sort of evaluation activity. Small projects may choose a very light, simple evaluation. Other projects—especially large, multi-year initiatives—commit to conducting more complex evaluations in addition to the regular monitoring activities identified in the PMP. Projects that do not include a formal evaluation should, at minimum, plan for an after action review.

Evaluations are complex and can be both time-consuming and costly. Thus, planning is essential to make sure you are using your resources wisely while meeting your information needs. The type of evaluation you do and the timing of your evaluation(s) will be dictated by your information needs and the related evaluation questions you identify. Figure 42 identifies evaluation types according to when they occur during the project cycle.

Figure 42: Evaluation types

Type	Purpose	Timing
Formative	Improve and refine an existing project.	Early in project implementation, up to the midpoint.
Process	Understand how well a project is being implemented (or was implemented) particularly if you want to replicate or enlarge your response.	During project implementation (often at the midpoint) or at the end.
Impact or outcome	Assess how well a project met its goal to produce change. Impact evaluations can use rigorous data collection and analysis, and control groups.	At project end. Also requires baseline data gathered at the beginning of implementation and regular, rigorous monitoring activities.
Summative	Judge the performance of the project.	At project end.
Ex-post	Assess the long-term sustainability of the project.	After the project's formal end date, sometimes 3 to 5 years later.
Developmental evaluation	Used to design a response to a known need, particularly in complex situations, where response approaches are being tested. It supports creative, innovative approaches and provides real-time	Continually throughout project implementation.

	feedback to inform ongoing project design.	
Empowerment evaluation	An approach that seeks to improve project implementation by providing project participants themselves with the tools to evaluate the planning, design and implementation of the project.	Throughout project implementation in the sense that participants require training and facilitation in evaluation tools. The evaluation becomes part of project implementation.
Meta evaluation	A systematic and formal evaluation of evaluations. Examines the methods used within an evaluation or set of evaluations to bolster the credibility of findings. Often used in policy-making settings.	External to project implementation cycle.

Note that the data collection methods used in each type of evaluation vary. Some evaluation types rely more on quantitative data while others rely more on qualitative data. The gold standard for selecting methods is to choose the most appropriate method to meet the objectives of the evaluation. Many evaluations use a mix of methods to gather the information needed to answer the relevant questions.

Summary evaluation table

Once you are clear about the type(s) of evaluation you will conduct, you can begin filling out the summary evaluation table, or SET. The table should be completed at the beginning of your project and begins to build out the details of the evaluations your project intends to conduct. The table uses a template similar to the one found in Figure 43.

Figure 43: Example summary evaluation table

Evaluation purpose (performance, impact, etc.)	**Priority evaluation questions**	**Timing (midterm, final, etc.)**	**Anticipated evaluation start and completion**		**Evaluation budget**
			Start	**End**	

You begin completing the table by identifying the types of evaluation you intend to conduct and the purpose of the evaluation. For larger projects, there might be multiple evaluations.

Next, you need to identify the priority evaluation questions that your evaluation(s) will answer. A preliminary step when identifying evaluation questions is establishing your evaluation criteria.

Evaluation criteria are a set of principles that guide the development of evaluation questions and the overall evaluation planning process.[17]

Some of the most commonly used evaluation criteria come from the Organization for Economic Cooperation and Development (OECD).[18] They include:

Relevance The extent to which the project is relevant to the priorities, needs and opportunities of the target group, recipient and donor.

Efficiency The extent to which the project uses the least costly resources possible to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.

Effectiveness The extent to which a project attains its objectives.

Impact The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended.

Sustainability The extent to which the benefits of a project are likely to continue after support (monetary and non-monetary) has been withdrawn.

If your donor has requested a certain type of evaluation and included related funding, then you will need to consider those requirements as you establish your evaluation criteria.

Once you have identified your evaluation criteria, you will need to identify the concrete evaluation questions that drive your evaluation.

Evaluation questions are clear statements of what you need to know from the evaluation.

The questions you ask will vary depending on the evaluation criteria you explore. Figure 44 provides examples of evaluation questions by OECD/DAC criteria area.

Figure 44: Evaluation questions by OECD/DAC criteria area[19]

Criterion	Illustrative question
Relevance	• Did the initial needs assessment identify priority community needs? • Did the assessment differentiate between the needs of men and women, and between more vulnerable and less vulnerable households? If so, how? If not, why not? • Has the project met the specific needs and priorities of women? Why or why not? • Is the project design appropriate for meeting the community's priority needs? • Did the targeting strategy allow the project to meet the greatest need in the community (i.e., the most vulnerable households or individuals)? Why or why not? • Was community participation sufficient throughout the needs assessment, design, implementation, and monitoring and evaluation of the project? Why or why not? If not, how can participation be increased during the remainder of the project (for midterm evaluations) or in a future project (for final evaluations)?

[17] Peersman G. 2014. *Methodological briefs: Impact evaluation No. 3. Evaluative criteria*. UNICEF.
[18] Organization for Economic Cooperation and Development. *DAC criteria for evaluating development assistance*.
[19] Hagens C, Morel D, Causton A and Way C. 2012. *Guidance on monitoring and evaluation*. Catholic Relief Services.

Efficiency	• Did the project achieve its planned outputs (according to the detailed implementation plan) on the planned timeline? Why or why not? • Did the monitoring and evaluation system provide the right information at the right time to allow for timely project management and decision-making? Why or why not? • Has working in partnership increased the effectiveness and quality of the project? Why or why not? • Has the project been effective in building partner capacity? If so, how has partner capacity been built? If not, why not? If not, how can this be improved for next time?
Effectiveness	• Are the project's staffing and management structures efficient? Why or why not? • Did the project staff have enough capacity to implement a high-quality project? Why or why not? • What was the cost per project participant? Is this reasonable given project impact? Why or why not?
Impact	• Has the project achieved its planned impact (refer to Logframe indicators to determine planned impact)? Why or why not? • Did impact vary for different targeted areas, households or individuals (e.g., men and women)? If so, how and why? • Was there any unintended impact from the project, either positive or negative? What impact was most valuable to participating communities? Why?
Sustainability	• What is the likelihood that the community will be able to sustain the impact of the project? How do you know? • What has the project done to support community structures or groups to be able to continue to address community needs and sustain project impact? Is this sufficient?

Once you are clear on the type(s) of evaluation and the evaluation criteria, you can provide high-level estimates of the evaluation calendar and evaluation budget.

Evaluation terms of reference

The evaluation terms of reference, or ToR, is a planning tool that is developed directly before the evaluation is conducted. It is much more detailed than the summary evaluation table and becomes a planning document for the evaluation itself. If your project intends to conduct multiple evaluations, a separate ToR will be needed for each evaluation.

As your evaluation approaches, those tasked with managing the evaluation(s) should allow plenty of time to collaboratively complete the ToR. Collaboration is important because it helps ensure that all stakeholders' information needs are addressed by the evaluation. And, it is an opportunity to clarify and agree on stakeholder expectations regarding data collection, analysis and use. If expectations are not clearly understood, you may find that your evaluation sits in a drawer because it did not meet stakeholder expectations in terms of design, implementation or decision-making.

Collaboration with the wider project team is also helpful because it allows you to ensure that the project budget and calendar include the time and resources you will need to conduct your evaluation.

Terms of reference are important whether you plan to hire an external evaluator or use an internal evaluation team. The ToR clearly explains the project, your evaluation purpose, evaluation questions, and

the methods you suggest for collecting data to answer those questions. It can be a useful management tool, both internally and externally.

An evaluation ToR should include the following information:

Project introduction and background: Briefly describe the project, its implementation period, funding sources and amounts, and any other relevant information. Summarize the project, the problem that it seeks to solve, and its intervention strategy. Also include a description of what baseline and monitoring data already exist.

Evaluation purpose, audience and use: This is an extremely important section. It explains why you are conducting the evaluation, who will be using it (internally and externally) and how it will be used. Being clear and specific in this section increases the chances that your evaluation results (and any reports you generate) will be relevant and timely to your internal and external stakeholders. To create this section, review your communications planning tools to refresh your understanding of your stakeholder information needs. Then, consider how you can present evaluation results to those stakeholders using methods appropriate to each.

Evaluation criteria and questions: Review the evaluation criteria and questions that were originally included in the summary evaluation table. It is likely that the questions will need to be updated based on your experience, monitoring results and implementation challenges. Be realistic about the number of questions you include in your evaluation ToR. Include only the questions that you need to answer and that can be realistically answered within the timeframe and budget available to you. Your MEAL specialists and stakeholders can help you narrow down the list.

Methodological approach: Many ToRs include a basic description of a suggested approach that incorporates the monitoring processes and data already in place and suggests supplemental ideas. If your donor has requested a certain type of evaluation and included related funding, then you will need to specify those requirements here. If you're using the TOR to hire an external consultant, you may want to request that they suggest methods with which they are experienced. Any methods chosen must be linked to the questions that need to be answered. It is likely that a variety of methods will be needed to meet information needs, resulting in the mixed-methods evaluation that is often recommended. Finally, include a section about how you expect data to be analyzed (this information can partially come from your PMP).

Evaluation roles and responsibilities: Describe the various roles and responsibilities of the evaluation team. Describe how a potential external evaluator or evaluation team will communicate with the project and MEAL teams. Also, be sure to include detail about data collection, data analysis and report-production responsibilities.

It is useful at this stage to be specific about how you expect partners and local stakeholders to be involved in the evaluation. Stakeholder involvement in the evaluation process itself enables them to own the findings, thereby increasing the chances of high-quality data and follow-up.

Evaluation deliverables and timeline: State specifically the timeline of the evaluation and when different components are due. Plan time for document desk review, fieldwork, data analysis, and report writing. Be sure to include time for stakeholder feedback and response.

Evaluation logistics and other support: Include details about logistics and support to the evaluation team. Indicate whether support will be forthcoming from local partners, particularly in terms of data gathering. If necessary, allow extra time when conducting more complicated evaluations to design samples, and finalize databases and data entry plans.

Section B: MEAL in project management

As your team plans for MEAL, it is critical that these plans are aligned with, and embedded into, the larger project's budget, timeline and staffing requirements. When MEAL activities are overlooked during the creation of wider project management plans, any number of issues can result, including inadequate budget and staff resources to conduct MEAL activities, and scheduling conflicts between MEAL activities and other project implementation activities.

The most important input when developing budgets and calendars for MEAL is a comprehensive and detailed list of project MEAL activities. If you have completed the planning tools in Section A of this chapter, you will have already identified many of these activities. The performance management plan and the summary evaluation table will be especially helpful; however, other documents like the learning plan and the communications plan will also be important to consult.

3.7 MEAL in the project calendar

When developing the calendar for MEAL activities, the MEAL team should list all the MEAL activities included in the planning documents. The list should include all monitoring visits, evaluation activities, learning initiatives, feedback-and-response mechanisms, communications efforts, and any reports that need to be created. Working from this information, build a Gantt chart specifically for project MEAL activities.

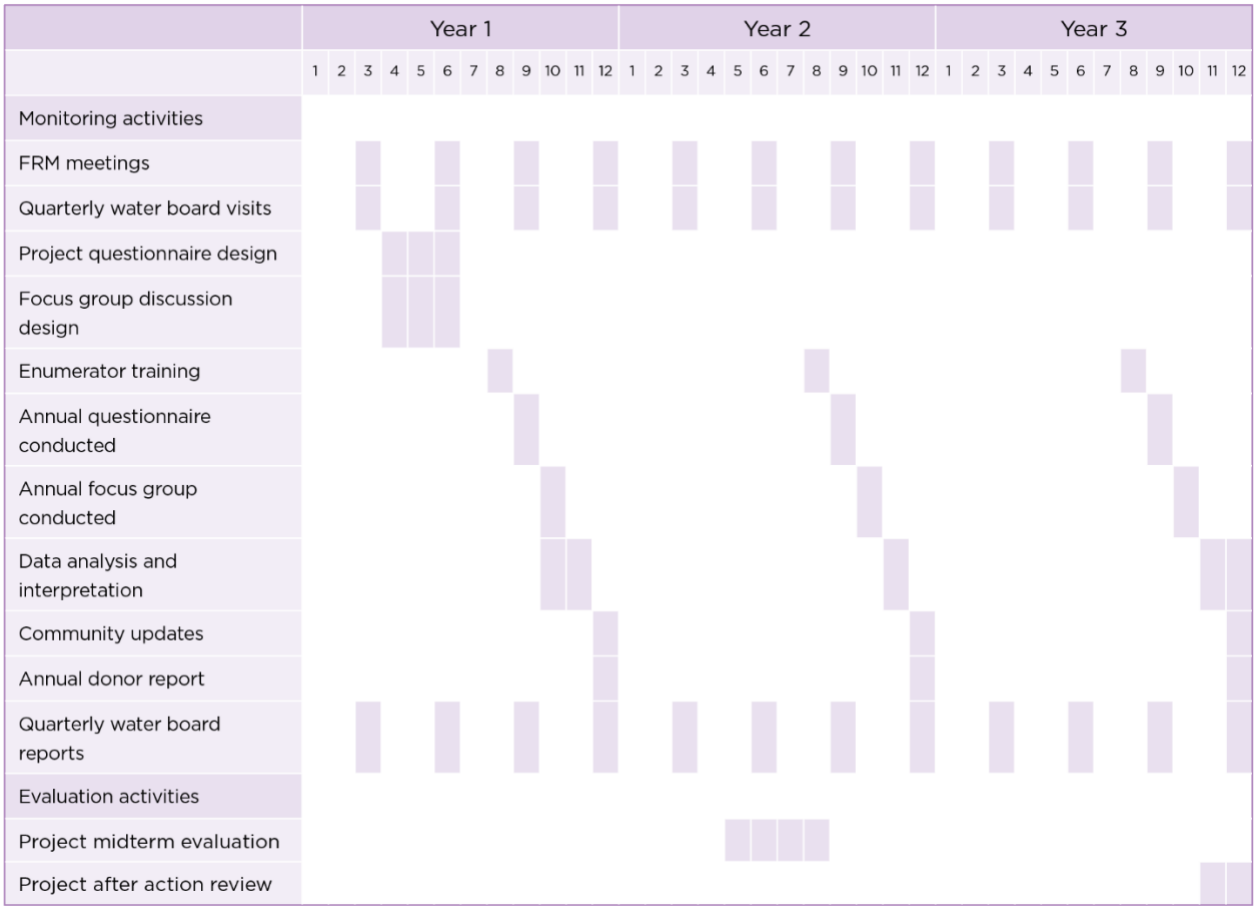
Gantt chart A bar chart that illustrates a project schedule, identifying the start date, end date and expected durations of all activities.

It is especially important that the project team works collaboratively with other stakeholders as they develop the MEAL Gantt chart. Using a participatory approach to scheduling helps identify opportunities for scheduling efficiencies, and reduces the risk of scheduling conflicts between MEAL activities and other project implementation activities.

Figure 45 shows an example Gantt chart for the first 3 years of MEAL activities for the Delta River IDP Project. The Gantt chart includes both the monitoring and evaluation activities for the project. This list of activities is pulled from the performance management plan, the summary evaluation table and the

communications plan for the project. Activities listed in those documents include feedback-and-response mechanism meetings, quarterly water board visits, annual focus group discussions, annual questionnaires, a midterm evaluation and an after action review.

Figure 45: Delta Region IDP Project MEAL Gantt chart



3.8 MEAL in the project budget

Budgeting for MEAL is usually an iterative process. The initial step toward establishing the MEAL budget takes place when the original project proposal is developed. This original budget is a high-level estimate of costs based on initial estimates of the MEAL activities that will be conducted.

After the proposal is approved, a more detailed budget needs to be created. Detailed budgets are often activity-based. This means that the project creates accurate and complete budget estimates by systematically listing, quantifying and costing out all the resources (e.g. staffing, materials, equipment and travel) that are needed to run the MEAL activities for the project. These MEAL activities are found in the MEAL planning documents and the MEAL Gantt chart.

It is important to consult with the budget and human resources offices within your organization to verify and understand your particular budget process, rules and policies. Similarly, review any donor requirements and regulations related to project MEAL.

The Delta River IDP Project MEAL budget is based on the activities listed in the project Gantt chart. The budget template is activity-based, providing budget estimates for the monitoring activities, midterm evaluation activities and the after action review activities listed in the project Gantt chart.

Figure 46: Delta River IDP Project MEAL budget

MEAL Summary Budget Years 1-3			
Budget description		Total (US$)	Notes
Monitoring activities (FRM meetings, water board visits, questionnaires, focus group discussions)			
Staffing	MEAL specialist	15,000	25% of time
	Recruitment	700	Cost of advertising 11 positions in print and online
	Enumerators	2,000	5 enumerators; 2 weeks full-time equivalent
	Enumerator training	600	Training on survey, focus group data collection technology
Equipment	Qualitative analysis software	1,000	CAQDAS software license
	Digital enumerator devices	1,200	Devices for questionnaire and focus group data
Materials and supplies	Meals for team-led meetings	2,000	10 meetings x $200 per meeting
	Office supplies	650	
Travel	Fuel	1,000	Monitoring visits
	Vehicle maintenance	3,000	Cost of vehicle running (insurance, maintenance)
	Food and accommodation	1,400	Enumerator accommodation
	Per diem	2,000	Monitoring visits per diem
Midterm evaluation			
Staffing	External consultants	10,000	2 weeks full-time equivalent
	RFP process	500	Cost of advertising 11 positions in newspaper and online
Materials and supplies	Office supplies	300	
	Printing	650	Evaluation report
Travel	Fuel	300	Evaluation report
	Vehicle expenses	500	Cost of vehicle running (insurance, maintenance)
	Accommodation	1,500	Evaluation field visit accommodation
	Per diem	1,000	Evaluation field visits per diem
After action review			
Materials and supplies	Accommodation	300	Facilitator accommodation
	Food	500	After action review workshop food
TOTAL		**46,100**	

As you review the Delta River IDP Project budget, notice that the team has categorized the expenses for each of the MEAL activities areas into three cost categories: staffing, travel, and materials and supplies. Staffing is by far the largest cost category. When it comes to estimating staff requirements for MEAL, your staffing needs will depend on the size and complexity of your project, your MEAL system, and the budget you have available.

Critical thinking: Staffing for MEAL

When budgeting for MEAL, clearly identify your MEAL staffing strategy so that your budget estimates are accurate and comprehensive. Ask the following questions as you develop the MEAL staffing strategy:

- Do we intend to hire MEAL specialists that are primarily responsible for implementing our project MEAL activities?
- Will we share responsibility for MEAL activities among and between multiple project team members.
- Will our project require the support of MEAL technical advisors on an occasional basis to support critical MEAL activities?
- Do we need enumerators, survey facilitators and other staff to conduct surveys, questionnaires, focus group discussions and other MEAL data collection tools?
- Do we intend to hire an external, independent consultant or company to conduct evaluation activities?

Finally, notice that the section of the budget entitled *monitoring activities* includes a cost category entitled *equipment*. Be sure to include expenses related to information and communications technology (ICT) in the equipment category. For example, the Delta River IDP Project intends to buy special computer-assisted qualitative data analysis software (CAQDAS) to analyze data collected during focus group discussions, as well as handheld devices for questionnaire enumerators, so that data can be recorded directly in a digital format. And, don't forget that new ICT investments will require the training of staff, so a training line item has been included in the staffing category for that purpose.

Chapter 4. Collecting MEAL data

Now that your MEAL planning process is complete, the next step is to get started with collecting data. Timely, high-quality data are the foundation upon which project teams can measure progress, make decisions and learn.

Data quality is an important consideration for all MEAL practitioners, so much so that standards exist to define various characteristics of high-quality data. These are described in detail below.

Then, this chapter focuses on four areas that influence your ability to collect high-quality data: developing good data collection tools, defining from whom data will be collected (otherwise known as sampling methods), correctly using data collection tools, and, finally, managing the data you collect properly.

By the end of this chapter, you will be able to:

- ✓ Explain the five elements of data quality
- ✓ Describe the components of a basic data collection tool outline
- ✓ Identify three primary methods of data collection and key characteristics of each (questionnaires, interviews and focus group discussions)
- ✓ Explain the basic principles of sampling
- ✓ Describe key steps in preparing to implement data collection tools
- ✓ Identify generally accepted protocols and standards for responsible data management
- ✓ Understand the basics of selecting databases and associated data entry and cleaning practices

4.1 Data quality

The data you collect will never be free of bias. Thus, you need to determine, with the help of your stakeholders, what quality and quantity of data is "good enough" for your decision-making, learning and accountability needs. As you begin to think about collecting MEAL data, it is useful to consider the following five data quality standards.[20]

[20] Text adapted from PACT. 2014. Monitoring, evaluation, results and learning series publications. Module 2. *Field guide for data quality management*; USAID. 2009. *Performance monitoring & evaluation tips: Data quality standards*.

Validity Data are valid when they accurately represent what you intend to measure. In other words, the data you collect helps you measure the indicators you have chosen. When designing your collection methods, make sure they will collect data that will help you measure the indicators outlined in your PMP. Also, the mix of collection methods should meet your needs for triangulation.

Reliability Data are reliable when the collection methods used are stable and consistent. Reliable data are collected by using tools such as questionnaires that can be implemented in the same way multiple times. In practice, this means that if you use the same questionnaire to ask the same person the same questions and nothing else has changed, you should get the same answer. Consider this factor when you are designing your discussion guides and questionnaires for focus groups and interviews.

Precision Data are precise when they have a level of detail that gives you an accurate picture of what is happening and enables you to make good decisions. For example, precise data allow you to compare results between men and women, if this is important for your project. When designing your data collection tools, make sure any subgroups you have identified are incorporated into the design. Accordingly, precise data are collected using appropriate sampling methods, which are described in detail below.

Integrity Data have integrity when they are accurate. Data should be free of the kinds of errors that occur, consciously or unconsciously, when people collect and manage data. Errors can enter your data when, for example, the questionnaire is implemented incorrectly or the data are not properly entered into the database. Following the guidance outlined below on the design and implementation of collection tools and the management of the data you collect will increase the integrity of your data.

Timeliness Timely data should be available when you need it for learning that informs decisions and for communication purposes. Data are not useful to you when they arrive too late to inform these processes. This factor plays a significant role in your planning for data collection, which is the reason for the column in the PMP on timing. Design your data collection efforts to coincide with when you need to make decisions, and report to stakeholders. Timeliness should also be factored into the design and implementation of your tools. You want to make sure that your design is as efficient as possible and only collects the data that you absolutely must collect.

4.2 Developing data collection tools

As you begin developing your data collection tools, it is a good idea to revisit the question, "*What do I need to know?*" The good news is that much of what you need to answer this question has been clearly mapped out by the indicators found in the PMP and, if you are conducting an evaluation, the evaluation questions found in the summary evaluation table and the terms of reference. Your design of the tools and your sampling process will depend on your answer to this question.

This section explores three of the tools most frequently used to collect quantitative and qualitative data: questionnaires, semi-structured interviews and focus group discussions.

Before we describe these tools in detail, it is useful to understand that all tools, whether it is a questionnaire, or a discussion guide used to facilitate a focus group discussion or interview, are designed using a similar outline. Walking through this outline helps illustrate good practice for designing data gathering tools:

Section 1: Introduction

The introduction to your tool gives you the chance to explain the project and the data collection process to the respondent. This overview should explain:

- Why information is being collected
- How participants were identified
- How the data will be collected
- How much time the data collection will take
- How the data will be used
- Who will have access to the data

Of particular importance in the introduction is an explanation of the ethical principles that guide your data collection efforts. Accordingly, all tools should explain:

- The principle of informed consent: Participants understand the above points AND understand that their participation is always voluntary. Respondents can leave or stop at any time. Remember that children and some adults may be unable to provide legal consent. In these cases, you might be required to obtain the consent of the parent or legal guardian and the assent of the subject.
- Specific plans to keep participant contributions confidential and, if needed, anonymous.
- Plans, if any, for compensation for participation.
- Plans to share results with participants.

Section 2: Questions

After the introduction, your tool lists the questions to be asked of the respondent that are designed to gather the data you need to meet your information requirements. The specific design of questions is dependent on the type of tool you are using and is described below. But, there are several general design practices that it is useful to highlight here. Overall, it is helpful to invest time in the layout and design of your data collection tool. When a tool has a professional look and feel (layout, style, graphics), it is not only easier to use, but also motivates those administering it. Additionally:

- Ensure that the language you use in your questions is simple, clear and free of jargon. This will help you collect data in a way that is appropriate to your context and your participants.
- Organize questions using a clear, orderly sequence. The structure of questions asked should be logical and make sense to data collectors and participants. It is recommended that tools begin with simple questions and then move to more challenging and sensitive questions later.
- Make sure that your data collection tool includes fields to record important data analysis and management information such as:
    - The date and location of the data collection.
    - Participant identification (or coded pseudonyms), geographic area, community, gender, etc. This is particularly important if you intend to disaggregate your data by subgroups.
    - If needed, assign each data field a number and/or response code that can be used to facilitate analysis.

Section 3: Conclusion

All tools should close by offering the respondent a chance to ask questions and provide feedback on the experience. Always thank participants for their time and reiterate how the data will be used and when respondents might be able to hear the results of the data collection effort.

Quantitative data collection tools: Questionnaires

Frequently, quantitative data is collected using a questionnaire.

> ***Questionnaire*** A structured set of questions designed to elicit specific information from respondents.

High-quality questionnaires collect precisely the information that you need. Furthermore, as you develop questionnaires, try to identify opportunities to collect data on multiple PMP indicators using a single questionnaire. By designing questionnaires to collect data on multiple indicators, the team not only saves money (and simplifies logistics), but it is also respecting the valuable time of project participants. The project participants have busy lives and many responsibilities, so it is critical to look for ways to collect the information you need through as few instruments as possible so that you are not repeatedly asking that they commit time to provide MEAL data.

Consistent implementation is key to a successful questionnaire: the same questions are asked of each respondent, in the same format and order. This helps ensure that responses are clear, valid and reliable. Because questionnaires collect data that you expect to analyze statistically, they use primarily closed-ended questions that generate responses that are easy to code and analyze.

> ***Closed-ended questions*** are questions that provide a predefined list of answer options. This makes it easier for responses to be coded numerically allowing for statistical analysis.

Commonly used closed-ended question types are described in Figure 47.

Figure 47: Types of closed-ended questions

Question Type	Example	
	Question	**Response example**
Numerical	1. *"How long have you been displaced?"*	____ number of months, or ❑ I don't know.
Two-option response	2. *"Are there handwashing facilities at the latrine?"* If no, skip Question 3 below.	❑ Yes ❑ No
Multiple choice	3. *"Which handwashing resources are currently available at the latrine?"*	❑ Water and soap ❑ Water only ❑ Soap ❑ Neither water nor soap ❑ Other _____ ❑ I don't know
Rating or Likert scale	4. *Indicate the extent to which you agree with this statement: "My household has enough water to meet our household consumption needs."*	❑ Strongly disagree ❑ Disagree ❑ Neither agree nor disagree ❑ Agree ❑ Strongly agree

When designing questionnaires, consider the following guidelines:

- Questionnaires include "skip logic," which allows respondents to skip a question based on their answer to a previous question. For example, in Figure 47, Question 2 *asks "Are there handwashing facilities at the latrine?"* If the respondent replies "*No,*" then they should skip the next question, "*Which handwashing resources are currently available at the latrine?*"
- Questions include the option to answer "*I don't know,"* as appropriate.
- Questions include all appropriate responses. These responses should be exhaustive, should be very different from each other and shouldn't overlap.
- In many cases, it is not feasible to include every possible category of response, in which case an "*Other"* category, with a space for the respondent to fill in a more specific response, is a good solution. See Question 3 above for an example of the use of "*Other."*

Another fundamental choice related to designing questionnaires is around which media will be used to present them to respondents and how responses will be recorded. Traditionally, questionnaires were paper-based, with the respondent or interviewer completing answers in pen. Today, questionnaires are

often administered digitally using one of the many online survey tools. When choosing the media you will use to implement your questionnaire, consider your target population and local logistics, the characteristics of the potential respondents, the types of questions you plan to include, the topic, the desired response rate, and the cost/time needed to collect the data.

The following chart describes the advantages and disadvantages of methods of questionnaire delivery.

Figure 48: Advantages and disadvantages of questionnaire delivery modes

Delivery mode	Advantages	Disadvantages	Requirements
Personal interview	• Respondents don't need to be literate • Facilitators can motivate and support respondents • There is a high rate of cooperation and a low rate of refusal	• Activities are time-consuming and expensive • Facilitators can influence respondents' interpretation of questions (and their responses) • Data entry can be difficult if responses are not collected using digital devices	• Space and privacy for interviews • Budget for travel • Trained facilitators
Self-administered questionnaires (online or offline)	• Easy and cheap to distribute • Access to a broader population in a larger geographic area	• Requires respondent literacy • Data input can be cumbersome if responses are not collected using digital devices • Potentially low response rates	• Logistics for distributing and collecting questionnaires • Budget for distribution and collection of questionnaires

Qualitative data collection tools: Semi-structured interviews and focus group discussions

Qualitative data collection tools are designed to explore and understand the rich depth and context of the respondent's perspectives, opinions and ideas. While questionnaires are highly structured and scripted, semi-structured interviews and focus group discussions more closely resemble a conversation.

> ***Semi-structured interview*** A guided discussion between an interviewer and a single respondent designed to explore and understand the rich depth and context of the respondent's perspectives, opinions and ideas.
>
> ***Focus group discussion*** A guided discussion between respondents in a group. It is a qualitative data collection tool designed to explore and understand the rich depth and context of a group's perspectives, opinions and ideas.

Unlike an interview with a single respondent, a focus group discussion provides an opportunity for a small group of participants to interact with each other, build on ideas and present divergent perspectives. However, while the exchange between group participants provides rich insights, a focus group discussion

requires more experience to facilitate. As well as an experienced facilitator, they require a notetaker. Typically, a focus group includes 8 to 12 participants.

For focus group discussions, it is crucial to recruit the right participants. Once you have narrowed down the topics and questions, you'll have a better understanding of who should participate in the discussion. Choose participants who can speak directly to the perspectives or experiences that you are interested in knowing about. When participants speak about personal perspectives and experiences, there is an increased likelihood of lively discussion, which leads to richer information and more reliable data. Also, identify focus group participants with a shared characteristic or experience so the discussion doesn't become an unfocused brainstorm.

Whether or not you are designing a semi-structured interview or a focus group discussion, the key to strong qualitative data collection is to carefully plan the questions that will frame the conversation. These planned questions are prepared ahead of time, carefully scripted, and documented in an interview or discussion guide. Unlike the closed-ended questions used in questionnaires, most of the questions in the guides are open-ended.

> ***Open-ended questions*** are those that allow someone to give a free-form response in their own words.

There are two types of open-ended questions:

> ***Content-mapping questions*** are also known as opening questions. These are intended to initiate the exploration of a topic by raising and broadly exploring an issue.

In order to encourage the rich discussion or responses desired by qualitative data collection, facilitators often follow content-mapping questions with content-mining questions.

> ***Content-mining questions*** are also known as probing questions. These are follow-up questions that elicit more detail or explanation about a response to a content-mapping question.

Unlike content-mapping questions, content-mining questions are unscripted and free-form. Facilitators must have the skills and flexibility to adapt the flow of the conversation and ask the right content-mining questions. Content-mining questions enable the facilitator to explore a topic more deeply and investigate unanticipated topics.

Let us return to the UNITAS example to explore these two types of questions. UNITAS will be conducting focus group discussions to understand IDP access to potable water. The focus group discussion guide includes this content-mapping question: "*What are the major barriers IDPs face when accessing potable water?*" It is expected that some responses will require follow-up, so content-mining questions will be useful. For example, if the facilitator receives a response indicating that IDPs don't always feel safe accessing water points, potential content-mining questions might include, "*Can you tell me more about why you said, 'I don't feel safe?'*" and "*Can you provide an example?*"

Note that content-mining questions are completely unstructured. Often you can anticipate potential content-mining questions and they can be documented as possible follow-up questions in the discussion guide.

4.3 Creating samples

Appropriate sampling methods collect the right amount of data from the right respondents to meet your information needs.

> ***Sample*** A subset of the population or community that you choose to study that will help you understand the population or community as a whole.[21]

Sampling is necessary because gathering data is expensive and time-consuming, making it difficult to speak to everyone. This is why you need to identify a sample group of respondents who will give you valid, reliable and generalizable information.

Sampling can be divided into two basic types: random sampling and purposive sampling.

Random sampling

Random sampling is used when you plan to use quantitative methods and analysis. This sampling approach is used when you need confidence that what is true for your sample is likely true for the entire population (or a subgroup of the larger population).

> ***Random sampling*** is a probability sample that includes respondents selected from a list of the entire population of interest so that each respondent has an equal chance of being selected.

Random samples are created using mathematical calculations to identify how many people will participate in your data gathering efforts. These calculations are developed based on how strong you need your analysis results to be and how varied the population is. With this structure and rigor, they are thus determined to be statistically representative of a survey population or a subgroup of that population. This means that the results of the data can be generalized to represent the larger population.

In Chapter 3, we discussed the importance of collecting quality data that are valid, reliable, precise and generalizable. One way to promote this goal is to take steps to avoid sampling bias in your data collection activities.

> ***Sampling bias*** occurs when some members of the population are more or less likely to be selected for participation in your data gathering efforts than others.

When your sample is biased, you are not taking into consideration all the available perspectives, ideas and opinions. This means that your data will not be as valid (accurate) and cannot be easily generalized to the population you want to address.

> ***Generalization*** is possible when data gathered from a sample accurately represent the general population from which the sample was drawn.

For example, if you are studying the effects of establishing new community-based water points on the incidence of waterborne disease among families, your data will be less valid and generalizable if you only complete questionnaires among men. This is because women are more likely to be responsible for many

[21] International Federation of Red Cross and Red Crescent Societies. 2011. *Project/programme monitoring and evaluation (M&E) guide*.

of the household activities that require access to water. Furthermore, if you only collect data from men, any findings and recommendations made from that data may not be valid for the entire community. Thus, you need to design your sampling method in a way that reduces sampling bias by giving all those who require access to water—both women and men—an equal chance of participating in your data collection efforts.

When working to reduce sampling bias, pay close attention to two specific types of bias that can be especially problematic.

- ***Convenience sampling bias*** occurs when data are collected from respondents who are easy to reach, or who are easy to work with. Data that suffer from convenience sampling bias could run the risk of over-representing people located closer to main roads, or groups that are fluent in the predominant language.

- ***Voluntary response bias*** occurs when data are collected disproportionately from self-selected volunteers. Data that suffer from voluntary response bias, could run the risk of under-representing people with busy schedules or people who travel frequently, and over-representing people with strong opinions or specific agendas related to the project.

After you have considered all these factors, steps to identify a random sample include:

Step 1: Defining your population and the sampling unit

> ***Population*** A set of similar people, items or events that is of interest for some question or experiment.

When defining your population, clearly articulate your inclusion and exclusion criteria. These criteria can include, for example, participation in project activities, geographic boundaries, or demographic characteristics. Inclusion or exclusion criteria are important decisions you make in deciding whether a particular group or geographic area should be included in a data collection activity.

Once you are clear on your population, you need to clearly identify your sampling unit.

> ***Sampling unit*** The individual person, category of people, or object from whom/which the measurement (observation) is taken.

Examples of sampling units might include children under 5 years of age, adolescents, women, men, households, etc.

Step 2: Choosing a method to calculate your random sample

Once you have identified your population and your sampling unit, you are ready to start calculating your random sample. There are different random sampling methods that can be used to calculate the sample.

Figure 49: Random sampling methods[22]

Random sampling method	Description
Simple random sample	Every unit in your population has an equal chance of being selected.
Systematic sample	A process of listing and numbering all potential subjects and then selecting every 10th person, for example, until you have reached your sample size.
Cluster sampling	The population is divided into naturally occurring clusters such as geographical areas, schools or places of employment. All the clusters are listed, and a sample of clusters is randomly selected. In some cases, all subjects in the cluster are included in the data collection. In other cases, teams will conduct a two-stage cluster sampling process in which participants are chosen from within the cluster and serve as a sample group for the cluster.

If your data analysis plans, as defined in your project management plan, include disaggregation by subgroup, your sampling method should specifically include those subgroups or strata of the population. Stratified sampling is a strategy that allows you to analyze stratified groups within the larger population.

> ***Stratified sample*** A type of sampling method in which the population is divided into separate subgroups, called strata. Then, a probability sample is drawn from each subgroup, which allows for the statistical comparison of results within the sample.

For example, you may want to know whether there is a difference between the opinions held by large families (of five or more members) and small families (of less than five members) regarding whether or not they have enough water to meet their consumption needs. To collect this information, you will need a stratified sample that selects and identifies participants according to family size. Note that, generally, when you have a stratified sample, your overall sample size will need to be larger, which has implications for time and budget.[23]

If you choose to create stratified samples, you will then need to revisit the random sampling methods in Figure 49 to decide which method will be used to identify your random sample (simple random, systematic or cluster sampling).

Step 3: Determining your sample size

Determining your sample size is important because the larger the sample size, the more likely it is that your sample will accurately represent the population.

[22] Bamberger M, Rugh J and Mabry LS. 2012. *Real world evaluation: Working under budget, time, data, and political constraints*, *Edition 2*. SAGE.

[23] Ibid. p256.

How well a sample represents the population is gauged by two important statistics: the margin of error and the confidence level.

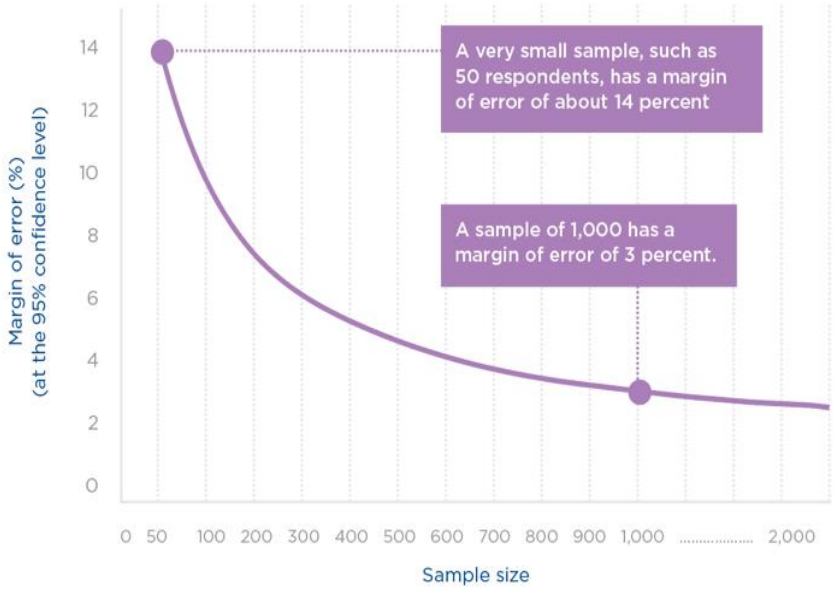
> ***Margin of error*** expresses the maximum expected difference between the true population and the sample estimate. To be meaningful, the margin of error should be qualified by a probability statement (often expressed in the form of a confidence level).
>
> ***Confidence level*** refers to the percentage of all possible samples that can be expected to include the true population parameter.

So, what do the margin of error and confidence level look like in practice? Let's look at the two concepts using an example from the Delta River IDP Project. UNITAS conducts a questionnaire and learns that 50 percent of respondents report "washing their hands after critical events." The confidence level for the survey is cited as 95 percent, with a margin of error of plus or minus 3 percent. This information means that if the survey were conducted 100 times, the percentage that reported "washing their hands after critical events" would range between 47 and 53 percent most (95 percent) of the time.

Decisions about margin of error and confidence level should be determined by MEAL experts on your team based on your information needs, the context you work in, and the resources available for MEAL. However, as a general guideline, the confidence level will increase (and the margin of error will decrease) as you increase your sample size.

Returning to the Delta River IDP Project questionnaire, let's explore how sample size influences margins of error and confidence levels:

- A very small sample, such as 50 respondents, has about a 14 percent margin of error while a sample of 1,000 has a margin of error of 3 percent.



- To obtain a 3 percent margin of error at a 90 percent level of confidence requires a sample size of about 750. While a 95 percent level of confidence, would require a sample size of about 1,000.

Figure 50: Margin of error

Step 4: Selecting your sample units

When selecting your sample units, it is especially helpful if you can start by accessing a sample frame.

> ***Sample frame*** A specific list of units (men, women, households, individuals, children, adolescents, etc.) that you will use to generate your sample. Examples could be a census list or a list of employed teachers, a registration log or a list of project participants.

If you do not have a sample frame or know that your frame is incomplete, you can use an alternative sampling selection approach. One option would be to use a random route method. This is a type of systematic sample that can be used when you don't have a list of the total population. Sketch a map of the community. Estimate the total number of households in the community. Calculate the number of households to be included in the sample. Then generate a random route through the community by selecting a starting point on the map and instructing the interviewer to turn left or right or go straight at each intersection. The interviewer then interviews one individual (often the household head) from every n^{th} house (n will depend on the size of your sample) along this random route.[24]

Purposive sampling

Purposive sampling is used primarily when you want to collect qualitative data. In this kind of sampling, your sample units are deliberately, rather than randomly, selected to reflect important features of groups within the sampled population.

> ***Purposive*** (selective) sampling is a non-probability sample where sampling units that are investigated are based on the judgement of the researcher. Sampling units are selected based on characteristics of a population and the objective of the study.

Purposive samples are used to understand the experience or perspective of a particular group by gaining a "deep" understanding at the level of the individual participant. The information collected from purposive samples can provide a much deeper understanding of what is happening in your specific context. It helps gain an understanding of the change you see, unpacking the meaning of the change and developing explanations for the change. These rich insights help you generate ideas, concepts and theories.[25] However, because purposive sampling is non-random, the data collected from the sample cannot be generalized to the general population.

[24] Ibid.

[25] Ibid.

Steps to identifying a purposive sample include:

Step 1: Identify the type of purposive sampling you desire

As is the case with random sampling, start by clearly defining your population and sample frame. Establish sampling criteria that are very clear about the sampling units you intend to use. The clearer you are about your criteria, the more valid and reliable your study will be.

Next, select the sampling method you intend to use to identify your purposive sample. There are different methods of purposive sampling.

Figure 51: Purposive sampling methods

Purposive sampling method	Description
Best- and worst-case sampling	Compares communities or individuals who are considered best and worst cases based on certain characteristics. (i.e. most vulnerable and least vulnerable).
Typical case sampling	Provides an understanding of the general scenario by choosing those communities or individuals who are considered average.
Critical case sampling	Collects information from communities or individuals who are important for understanding a particular context or situation.
Quota sampling	Attempts to collect information from participants with characteristics of interest according to estimates of their proportion in the population.
Snowball or chain sampling	Collects information from participants in stages, starting with respondents known to the evaluators or partners and then asking those respondents for recommendations of who else to speak to. The advantage of this method is that it helps you identify sources of information previously unknown to you.

Step 2: Determine your sample size

Sample size is calculated very differently in purposive sampling than in random sampling. Often, qualitative data are used to triangulate, or cross-check, quantitative or other qualitative data. Thus, purposive sample sizes must be considered with triangulation needs in mind. You need to conduct enough focus group discussions or interviews to test, reinforce and confirm the patterns that are emerging. For example, if you use the best- and worst-case purposive sampling method to conduct focus group discussions on women's opinions about access to water points, plan to conduct at least two or three focus group discussions to collect information from each perspective (best case and worst case).

Interestingly, this number of focus groups is recommended because experience tells us that 80 percent of themes about an area of interest are identified by two to three focus group

discussions. Furthermore, 90 percent of themes are identified by holding six to nine focus group discussions.[26]

Furthermore, purposive sample sizes are decided based on the following factors:

- If the data analysis plan in your PMP requires that you compare subgroups, you will require a larger sample, and the size increases exponentially the more subgroups you have. For example, if you want to look at both large- and small-sized families, you will need to hold two to three focus groups for each of these subgroups.
- Budget constraints and resource limitations can influence your sample size decisions. You may need to limit the number of subgroups you compare (and associated data collection events) if you lack the resources to implement data collection events.

4.4 Using data collection tools

Once you have designed your tool and your sampling strategy, it is time to implement your data collection effort. However, before you can begin to collect your data, there are several steps that should be followed to ensure that your data collection is successful.

Step 1: Translate your data collection tools

Is your project working in a region that uses multiple languages? If so, then your tool will need to be translated so that it is not biased toward those who speak the initial language of your tool.

Step 2: Train data collectors and test your tools

Written instructions accompanying your collection tool are essential. Often, additional training is also needed, for both new collectors and as a refresher for those who are skilled. Training should include the following:

- An explanation of the basic ethical principles of good data collection.
- An explanation of the purpose of the tool. Make sure everyone using the tool understands the purpose of each question and how the answers received will feed into analysis and use.
- Instruction that emphasizes the skills needed to use the tool. Data collectors need skills to collect high-quality data. The skills needed for quantitative and qualitative data collection are often different. For example, when collecting quantitative data, enumerators need training to know the order of questions to ask and how to ask them without leading respondents. When collecting qualitative data, interviewers need to be able to elicit information from respondents while making them feel comfortable, and must create a trusting relationship with respondents while remaining neutral in attitude and appearance.
- The opportunity to physically test the tool with potential respondents.

[26] Velida Dzino-Silajdzic. 2018. *Focus group discussions: Practical guide*. CRS.

Training data collectors serves two purposes: building the skills of your data collectors *and* ensuring that your tool works as it should. You must always test your tool, a process that can be built directly into your training. Physically testing the tool with potential respondents makes sure that:

- You will collect the data you intend to collect.
- Your questions are written using language that respondents and collectors understand.
- Your tools will not take too long to implement. You want to avoid situations where you put too great a burden on respondents and/or risk them losing motivation and focus.
- Your tools appropriately explain to respondents the ethical norms and standards related to informed consent, anonymity and confidentiality.
- Your data collectors have been sufficiently trained. They understand the tool's instructions, the logical flow of the questions, and how respondent data should be recorded.

Step 3: Revise and finalize your tools

After you have tested your tool, any revisions can be incorporated into your final document.

Step 4: Plan for implementation and data management

As you plan your data collection activities, be sure to:

- Allow enough time for each data collection event. Remember that questionnaires should take no more than 45 minutes to implement, and that interviews and focus group discussions can take up to 90 minutes. You want to make sure you give participants enough time to answer questions completely, while not asking too much time from them. Furthermore, it is important to acknowledge that facilitating interviews and focus group discussions can be tiring. Don't plan for a single facilitator to conduct more than two or three events in a single day (especially if they are 90 minutes long.) Planning too many events can result in errors and diminished quality.
- Choose a venue for interviews and focus group discussions that provides privacy and an appropriate level of comfort. You want to make sure your participants are as comfortable as possible, particularly if the subject matter is likely to be challenging.
- Identify how you intend to manage the data you collect. The specifics of data management are described in detail below. However, before you begin implementing your tool, take time to consider:
    - Who will be responsible for entering the data into the selected databases, if you are not using digital data recording devices.
    - Who will be responsible for conducting data quality checks and when.
    - How you will protect and store questionnaires once they have been completed.
    - How you will protect the privacy of respondents and who will be responsible for this function.

4.5 Managing data

Creating an effective data management system enables you to effectively analyze, interpret and use the data you collect.

> ***Data management*** is the process of managing data through the phases of its life. Complete data management includes four primary components: entry, cleaning, storage and security, and retention and disposal.

Data entry

The term "data entry" means putting the data you have collected into a form you can use by entering it into an electronic database. Effectively using a database improves your ability to:

- Access, manage and share data
- Improve data security and protection
- Integrate data more effectively
- Manage data quality
- Facilitate timely decision-making

The first question to ask yourself when thinking about data entry is, "*What type of database(s) do we need?*" As you explore options related to your database needs, you will quickly discover that your choices will directly inform your larger ICT strategy for MEAL.

In many cases, if you are managing quantitative data and only intend to complete relatively basic levels of analysis, common database software such as Microsoft Excel and Microsoft Access will often suffice. However, projects that intend to conduct more complex analysis of quantitative data might choose to use statistical programs like Stata or SPSS.

However, if you are managing qualitative data, your choice of software will depend on the quantity of data you are managing and the depth of analysis you intend to conduct. For relatively small-scale qualitative analysis activities, projects often use Microsoft Excel or Microsoft Word. Projects with more extensive qualitative analysis activities often choose to use computer-assisted qualitative data analysis software, or CAQDAS, such as NVivo, Dedoose, MAXQDA, and others.

Once a decision is made on which database will be used, the next step is to enter the raw data into the database. Increasingly, this step has been automated as projects adopt digital devices that synchronize the data collected in the field with the databases used to analyze MEAL data.

In practice, many projects need two databases, one that manages quantitative data and one that manages qualitative data.

Whether you are using digital devices or paper-based systems to collect data, follow these steps as you enter data:

> Step 1: Create a data entry protocol

Inconsistent data entry procedures and data entry errors can compromise your data, analysis and MEAL findings. To reduce this risk, create a standard data entry protocol that includes guidance on:

- The data entry process, outlining the rules and instructions for entering data into the database.
- The timing of data entry to ensure that data are available to meet reporting requirements and decision-making needs.

Step 2: If necessary, identify your requirements for those entering data

Most data entry is now conducted electronically, often using digital devices to collect information that is then uploaded automatically into the project MEAL database. However, in some environments, there may still be a need to input data by hand. Any data entry protocols you create should clearly indicate whether those inputting data require previous experience or training. If appropriate, identify a supervisor who is ultimately responsible for quality management of the data entry process.

All data entry staff should be trained on the objectives of your data collection efforts, the data collection methods you are using, the database itself, and the protocol you set up for data entry. If those entering the data understand the big picture, they will be more likely to enter the data completely and cleanly. For example, they should be comfortable with the questionnaire layout and any skip logic included, and they should be aware of any potential errors in data collection.

Cleaning data

It is important that your project team confirms that your MEAL data are correct, complete and of the highest quality. With the increased use of digital devices to collect data, there is less risk of the transcription errors that result when transferring paper-based data to databases. Nevertheless, teams should still invest in data cleaning to help ensure that they are accurate and free of errors.

Data cleaning Detecting and removing errors and inconsistencies from data to improve its quality.

Some of the most common data cleaning methods include:

Conducting quality checks Randomly selecting and comparing raw data to the electronically entered data to check for data-entry and coding errors. Teams that use digital devices to collect data can skip this step.

Identifying outliers Checking whether there are unexpected entries in the data. This could mean that the person entering data does not understand the process and has made a coding error. For example, if a questionnaire asked a question about age, and an age of 110 was entered, you would quickly spot the error, and be able to prevent similar ones.

Removing duplicate entries Confirming that each data record (questionnaire, form, etc.) has a specific, unique identification number and that no numbers have been repeated in the database.

Keep a record of data errors, and review any observed trends and patterns in the errors with the data entry team to improve future results. In an environment where data is being entered automatically through electronic devices, this check should happen on the first day of data entry to make sure any systematic problems are identified and addressed.

Data storage and security

It is important to ensure that data are secure and protected against unauthorized changes, copying, tampering, unlawful destruction, accidental loss, improper disclosure or unauthorized transfer.

The data storage and security measures you put in place will naturally vary according to your situation, the level of risk assessed, the nature and sensitivity of the data you are collecting, and the local security and logistical conditions. Risks can be as simple as recurrent problems with electricity supply—requiring regular backup policies—or as complicated as the need to create a special, secure database for particularly sensitive information. It is likely that your organization will already have a policy on issues such as the physical security of data, information technology security (i.e. the use of passwords), and the duties of staff to use data with discretion.

Critical thinking: Understanding the European Union General Data Protection Regulation

Given the importance of data protection, the European Union enacted the General Data Protection Regulation, or GDPR, in May 2018. Its goal is to protect EU citizens from privacy and data breaches. While this may initially seem irrelevant if you are working outside of Europe, keep in mind that the regulation affects all organizations working inside the EU **and** anyone who is offering goods or services to, or monitoring and evaluating the behavior of, EU data subjects, **regardless of their location**. Given the global nature of their work, many organizations are changing their policies as a result, no matter what their location.

The primary benefit to the individual resulting from the GDPR is that the conditions for consent to use data have been strengthened. Organizations can no longer use a person's data without clear consent. And, they cannot obtain that consent in unclear ways. A request for consent must be clearly indicated using plain language that can be understood by everyone. Additionally, individuals have the right to access their data and to "be forgotten" if they desire. Efforts to protect the individual's privacy and their data must be part of the initial design of any data management system.

Data retention and de-identification

When it has been decided that data are no longer needed—either following the end of the project, or during the implementation of the project—all records and backups should be disposed of or adjusted so that it is impossible to identify the data respondents.

Data disposal: The method you use to destroy data and records will depend on the following factors:

- Applicable laws
- Organization's policies and donor requirements
- Local operating context
- Sensitivity of the data that require disposal
- Volume of data that require disposal

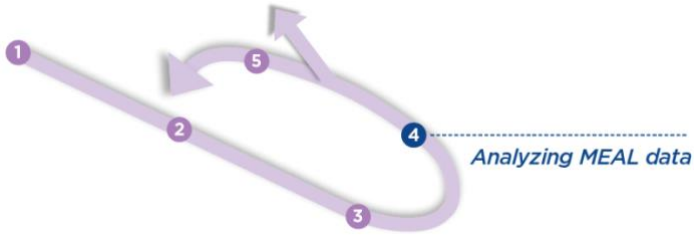
Another factor that will determine the method used to destroy data is its format:

- *Paper records.* Any paper records should be destroyed by burning or shredding. They should not be able to be used again or reconstructed in the future.
- *Electronic records.* Destroying electronic records should be the responsibility of an IT professional with knowledge of how to eliminate all traces of the files. Disk drives and databases should be completely purged and data on rewritable media—such as CDs and DVDs, audio and video tapes—completely erased before reuse.

De-identification: If you choose to retain data following the end of project activities, you can conduct a de-identification process to maintain respondents' anonymity. Anonymization and pseudonymization are two techniques that you can use to de-identify data.

- ***Anonymization*** Stripping data of any identifiable information, making it impossible to derive insights on a discrete individual, even by the party that is responsible for the anonymization.
- ***Pseudonymization*** Replacing personally identifiable information fields with a code that protects a respondent's identity. However, with the use of a data "key," the individual's identity can be accessed.

Chapter 5. Analyzing MEAL Data



Now that your project is underway, you are following your MEAL plans and collecting your data.

But, the data you have collected do not mean much to you and your stakeholders in their raw form. Data become useful when you give them meaning, and this is done through analysis, visualization and interpretation.

> ***Data analysis*** is the process of bringing order and structure to the collected data. It turns individual pieces of data into information you can use. This is accomplished by applying systematic methods to understanding the data—looking for trends, groupings or other statistical relationships between different types of data.
>
> ***Data visualization*** is the process of putting data into a chart, graph or other visual format that helps inform analysis. Data visualization also helps you interpret and communicate your results.
>
> ***Data interpretation*** is the process of attaching meaning to data. Interpretation requires reaching conclusions about generalization, correlation and causation, and is intended to answer key learning questions about your project.

Chapter 5 introduces the basics of quantitative and qualitative data analysis, visualization and interpretation. It will provide you with a basic understanding of, and the vocabulary to express, these processes with the experts who are usually involved.

These three processes are not usually linear; they don't follow each other in an orderly process. Instead, they support, inform and influence each other, resulting in data that are rich and useful. Where possible, this chapter indicates where these processes overlap and support each other in the quest for understanding about your project.

By the end of this chapter, you will be able to:

- ✓ Explain how your MEAL planning documents guide data analysis, visualization and interpretation
- ✓ Describe the purpose and processes of quantitative data analysis
- ✓ Describe the purpose and processes of qualitative data analysis
- ✓ Describe the purpose and process of data visualization
- ✓ Explain how analysis leads to appropriate interpretation and the development of conclusions and recommendations

5.1 Introduction to data analysis

Data analysis is guided by your performance management plan. A careful review of the PMP will tell you what data you will analyze, when and how you analyze them, and how you will use your results.

How you analyze depends on the type of data. Quantitative data are analyzed using quantitative, statistical methods and computer packages such as Microsoft Excel or SPSS. The results of quantitative data analysis are numerical and easily visualized using a graph, chart or map.

Qualitative analysis is most often done by reading through qualitative data in the form of data transcripts, such as notes from focus group discussions or interviews, to identify themes that emerge from the data. This process is called content analysis or thematic analysis. It can be aided by software, but is most often done using paper, pens and sticky notes.

The timing of your data analysis depends on when it is collected and the timing of your stakeholder information needs. Output-level data change quickly and are thus analyzed more frequently than data at the intermediate result and strategic objective levels of the Logframe.

Data analysis and interpretation often occur before an important quarterly project meeting, reporting deadline or as part of an evaluation. But, many advocate for data analysis and interpretation to be completed more often as part of a MEAL system that proactively uses data. For example, project activities may incorporate discussions involving analysis and interpretation after site visits and during quarterly meetings. There are many benefits to this approach, including better management of challenges and timely learning and adaptation of project implementation.

It is particularly important to coordinate your data analysis with the overall project implementation calendar. Data collection and subsequent analysis, visualization and interpretation activities require time and input from the wider non-MEAL project team. Don't forget to factor this into your planning. Always remember that your objective is to provide timely, relevant responses to stakeholders, learn effectively, inform required reports, and generally find ways to make your data as useful as possible.

5.2 Quantitative data analysis basics

At a basic level, there are two kinds of quantitative analysis: descriptive and inferential (also known as interpretive):

> ***Descriptive data analysis*** is the analysis of a data set that helps you describe, show or summarize data in a meaningful way so that patterns might emerge.
>
> ***Inferential data analysis*** enables you to use data from samples to make statistical generalizations about the populations from which the data were drawn.

Understanding quantitative data

Before you begin quantitative analysis, you need to understand what kind of data you are working with. The kind of quantitative data you have will determine the kind of statistical analysis you can conduct. Understanding your data begins with understanding variables.

Variable Any characteristic, number or quantity that can be measured or counted.

There are two categories of variables, independent and dependent:

- Independent variables are just what they sound like; variables that stand alone and are not changed by the other variables you are looking at. Age, religion and ethnic group are all examples of independent variables.
- Dependent variables are categories that depend on other factors. For example, a dependent variable might be distance walked to collect water or the incidence of waterborne disease.

Different types of variables are measured or counted differently. For example, time is measured using minutes or seconds. Knowledge, on the other hand, could be measured by test scores or by observing changes in people's behavior. These variables are thus analyzed differently.

Next, proper analysis of your data requires you to understand it in terms of its "level of measurement." Data is classified into four fundamental levels of measurement: nominal data, ordinal data, interval data, and ratio data.

Figure 52: The four levels of measurement

Level	Description	Examples	Use scenario
Nominal data	Data collected in the form of names (not numbers) and which are organized by category.	Gender, ethnicity, religion, place of birth, etc.	Nominal data can be counted, but not much else can be done. Information collected from nominal data is very useful, even essential, as it enables basic descriptions of your project.
Ordinal data	Data that have an order to them. They can be ranked from lesser to greater.	Scales measuring levels of satisfaction or levels of agreement	Strictly speaking, ordinal data can only be counted. However, a consensus has not been reached among statisticians about whether you can calculate an average for data collected using an ordinal scale.
Interval data	Data expressed in numbers and that can be analyzed statistically.	Temperature, time	Distances between data points on an interval scale are always the same. (This is not always the case with ordinal scales.) That means that interval data can be counted *and* you can undertake more advanced statistical calculations for interval data sets.
Ratio data	Data expressed in numbers, with the added element of an "absolute zero" value.	Height, weight	This means that ratio data cannot be negative. Because ratio data have an absolute zero, you can make statements such as "one object is twice as long as another."

No matter what their type, data are not particularly useful to you in their raw form. You need to analyze the raw data before you can determine whether your program is meeting its targets, use it to make decisions or start to communicate with your stakeholders. To understand the difficulty of using raw data, examine Figure 53, which shows how raw data collected from four respondents to a Delta River IDP Project questionnaire are organized into the project database. The left-hand column shows the code for each respondent. For example, the first respondent from the first village is coded as V1R1. Each subsequent column shows how respondents answered the first six questions of the questionnaire.

Figure 53: Example raw data from the Delta River IDP Project questionnaire (partially developed)

Respondent/ questionnaire identifier	Q1 (Age)	Q2 (Number in household)	Q3 (Use of water points)	Q4 (Daily frequency of water point usage)	Q5 (Distance walked to water point)	Q6 (Diarrheal incident in last 3 months?)
V1R1	27	1	Yes	2	50	No

V1R2	53	1	Yes	1	1000	N/A
V1R3	19	2	No	3	400	Yes
V1R4	21	4	Yes	5	200	Yes

By looking at this data, you can see general trends, but you cannot make any specific statements about findings. And, critically, this table only includes data from four respondents, which makes it relatively simple to see trends. If the table included data from 400 or even 4,000 respondents, your ability to use it would be extremely limited until you had analyzed it.

Analyzing quantitative data using descriptive statistics

There are three categories of calculations that are used to analyze data using descriptive statistics:

- **Measures of frequency** Display the number of occurrences of a particular value(s) in a data set (frequency tables, cross-tabulation tables).
- **Measures of central tendency** Calculate the center value of data sets (mean, median, mode).
- **Measures of variability** Determine the extent to which data points in the data set diverge from the average, and from each other (range, standard deviation).

Measures of frequency

A measure of frequency indicates how many times something occurred or how many responses fit into a particular category. You can analyze frequencies by using two tools: frequency tables and cross-tabulation tables. The tool you use will depend on whether you are measuring the frequency of the response values of a single group (frequency table) or multiple groups (cross-tabulation table).

Frequency table A visual representation of the frequency of values in your data set.

For example, the Delta River IDP Project conducted a questionnaire that included a question collecting the following ordinal data:

"I can access the water I require to meet my household consumption needs."

- ❑ Strongly agree
- ❑ Agree
- ❑ Neither agree or disagree
- ❑ Disagree
- ❑ Strongly disagree

The frequency table in Figure 54 provides a simple, easy-to-read summary of the answers given by the entire group of 60 respondents. Frequency tables do not require that a percentage be added, but we have added one in this example to help make the results easier to understand.

Figure 54: Frequency table: Water access

Question: *"I can access the water I require to meet my household consumption needs."*	Number of responses	Percentage
Strongly disagree	6	10 percent
Disagree	10	16 percent
Neither agree nor disagree	7	12 percent
Agree	25	42 percent
Strongly Agree	12	20 percent
TOTAL	**60**	**100 percent**

While frequency tables help you analyze the frequency of data values according to a single categorical variable (for example, the 60 respondents to a questionnaire), sometimes you will want to analyze the frequency of responses according to multiple variables. This is where a cross-tabulation table can help.

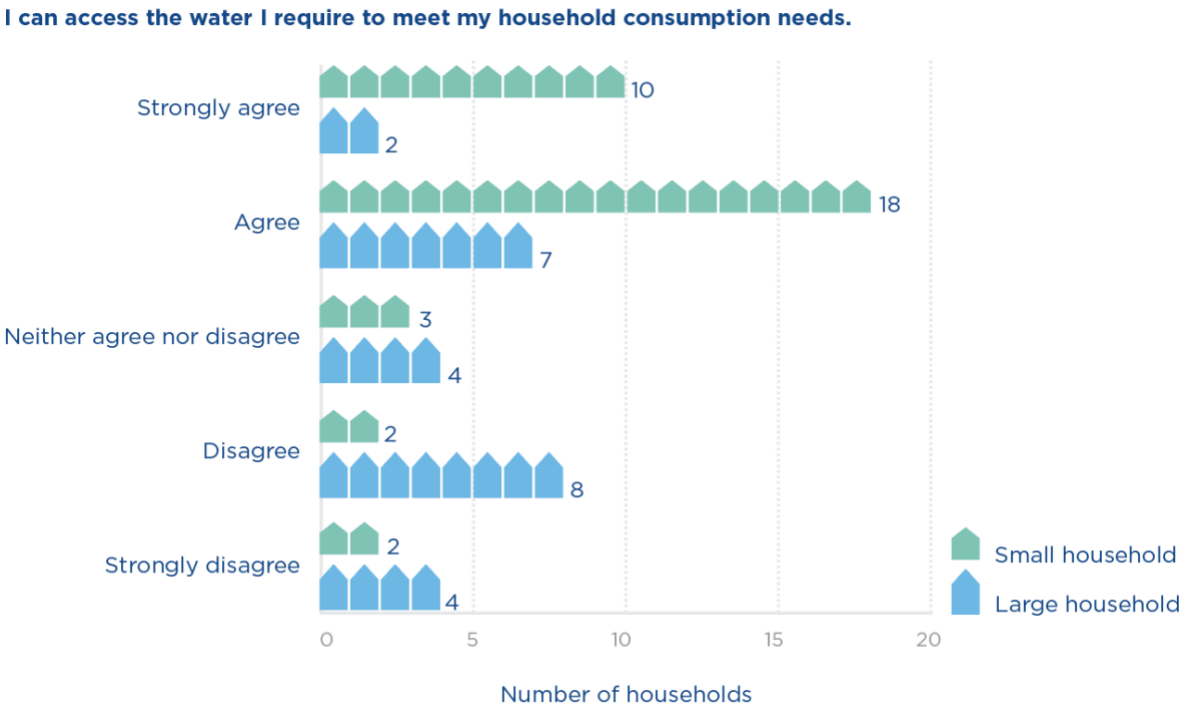
> ***Cross-tabulation table*** A visual representation of the frequency of values in an entire data set, including subgroups within the data set.

Let's return to the previous example from the questionnaire, which asked respondents to indicate their level of satisfaction with their level of access to water for household needs. However, this time, we want to compare the responses of large households (those with five or more members) and small households (those with four or fewer members). Respondents had identified whether they were part of a large or small household earlier in the survey. Using that information, the UNITAS team creates a cross-tabulation table to compare the responses of the two subgroups.

Figure 55: Cross-tabulation table: Level of satisfaction with household water access

Question: *"I can access the water I require to meet my household consumption needs."*	**Response total**	**Response (large households)**	**Response (small households)**
Strongly disagree	6 10%	4 16%	2 6%
Disagree	10 16%	8 32%	2 6%
Neither agree nor disagree	7 12%	4 16%	3 9%
Agree	25	7	18

	42%	28%	51%
Strongly agree	12 20%	2 8%	10 28%
TOTAL	**60** **100%**	**25** **42%**	**35** **58%**



The cross tabulation table and its accompanying bar graph allow you to compare the responses of the two groups. For example, the UNITAS team can see that of the 60 households interviewed, 62 percent strongly agree or agree that they have enough water to meet their consumption needs, which is an acceptable result. However, this percentage can be interpreted somewhat differently when viewed through the perspective of large and small households. Of the large households, only 36 percent strongly agree or agree that they have access to enough water. Of the small households, on the other hand, 79 percent strongly agree or agree that they have access to enough water.

We will revisit the topic of cross-tabulation tables when we discuss inferential statistics. When you combine cross-tabulation tables with the inferential statistical measurements described in the next section, you can start to assess the relationships between multiple variables.

Measures of central tendency

One of the most common ways to analyze frequencies is to look at measures of central tendency.

Measures of central tendency help identify a single value around which a group of data is arranged.

There are three tools used to measure central tendency:

Mean The average of a data set, identified by adding up all the values and dividing by the whole.

Median The middle point of a data set, where half the values fall below it and half are above.

Mode The most commonly occurring answer or value.

To illustrate the differences between mean, median and mode, let's use another data set collected by the Delta River IDP Project. You will remember that one of the indicators for the project is: "By Year 3, 85 percent of IDP households are located no more than 500 meters from a water point." To track this indicator, project staff conducted field visits to each village where the project works. The UNITAS team randomly selected 10 IDP households in each village and physically measured how far they walked to collect water. The raw data from the households in village 1 are recorded in the table below.

Figure 56: Raw data: Meters walked to collect water

Households (village 1)	Distance walked (meters)
R1	100
R2	300
R3	600
R4	400
R5	300
R6	700
R7	2,000
R8	300
R9	800
R10	100

UNITAS can use any of the three tools to describe the way in which the data above cluster around a central value. Note, this is because the distance walked to collect water is ratio data: the data set is expressed in numbers, can be manipulated statistically, and includes an absolute zero measurement (0 meters.)

The mean

The mean (or average) is the most well-known measure of central tendency.

To calculate the mean, you add up all the responses to the question about distance walked and divide it by the number of respondents.

(100+300+600+400+300+700+2,000+300+800+100) ÷ 10 = 560 meters

The mean can only be used to analyze numerical (ordinal and ratio) data. However, some people believe you can calculate the mean of ordinal data if you are highly confident that the distance between the points on the ordinal scale is equal. For example, "How satisfied are you with your level of access to water? (1 = lowest; 10 = highest)."

The median

The median can also be used to describe the way data clusters around a central value. Like the mean, the median is used to analyze numerical data.

To calculate the mean, complete the following steps:

- Write out all the values in numerical order.
  100 - 100 - 300 - 300 -300 - 400 - 600 - 700 - 800 - 2,000
- Then, cross off the first and last numbers in the row until you get to the middle.
  ~~*100*~~ *- 100 - 300 - 300 - 300 - 400 - 600 - 700 - 800 -* ~~*2,000*~~
  ~~*100*~~ *- 300 - 300 - 300 - 400 - 600 - 700 -* ~~*800*~~
  ~~*300*~~ *- 300 - 300 - 400 - 600 -* ~~*700*~~
  ~~*300*~~ *- 300 - 400 -* ~~*600*~~
  300 - 400

Data sets that contain an even number of values, like this one, will not have a middle value. In these situations, you calculate the median by taking the average of the two numbers at the midpoint of the data set.

(300 + 400) ÷ 2 = 350

The median is not used as frequently as the mean, but it is a valuable tool for double-checking whether the mean provides a fair representation of the data. If you find that there is a large difference between the mean and the median, then it could be a sign that there are outliers (unusually small or large values in the data set) that are skewing the mean.

The mode

The mode states what is the most commonly occurring answer or value in the data set. To calculate the mode, write out a frequency table and identify the most frequently occurring response value:

100 meters =	*2 responses*
300 meters =	*3 responses*
400 meters =	*1 response*
600 meters =	*1 response*
700 meters =	*1 response*
800 meters =	*1 response*
2,000 meters =	*1 response*

Mode = ***300 meters***

Which measure of central tendency should you use?

At this point, we have used three tools (mean, median, mode) to calculate the way data from Figure 55 cluster around a central value.

Mean = 560 meters	Median = 350 meters	Mode = 300 meters
What does this mean? On average, the 10 respondents walk 560m to collect water.	**What does this mean?** Half the respondents walk more than 350m to collect water; half walk less.	**What does this mean?** The greatest number of respondents (3) walk 300m to collect water.

So, which of these three calculations best expresses the central tendency of this data set? There are three factors that will inform your answer to this question:

- What type of data do you have (nominal, ordinal, interval or ratio)?
- Does your data set have outliers and/or is it skewed?
- What you are trying to show from your data?

As indicated previously, the data set contains ratio data, so we can calculate all three measures of central tendency.

However, notice that the data set from Figure 56 is skewed. More specifically, respondent 7's data point (2,000 meters) is a significant outlier. This results in a large difference between the mean (560 meters) and the median (350 meters). Outliers have less impact on the calculation of your mean if your sample size is large. However, in this data set, we have a sample size of just 10 households, so the outlier data point from respondent 7 has a large impact on the value of the mean.

The median is especially useful when the calculation of the mean does not fairly represent the center of your data set. This is the case with the data set in Figure 56. When measuring the central tendency of a numerical data set that is skewed, either choose to use the median, or use both the median and the mean together to express the central tendency. In fact, experts suggest that analysis should never use only one measure of central tendency. Measures of central tendency on their own can be misleading. Using two or more brings more clarity to your analysis.

Why not use the mode in the case above? The mode is not commonly used to analyze numerical data sets. However, there are other types of data sets (like nominal data) that can only use mode to measure the central tendency.

For example, the Delta River IDP questionnaire asks a question using a nominal scale:

"What is the main source of water for members of your household?"

- ❑ Piped water
- ❑ Borehole
- ❑ Protected well
- ❑ Unprotected well
- ❑ Spring
- ❑ Rainwater
- ❑ Surface water (river, lake, pond, stream, canal)
- ❑ Other?

You cannot describe the typical response to this question by calculating the mean or the median, because each response option is equal in 'value' and the choices are not listed in an order. However, calculating the mode for a nominal scale's data set could be very useful because it identifies which response is answered with greatest frequency.

Measures of variability

Measures of variability are the third set of calculations used to analyze data using descriptive statistics. They tell you the spread or the variation of the values in a data set. Are the responses very different from each other over the scale of possible responses or are they clustered in one area? In this section, we will use two tools to calculate the variability of the data set: the range and the standard deviation.

The range

Range The difference between the lowest and highest values of a data set.

The range is easy to calculate by subtracting the lowest value in the data set from the highest value. In the case of the Delta River data set, the longest distance walked is 2,000 meters, and the shortest distance is 100 meters. Thus, the range is 1,900 meters.

2,000 - 100 = 1,900 meters

Remember, the average distance walked to collect water is 560 meters, so the range in this data set is relatively large; almost three times the average distance walked. In situations like this, it can be useful to state the range and the mean together: "The average distance walked to collect water is 560 meters, with a data set range of 1,900 meters.

The standard deviation

Standard deviation calculates how far responses differ (deviate) from the mean (average).

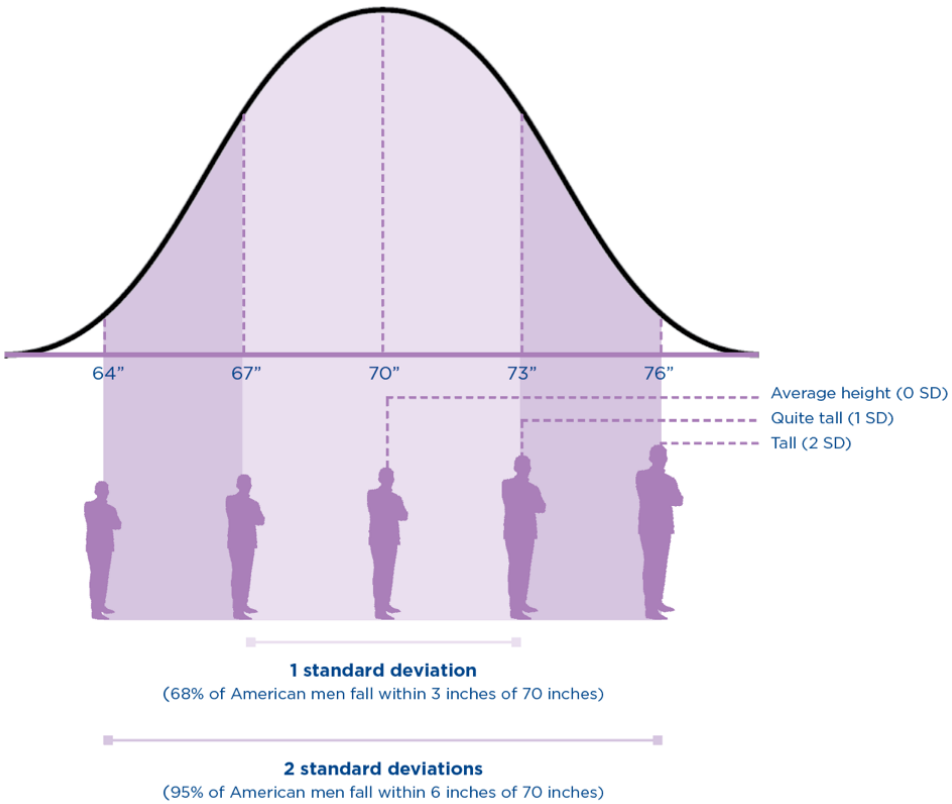
A high standard deviation indicates that the data set's values differ greatly from the mean. A low standard deviation means that values are close to the mean. A zero standard deviation means that the values are equal to the mean.

For example, if the average height of an American man is 70 inches, with a standard deviation of 3 inches, then most men have a height between 3 inches taller and 3 inches shorter than the average (67"–73"). You can analyze your data by identifying what percentage of American men fall within one standard deviation of the mean, two standard deviations, or three standard deviations of the mean.

Figure 57: The distribution of heights of adult males in the United States

# of standard deviations	Height	Percentage of American men
1 SD	3 inches	68 percent of American men fall within 3 inches of 70" in height
2 SD	6 inches	95 percent of American men fall within 6 inches of 70"

Calculating the standard deviation of a data set is much more difficult than any of the other calculations we have introduced so far, especially by hand. The good news is that most databases include functions for calculating the formula for standard deviations.



Critical thinking: Including multiple perspectives when interpreting descriptive statistics

Once you've calculated your descriptive statistics, the analysis process is much richer and aids learning if you stop at this point and do some basic interpretation.

Data interpretation is not something that happens behind closed doors among statisticians, nor should it be done by one person the night before a reporting deadline. Most data interpretation does not require complicated processes, and the multiple perspectives brought through greater participation can help enrich interpretation as well as reflection, learning and the use of information. Any suggested recommendation can look different from the perspective of a field office staff person, a participant, a headquarters staff person, etc. Furthermore, stakeholder involvement can also help build ownership of the follow-up and use of findings, conclusions and recommendations.[27]

As you conduct an initial interpretation of your data analysis findings, ask yourself these questions:

- *What are the maximum and minimum values for frequencies … what is the range? What do we need to do next with our analysis if the range is very large?*
- *What is the spread of these values? Are they clustered in any way? Is the mean very different from the mode? If so, what is our next step for analysis?*
- *What do our contingency tables show us? Are there any interesting differences or similarities between the subgroups identified in our PMP?*

Inferential analysis

Descriptive statistics may be enough to satisfy your analysis needs. However, it is likely that you will need to know more, especially when you are evaluating your results.

You will want to know whether the patterns you see in your sample can be true for the wider population. And, you may want to be able to show, statistically, whether the project is causing the changes you are seeing. This type of analysis is done by calculating inferential statistics. It is important to note that inferential statistics are only possible when you have a good random sample that generates high-quality data. In particular, demonstrating causation is usually only possible when your MEAL system is designed to facilitate this analysis.

Inferential statistics require additional skills, and they provide some very interesting understandings of your results. Inferential analysis helps you:

1. ***Compare the significance of differences between groups:*** Determining whether the differences that exist between subgroups are large enough to matter.

[27] Adapted from: International Federation of Red Cross and Red Crescent Societies. 2011. *Project/programme monitoring and evaluation (M&E) guide*.

2. ***Examine the significance of differences between variables to determine correlation and, potentially, causation:*** Determining whether your activities contributed to the changes you are seeing.

This is the point at which you will need to consult the statistical experts on your team. The purpose of this section of the guide is to describe these statistical tests so that you know what is possible. This will help ensure that your sampling plans support your analysis needs.

1. ***Exploring the significance of differences between subgroups:***
   t-tests, analysis of variance (ANOVA), and chi-square tests help you determine whether the differences between the descriptive statistics for subgroups are significant. Some inferential statistics calculate whether differences in frequencies are significant, while others calculate whether differences in averages are significant. The table below briefly describes these three primary tests used to explore the differences between subgroups. It is easiest to understand these tests by first examining the question they aim to answer.

Figure 58: Exploring the significance of differences between subgroups

Analysis method	Description	Example questions
t-test	• The *t*-test compares the average for one subgroup against the average for another subgroup. • It can also compare differences in averages at two points in time for the same subgroup. • If the result of the test is statistically significant, you can potentially consider it as a project impact.	*"Is the average distance walked to collect water at the end of the project significantly different from the average distance walked at the beginning of the project?"*
Analysis of variance	• The ANOVA test compares the average result of three or more groups to determine the differences between them.	*"Does the average distance walked to collect water vary significantly between villages 1, 2, 3 and 4?"*
Chi-square test	• The chi-square test works with frequencies or percentages in the form of a cross-tabulation table. • It helps you see the relationship (if any) between the variables and to know whether your results are what you expect to see.	You expect that the creation of new water points will improve access to water and thus meet consumption needs *for both large and small households.* A chi-square test helps you statistically test this expectation by analyzing the information provided in the cross-tabulation table in Figure 55. *"Is there a significant difference between the responses of small and large households to questions about household consumption needs?"* *"How significant is this difference?"*

2. Examining differences between variables to determine correlation and causation

The tests described above can tell you whether there is a statistically significant relationship between two groups, which may give you some early indication of the effects of your project. But, the limitation of *t*-tests, ANOVA and chi-square tests is that they don't tell you which variables influenced that relationship and which did not.

This is where regression analysis can help.

> ***Regression analysis*** gives you an understanding of how changes to variable(s) affect other variable(s). "Regression analysis is a way of mathematically sorting out which of those [independent] variables does indeed have an impact [on your dependent variable]. It answers the questions: Which factors matter most? Which can we ignore? How do those factors interact with each other? And, perhaps most importantly, how certain are we about all these factors?" [28]

Regression analysis gives you an understanding of correlation. In other words, this type of analysis will give you a sense of how closely your variables are related.

> ***Correlation*** A statistical measure (usually expressed as a number) that describes the size and direction of the relationship between two or more variables.

For example, regression analysis could possibly tell you the different correlations between the reduction in waterborne disease rates (your independent variable) and the use of two prevention methods: provision of potable water and handwashing campaigns (your dependent variables). The analysis will also give you an understanding of the strength of this correlation. If it is strong, then you can be more confident that your intervention is related to the changes you are seeing.

It is important to note that correlation does not necessarily imply causation.

> ***Causation*** When changes to one or more variables are the result of changes in other variables.

For example, if your analysis shows a correlation between handwashing messaging, improved handwashing practices, and the reduction of waterborne disease, you can't necessarily say that your project caused these changes.

It is extremely difficult to prove causation—saying with 100 percent certainty that your project caused a particular change. This is especially true when working in the "real world," outside of a laboratory environment. There are, however, two strategies that can be used to increase your confidence that causation exists between variables:

Counterfactuals and control groups: The use of counterfactuals and control groups is a strategy usually used in impact evaluations. These evaluations are designed to understand cause and effect between your project and the outcomes you see. The "counterfactual" measures what happens to the "control group," a group of people who are not involved or impacted by your

[28] Gallo A. November 4, 2015. A refresher on regression analysis. *Harvard Business Review*.

project. During analysis and interpretation, you compare the results of your project sample with the control group in an effort to demonstrate causation. This kind of study requires a great deal of planning and structure, including a rigorous sampling design. The problem with this strategy is that not all projects have the resources and capacity to design a rigorous impact analysis that includes control groups.

Mixed-method approaches: Many experts believe that a higher level of certainty about causation is possible using a mix of evidence to triangulate your results. For example, you might gather data through a quantitative questionnaire; qualitative semi-structured interviews; and direct, systematic observation at the project site. If these three methods of data collection and the resulting analysis all lead you to the same conclusion, then you have triangulated your data and potentially demonstrated stronger grounds for causation.

Contribution: An alternative to causation

MEAL experts understand how difficult it is to be confident about causation in development settings such as the UNITAS case. As a result, an alternative has been developed called contribution analysis. Those advocating contribution analysis suggest that while causation might be too difficult to prove, contribution is not quite as difficult and can be sufficient for your information needs. Contribution analysis is used in situations where rigorous sampling and data collection processes are not possible and it would be unrealistic to attempt to establish statistical causation. Instead of asking "*Did our project cause the changes we are seeing,*" these experts ask, "*Did our project contribute to the changes we are seeing?*"

Contribution analysis is a process of clearly outlining a contribution "story" by transparently following these six steps:

- Clearly define the questions that need to be answered
- Clearly define the project's theory of change and associated risks to it
- Collect existing evidence supporting the theory of change (your conceptual frameworks)
- Assemble and assess your own project's contribution story
- Seek out additional evidence where necessary
- Revise and conclude the contribution story

By following and documenting these steps, contribution analysis can demonstrate that a project contributed to change.

Quantitative analysis errors

As you consider quantitative analysis and the sampling decisions that go along with it, there are two general types of quantitative analysis errors you need to be aware of, a Type I error and Type II error.

Type I error Wrongly concluding that your project has had an effect on the target population when it has not. This is also called a false positive. In the UNITAS example, a Type I error would be to state that the creation of new water points reduces waterborne disease among IDPs when it actually does not.

Type II error This is the opposite of the Type I error. This occurs when you wrongly conclude that your project has *not* had an effect on the target population when it actually has. This is also called an error of exclusion or a false negative. In the UNITAS example, a Type II error would be to state that the creation of new water points does not reduce waterborne disease among IDPs when it actually does.

Type I errors (false positives) are problematic when you are considering expanding your project on a large, expensive scale. UNITAS is considering expanding the program to create new water points in other IDP areas. Before expanding the program, the team will want to be as sure as possible that that new water points and handwashing promotion results in improved handwashing practices, and thus reduces the incidence of waterborne disease.

To avoid Type I errors, you will want to plan for a smaller margin of error and a higher confidence level when you select your sample from which to collect data.

However, be careful not to set your requirements too high. This can lead to Type II errors, where you fail to recognize important factors that make a difference to your population or project implementation. One way to reduce the risk of making a Type II error is by increasing your sample size. But, this has implications on your budget that must be considered. Even small increases in sample size can dramatically increase your budget.

5.3 Qualitative data analysis basics

Qualitative analysis is working with words that combine to become ideas, opinions and impressions. There are fewer rules, and approaches vary. In general, the objective of qualitative analysis is to identify key themes and findings, including among subgroups if you have them, from all the notes you have collected from your interviews and focus group discussions.

Qualitative analysis is often called “content analysis” and requires multiple reviews of data (your content) so that the data becomes more manageable. The process of becoming familiar with the data will generate themes, which you will use in your analysis. Conducting multiple reviews of the data is particularly important in qualitative analysis, because you need to know your data very well to generate reliable themes and interpretations. Multiple reviews also implies the inclusion of multiple perspectives in the analysis.

Qualitative analysis begins with the raw data, which can take many forms. You might have recordings of interviews. You might have notes from focus group discussions. The raw data need to be organized so that they are easy to review. If you are using well-written notes from interviews and focus groups, you may not need to do much at this stage. But, if you have both recordings and notes, or notes that are difficult for multiple people to review, it will be helpful to do some work with the data before you analyze it. You may need to make a written transcript of your recordings. Or, it might be necessary to rewrite notes that were taken in shorthand. Always make sure that the final document is written in the language that will be used in analysis; for this reason, translation may be necessary.

Once you have organized your raw data, you need to complete the following steps:

Step 1: Code data: Begin to identify themes

Coding is a process that helps reduce the large quantity of qualitative data you have into manageable units. The coding process is iterative, meaning that you will learn as you code content. Reading the data might trigger new ideas, which lead you to review the data again, and thus make new findings. To begin coding, read through all your transcripts at least once so you get a sense of the entire package. During this first reading, you can begin to make notes in the margins of your transcripts to identify themes that you see emerging.

After you have read through the data, read through the information carefully again. You may be comfortable at this point to start adding codes (based on your original notes). A code is simply a category label that identifies a particular event, opinion, idea, etc. Your codes need to be descriptive enough so that people understand their meaning, but not so long that they become difficult to manage.

For example, you might notice that there are different thoughts about the concept of water "meeting my household consumption needs" that are interesting to you. These can be sorted into categories such as ease of access to water, the specific location of the water point, number of times the water point is visited per day, perceived water quality, etc. Your related codes could be: access good, access poor, location good, location poor, etc.

Eventually, these codes will be mapped in a matrix that will help you visualize the data and begin to interpret its meaning. (See step 4.)

There are competing theories about coding, which cannot be covered in this guide. However, it is useful to consider the differences between deductive coding and inductive coding.

> ***Deductive coding*** is an approach to coding in which codes are developed before the data is reviewed. During the review, the codes are applied to the data.
>
> ***Inductive coding*** is an approach to coding in which codes are developed as the data is reviewed, using the specific words used by participants themselves. Codes are built and modified during the coding process itself.

Deductive coding uses labels in your data that relate to the questions you asked in your tool, which, of course, relate back to the indicators in your PMP and the questions in your evaluation terms of reference. Inductive coding, on the other hand, means that you create codes based on the themes that emerge naturally from the participants' experience as recorded in your data. In this case, you are using the participants' own words to create your codes. It is useful to practice both of these coding methods. Deductive coding can help you organize your codes and analysis, while inductive coding helps you identify new ideas. Deductive coding rarely identifies all of the codes you will need before you analyze your data. That is the beauty of qualitative analysis; it raises many interesting themes and understandings that you may not have thought of before.[29]

[29]Alkin MC and Vo AT. 2018. *Evaluation essentials from A to Z*. Guilford Press.

For that reason, use a mix of both deductive and inductive coding to arrive at the most comprehensive results.

Step 2: Index data

As you begin reading your transcripts, you may need to match concepts and relevant quotations to the codes you have identified. This is called indexing, a step often used when you are sorting through large amounts of qualitative data. When you index your data, you essentially tag the content from your transcripts using the codes from the previous step. Then, you create a list of those tags and where they are in the data in the form of an index.

Once you have indexed your content, you will be able to review your codes and more easily find the different concepts and relevant quotes related to the codes within your transcripts. You will also be able to identify how dense a code is; how often the code appears and where, relative to the other codes you created. Indexing is particularly important if you need to go back to find a noteworthy idea or quotation when you are communicating your results.

Step 3: Frame data

At this point, you begin to put the qualitative data you are working with into a form that can be understood. The most frequently used method of describing qualitative data is a matrix—sometimes called the framework approach—which organizes your data according to categories that are useful to you. The structure of a matrix will differ depending on the type of data collection you are doing. For example, a matrix including data from semi-structured interviews may show the respondent along the left column and the questions along the top row. Responses are included in the box corresponding to the question and the respondent.

Data resulting from focus group discussions may be structured in another way, depending on the nature of the group and your information needs. For example, you could create one matrix for one particular group in one location, another for one subgroup within the focus group in that location, and even one comparing the results of subgroups in various locations.

Figure 59 shows a matrix created to analyze the data collected from questions asked during focus group discussions held in two villages. For each session, the focus group leader asked questions related to household consumption needs and whether the new water points helped meet those needs. The respondents included household heads of both small and large households in each village. (Remember from the previous example that small households are families of four or fewer members and large households consist of five or more members.)

The project team first created analysis matrices for the responses from each focus group in each village, including one for each subgroup. Then, those responses were summarized in this matrix in the field corresponding to their village and size of household.

Figure 59: Qualitative analysis matrix: "Access to water meets my household consumption needs."

Location	Large households	Small households

Village 1	Access: Generally OK, but need to visit water point often during the day. Consumption needs: No consensus on whether 30 L per person per day is enough. Some require more for washing and cooking than others. Location: Still too far away for some. No consensus. Quality: Smells and tastes different, but generally acceptable.	Access: Much better than before. Consumption needs: Meets consumption needs. Consensus that 30 L per person per day is acceptable. Location: New location is not safe for children, so need to send adult or older child to collect water. But happy overall with the fact that it is closer. Quality: Smells and tastes different, but much better than before.
Village 2	Access: All agree that the new water point location is a great improvement. Consumption needs: 30 L per person per day is definitely not enough for large families. Location: Large families need more water on average and the new location allows them to go more often to get water more easily. Quality: No specific complaints.	Access: Some complain that some families have more access than others in the new location. Consumption needs: 30 L per person per day meets consumption needs. Location: Not as centrally located as it could be. Quality: No specific complaints.

A matrix helps you visualize and begin to interpret your qualitative data, which allows you to arrive at meaningful conclusions. The qualitative analysis matrix is also a good tool to support your conclusions, which you can show to stakeholders if necessary. Remember as you create your matrix that the number of rows and columns you use will depend on your context, the number of questions you ask, and the type of responses you receive. Imagine an entire wall covered with sticky notes containing coded responses generated by a room full of stakeholders discussing the data. The coding and matrices will help you make sense of all the data.

Qualitative analysis is flexible. You can use or adapt the steps described above to fit your context and situation. Critically, it is just as important to incorporate a wide variety of perspectives into your analysis as it is in the data gathering itself. Thus, many experts advise doing this analysis as a participatory workshop in which you involve different stakeholders.

5.4 Data visualization

Data visualization is the process of showing your data in a graph, picture or chart. Because of the way the human brain processes information, using pictures, maps, charts or graphs to visualize large amounts of complex data is easier than poring over spreadsheets or reports. Data visualization helps share detailed insights into data in the quickest and most efficient way. This helps with:

- **Analysis:** Discovering relationships between, and patterns in, the data.
- **Interpretation:** Understanding and reflecting on patterns in the data set and then inferring new information based on that interpretation.
- **Communication:** Making technical, statistical analysis understandable to people with limited technical knowledge, and sharing your information in ways appropriate to your stakeholders.

Consider following these steps to ensure that your products are effective, especially if you intend to use data visualization to aid communication to stakeholders (in a report, for example):

Step 1: Define the stakeholder(s)

Before designing a visualization, identify the key audience(s). Refer to your communications planning and craft the visualizations according to the stakeholder. Keep in mind that different people have different learning styles.

Step 2: Define the data visualization content

Check your communications plan to determine the "need-to-know" content for each of the stakeholders identified. Then, determine where a visual will be most useful based on your findings, your information needs and the data available to you.

Step 3: Design and test your visualization

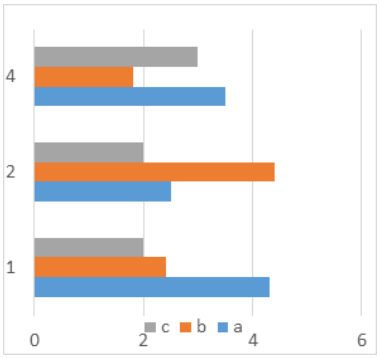
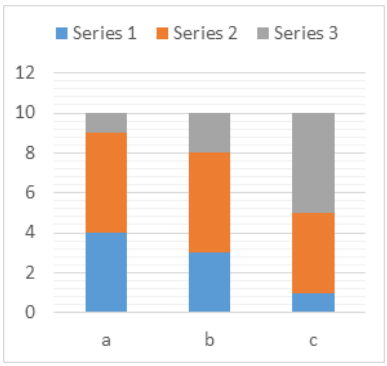
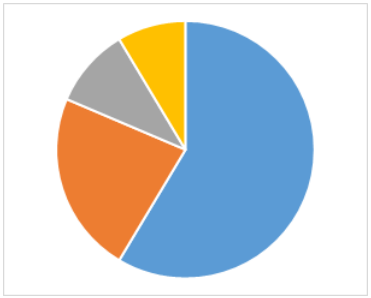
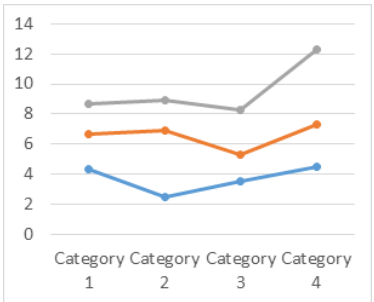
Remember to keep it simple. Less is more with data visualization. Do not crowd your visuals with too much data. Get started on paper, with the audience-specific content that was identified. For each key audience identified, different visuals or dashboards may need to be designed. Figure 59 provides examples of the most common data visualization tools.

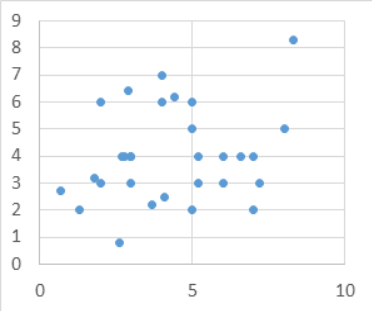
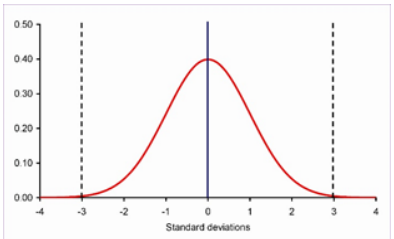
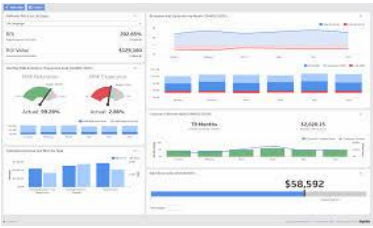
Step 4: Build your visualizations

Team members with skills and experience in digital software can build data visualizations using the prototypes that were developed in a small group or workshop setting. Some of these visualization tools can be created in Microsoft Excel, if that is the software you are using to organize and analyze your data. For many, however, you will need the assistance of a team member who is skilled in digital software and visualization. Collaboration between digital experts and MEAL staff will be necessary for more complex visualizations.

Figure 60: Examples and use scenarios of data visualization tools

Tool	Use

	**Bar chart** ● Shows multiple responses across different subgroups or points in time. ● Useful when presenting various responses for only a few subgroups or points in time. ● Not appropriate when the responses given are numeric or equal 100 percent in total.
	**Stacked column chart** ● Shows the variation in multiple variables or options across different subgroups on different questions or different points in time. ● Useful when comparing parts of a whole across different subgroups. ● Not appropriate when the totals do not equal 100 percent or when representing only one subgroup or point in time.
	**Pie chart** ● Shows composition of data set when component parts add up to 100 percent. ● Useful when demonstrating the different subgroups or demographics represented within a data set. ● Not appropriate with multiple (more than five, etc.) data points represented or when the total does not equal 100 percent.
	**Line chart** ● Shows the trends across different points in time. ● Useful when tracking change over many points in time. ● Not appropriate to show cumulative data or when comparing multiple (more than five) different trends.

	**Scatter chart** ● Shows the relationship between two continuous variables (i.e. amount of harvest or rating scale) or distribution within a data set. ● Useful when looking for patterns or outliers and for correlation in large data sets. ● Not appropriate when using binary (yes/no, etc.) variables or with very few data points.
	**Heat map** ● Shows the distribution of results across a geographic area, with greater distributions represented by greater (“hotter”) color intensity (in this case, red). ● Useful when covering an entire region or district. ● Not appropriate to demonstrate change within a subgroup or between different points in time.
	**Line histogram** ● Shows the distribution with a range of numeric data. ● Useful when looking for the range to accompany an average value. ● Not appropriate when presenting categorical data (data that can be divided into mutually exclusive groups) or multiple responses given or when tracking changes over time.
	**Data dashboards** Visually display a collection of key data points to monitor the status of a project. A dashboard can include multiple visualization tools as its subcomponents.

5.5 Interpreting quantitative and qualitative data

Quantitative analysis generates frequencies, averages and levels of difference that exist in your data. Qualitative analysis identifies themes and patterns. Both types of analysis need to be interpreted to make sense of the information they offer you. Together with your team and other important stakeholders, you interpret your data set by giving meaning to it. The meaning you give it is the story of your project, the story you will use to make project decisions and share your results with others.

As with analysis, your planning documents will help you decide when to interpret. You interpret after you analyze and visualize, although the process is often iterative. Your interpretation can lead to the need for more data collection and further analysis and interpretation, and so on. There is no prescribed process

for interpreting data, but there are several recommended practices for improving your data interpretation through enhanced participation and critical thinking. These include:

- Creating visualizations of your results to help people better understand and interpret your data, making sure your visualizations are used to give the full picture of the data and are not misleading.
- Triangulating your data by presenting the results of both quantitative and qualitative analysis together so that you can compare the results.
- Convening a stakeholder meeting to interpret the data. This meeting should involve stakeholders with different perspectives on the project. The incorporation of multiple perspectives in your interpretation is critical to the creation of information that will be useful and trusted to help the project improve.
- Planning an adequate amount of time to analyze and interpret data. As indicated throughout this chapter, the analysis and interpretation process takes time. It is important to ensure that these processes are part of the overall project implementation plan.
- Making sure roles and responsibilities around interpretation are clear. Usually, the MEAL team does the initial analysis while project staff organize and facilitate interpretation events.

As your team and stakeholders undertake data interpretation, you need to consider your interpretation (and subsequent results and recommendations) through the same lenses you used to view data quality. For example:

- **Validity** Your interpretation is considered more valid if you can clearly demonstrate that it is based on data that directly supports it.
- **Reliability** Your interpretation will be considered more reliable if you can demonstrate the consistency of your data analysis methods and their use across multiple data sets.
- **Integrity** Your interpretation will be considered to have more integrity if you can demonstrate that it is based on data collection and analysis processes that are relatively free of error and bias.

Data limitations to consider during interpretation

Your interpretation process must consider that the type of data you have limits your ability to make interpretations and reach conclusions. Your chosen data collection methods and related sampling designs *determine* the type and quality (using the standards outlined above) of data you have available. The type of data you have determines the type of tests you can do and, thus, the kind of conclusions and recommendations you can develop. And, while interpreting data, you must always be aware of, and factor into your interpretation, the various types of bias that may be present. There are different types of limitations and bias to consider:

- ***Limitations related to data type*** With qualitative data, you must be very clear about the fact that your data represent only the perspectives of the people participating in the focus group discussions or set of interviews. They should not be used to make broad generalizations about the population. However, this information can be used to support other findings, such as those generated using quantitative data.

Quantitative data generate different interpretation challenges. In theory, quantitative data, if rigorously collected and analyzed, can help you generalize and make statements about correlation and even causation. But, quantitative data collection is by nature fairly limited in the breadth of information it collects. "Yes" or "no" answers are clear and concise. But, they do not tell you the whole story. Quantitative data can tell you whether something happened, but possibly not why. Whenever possible, combine quantitative data interpretations with supporting interpretations from qualitative data.

- ***Limitations related to sampling*** You now know that there are different sampling methodologies. Your sampling method and size have an impact on the kind of analysis and interpretation you can conduct. For example, random sampling allows you to generalize to the larger population from which the sample was selected. If your results fall within your desired margin of error, you can then make more confident statements about how your project can benefit others.

  Purposive sampling, on the other hand, is used to better understand a specific context or situation, usually one in which you are hoping to triangulate data. Sometimes your best efforts to collect data according to your purposive sampling plan are unsuccessful. For example, perhaps you were able to only conduct one focus group discussion with small families while you have three sets of data from larger families. Any results you report must take this situation into account and make it explicit.

  Furthermore, any interpretations or comparisons you make relating to subgroups are only possible if your sampling strategy allows for it. If your analysis plans identified groups based on household size, and your collection methods incorporated this stratification (i.e. you collected information from both large and small households) then you will be able to analyze and interpret your data using these subgroups. If your data were not collected in this way, then you cannot make these distinctions.
- ***Limitations related to data quality*** With any data, you must be explicit about any existing quality issues and how they might influence your interpretation. The information you collect will never be perfect. Questionnaires will have missing responses, focus group leaders may unintentionally influence respondents, and self-reported responses may be improperly understood. Your interpretation of both quantitative and qualitative data must incorporate your understanding of any data quality issues.

  For example, imagine that after implementing the questionnaire in village 1, UNITAS staff found that the concept of "*having enough water to meet household needs*" was not translated well. The respondents did not understand the question and thus gave responses that did not make sense. This was discovered after a review of the data, and the translation was improved for all

future uses of the questionnaire. However, any data gathered about this question from village 1 would need to be treated very carefully and potentially not included in the interpretation.

Be transparent about all limitations of your analysis and interpretation. For example, when you write up your findings in a report, be sure to include the limitations alongside them.

- ***Limitations related to bias***

Bias has already been mentioned in different settings. Remember that bias can be defined as any trend or deviation from the truth in data collection, analysis, interpretation, and even publication and communication. There are various types of bias, which must be considered during your data interpretation and explained in your communications. It is nearly impossible to eliminate all bias from your MEAL work. However, simply being transparent about these biases increases the trust your stakeholders will have in your conclusions and your processes.

Sampling bias is when certain types of respondents are more likely than others to be included in your sample, as in convenience sampling and voluntary response bias. This bias compromises the validity of your random sample.

Data analysis bias occurs when your analysis includes, intentionally or unintentionally, practices such as:

- Eliminating data that do not support your conclusion.
- Using statistical tests that are inappropriate for the data set.

Data interpretation bias occurs when your interpretation does not reflect the reality of the data. For example, the analysis team may:

- Generalize results to the wider population when they only apply to the group you have studied.
- Make conclusions about causation when the sampling and collection designs do not make this possible.
- Ignore Type I and Type II errors.

Data publication and communication bias This occurs when those publishing or reporting on project results neglect, for example, to consider all results equally, whether positive or negative. For example, there are many published and communicated success stories, but not as many “failure” or “lessons learned” stories.

Participation: Collaborating with stakeholders to validate data analysis themes and conclusions

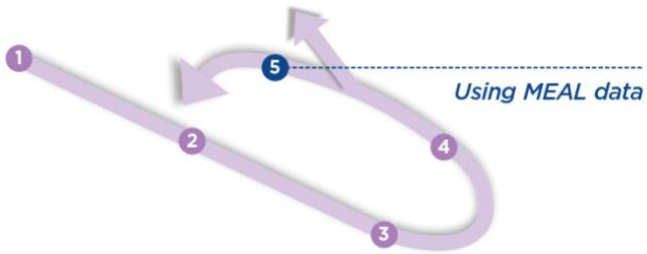
Validating, or testing, the themes and conclusions you generate from data analysis is always an important part of the process. There are clear benefits to including multiple stakeholders when validating themes and conclusions.

The simplest way to validate data analysis themes and conclusions is by simply asking data sources whether you have correctly captured their opinions and thoughts through the themes you generated. By including multiple, varying perspectives, it is more likely that you will solicit competing explanations of the results you are seeing. One way to promote this dynamic is to ask yourself and others to take on the role of the "skeptic." This involves asking stakeholders, "*What if what I found is NOT true?*" Validating your results through multiple stakeholder perspectives can help reveal biases that may have entered the analysis consciously or unconsciously.

- Can you think of an example of when your data analysis themes and conclusions were incomplete or biased?
- Would the results have been improved by incorporating a variety of stakeholder objectives? How?
- What practical steps could you take to collaborate with stakeholders more closely when validating data analysis themes and conclusions?

Chapter 6: Using MEAL Data

6.1 Introduction



You have now reached what many consider to be the most important phase of the MEAL cycle, where you have the opportunity—and obligation—to use your MEAL information to inform decisions. Indeed, a disciplined focus on the end use of the information will have informed your decisions throughout the processes described in chapters 1 to 5.

MEAL data are critical for project and MEAL management and for the communication of project results to stakeholders.

In this chapter, we explore the purpose and practice of using MEAL data to inform project management and direction through a discussion of adaptive management. This chapter also includes guidance for meeting key stakeholder information needs, particularly in the areas of progress and evaluation reporting.

By the end of this chapter, you will be able to:

- ✓ Identify the key principles of adaptive management, including how they are incorporated into the MEAL cycle
- ✓ Describe how data are used in reporting and communication with stakeholders

6.2 Adaptive management

In order to contribute to project improvements, MEAL information should be used as part of ongoing project decision-making. Adaptive management, as discussed in Chapter 4, encourages and supports this process. Effective adaptive management collects and analyzes project monitoring and feedback data to help project staff make collaborative, timely and informed decisions to ensure that project activities deliver intended impact to participants within the approved time, scope and budget.

Project managers need accurate, relevant and timely information to:

- Assess project progress.
- Inform ongoing problem-solving and good management decisions.
- Understand the perspectives of participants and their levels of satisfaction with the project.

- Address feedback raised by community members, both participants and non-participants.

Adaptive management also contributes to internal and external learning. In a project that embraces adaptive management, learning is not a parallel or standalone activity, it is a core activity that is part of project implementation, helping you make changes so that you are doing "the right things" in "the right way" for "the right people." By embracing adaptive management, individuals and teams not only learn, but are also more accountable to stakeholders as they respond to project data and feedback.

In order to demonstrate the value of adaptive management, Figure 61 contrasts it with more traditional management approaches.

Figure 61: Traditional versus adaptive project management[30]

Traditional management	Adaptive management
Leadership encourages standardization and control	Leadership encourages interaction and change
Change efforts are driven from the top down	Change is emergent and contextual
Relies on management planning and execution of repeatable tasks	Relies on organizations having capacities and processes to generate innovation in day-to-day performance

A culture of adaptive management results from a series of intentional investments related to project design, staffing, budgeting, decision-making and more. A project that embraces adaptive management will respond affirmatively to the questions in Figure 62.

Figure 62: Is your project designed to promote adaptive management?

Does your project have resources to support learning?	**Your project does this by…** ● Providing the budget, resources and time for learning-related activities. ● Recruiting staff who show passion and curiosity, and who are willing to question the standard operating procedures and take risks.
Are project decisions informed by evidence-based data?	**Your project does this by…** ● Promoting a safe environment for speaking up, even when opinions differ from the majority, or from the team lead. ● Intentionally and appropriately using evidence from multiple sources in analysis and interpretation. ● Generating timely and accurate data to inform project design, planning and implementation. ● Using feedback from stakeholders as part of decision-making.
Does your project accept and encourage change?	**Your project does this by…** ● Encouraging flexibility, adaptability and entrepreneurship. ● Revisiting logic models and implementation plans to promote learning.

[30] Valters C, Cummings C, Nixon H. 2016. *Putting learning at the centre: Adaptive development programming in practice*. Overseas Development Institute.

	• Promoting and rewarding innovation.

6.3 Progress reporting

You have already seen that using data is about much more than generating required reports. But high-quality, transparent reports in line with your donor or other internal and external stakeholder requirements are vital. Good reporting captures and explains both the successes and the challenges facing the project, and offers evidence of robust evaluative thinking in the search for solutions.

Reporting and communication can be seen as the culmination of your data analysis process, recognizing that the ways you choose to include information in your reports is the final stage of interpretation. The guidance below is critical to creating reports that resonate with your stakeholders and are useful.

- Consult your project communications plan and data flow map
  This review will remind you of your communications audience, purpose and timing.
- Identify or develop report templates
  Don't make unnecessary effort when it comes to reporting. First find out whether your organization or project already has a report template that you can use. If you need to create a new one, ask your colleagues and stakeholders for examples they find useful that you can adapt for your purposes. Keep in mind that your organization may have internal reporting procedures that you must follow. And, donors often provide a report template and schedule that you must follow.
- Identify donor reporting requirements
  Donors frequently specify their required reporting template and schedule. Ensure that any templates you adapt or create also comply with these requirements.

  Given the importance of reports, many donors and organizations have created detailed guidance on how to create them. Check with your donor for their guidance on evaluation reporting. For example, USAID gives extensive guidance on how to prepare an evaluation report.[31]

6.4 Using data from the Delta River IDP Project

At the end of the second year of the Delta River IDP Project, the UNITAS team held an annual review meeting, during which they analyzed the monitoring data collected to date, and reviewed the findings from the midterm evaluation conducted earlier in the year.

The data indicated that the project was underperforming in its efforts to achieve its strategic objective: "*There is a reduced incidence of waterborne disease among IDPs.*" While the strategic objective indicator stated that *"The incidence of waterborne disease among IDPs is reduced by 30 percent by the end of Year 3,"* data from the evaluation indicated that the incidence of waterborne disease had only been reduced by 5 percent.

[31] USAID, Bureau for Policy Planning and Learning. 2013. Evaluation report template.

However, while the incidence of waterborne disease was not declining as significantly as expected, several other data points painted a more positive picture of the project:

- Qualitative data collected through focus group discussions indicated that community members and other local stakeholders described the project as very valuable and resulting in positive changes for communities.
- Data relating to intermediate result 2 *(IDPs improve their handwashing practices*) indicated that while rates of adoption varied by community, some communities had made significant progress toward meeting their handwashing adoption targets.

The project donor's annual reporting deadline was a month away and the UNITAS team was not sure how to interpret the data. Some members worried that the project was fundamentally flawed. They were concerned that either the theory of change was incorrect, or that they had missed a critical assumption. Others felt there were conflicting messages in the data, and it was too soon to assume that the project was flawed.

The UNITAS MEAL officer requested more time to further analyze the data sets.

First she analyzed the data related to reducing the incidence of disease by disaggregating the results by gender. She tried to determine whether the rates of decline differed between male- and female-headed households. But, the disaggregated data did not provide additional insights.

After conducting several additional calculations, the MEAL advisor used the existing data to explore another question she wanted to test: "*Did communities who adopted improved handwashing practices reduce their incidence of waterborne disease more significantly than communities that did not?"*

She then disaggregated the data on the incidence of waterborne disease into two groups: *"high-adoption communities"* that had improved their handwashing practices, and *"low-adoption communities"* that had not changed their handwashing practices. Looking at the data through the perspectives of these two groups conveyed a completely new story. While the general progress in reducing waterborne disease was underperforming; reductions in waterborne disease among high-adoption communities was remarkable.

With this new data interpretation, the UNITAS team could confidently communicate two findings to the donor:

1. The ToC was not flawed, and remained relevant to the project context and problem.
2. Investment in improved handwashing practices was key to reducing the incidence of waterborne disease.

When sharing these results in the annual donor report, the UNITAS team visualized the data by creating a heat map that illustrated improved handwashing practices by village and how they related to reduced waterborne disease. The report narrative also recommended activities to improve adoption of improved handwashing practices in non-adopter communities. Suggested strategies included:

- Scheduling trainings at different times so older children and young adults could attend.
- Ensuring that local markets had enough soap available for purchase.
- Confirming that there was reliable access to water and soap in all latrines.

- Conducting refresher trainings for communities with low adoption of handwashing.

In response to the report, the donor approved changes to the project plans. These included:

- Inserting new activities into the project Logframe, the budget and Gantt chart. These activities included providing refresher trainings in low-adoption communities and monitoring soap availability through market checks.
- Updating the PMP and the IPTT to include new analysis subgroups (high-adoption communities and low-adoption communities).

The updates to the project plan were then shared with community leaders, who were invited to provide ideas on how to make the refresher training more engaging and effective.

By carefully and diligently using the data from its MEAL system, the UNITAS team was able to make significant improvements to the project. Through a combination of insightful interpretation, data visualization and adaptive management, over the next 12 months, the project was able to increase the adoption of improved handwashing behaviors in all the IDP communities. This, in turn, resulted in the project meeting its strategic objective of reducing the incidence of waterborne disease.

On the completion of the 3-year project, the learning from the Delta River IDP Project was codified into a case study that was shared internally and published on the UNITAS blog. The UNITAS project manager also made several presentations at conferences on the relationship between handwashing practices and reduced incidence of waterborne disease.

Glossary

Accountability is a commitment to balance and respond to the needs of all stakeholders—including project participants, donors, partners and the organization itself—in the activities of the project.

Activities are the work that will be conducted to deliver the project outputs.

Adaptive management is an intentional approach to making decisions and adjustments to the project in response to new information and changes in context.

Anonymization Stripping data of any identifiable information, making it impossible to derive insights on a discrete individual, even by the party that is responsible for the anonymization.

Assumptions are the conditions or resources outside the direct control of project management, but that nevertheless must be met for change pathways to succeed.

Baseline The value of an indicator before the implementation of an activity, against which subsequent progress can be assessed.

Bias Any trend or deviation from the truth in data collection, analysis, interpretation, and even publication and communication.

Blind spots are unintentional omissions in thinking, or errors that happen because of habit (e.g., snap judgments, confidence, experience).

Causation is the ability to say that changes to one or more variables are the result of changes in other variables.

Closed-ended question A question that requires the respondent to choose from a predefined list of answer options. This makes it easier for responses to be coded numerically, allowing for analysis using statistical models.

Communication plan This defines who needs to be aware of and informed about the project MEAL activities, what they need to know, how and how often information will be distributed, and who will be responsible for the distribution.

Conceptual framework A tested, evidence-based model for a development or relief intervention.

Confidence level The percentage of all possible samples that can be expected to include the true population parameter.

Content-mapping question A question intended to initiate the exploration of a topic by raising and broadly exploring an issue.

Content-mining question A follow-up question that elicits more detail or explanation about a response to a content-mapping question.

Contingency or cross-tabulation tables use data that can be separated into different categories that are distinct from each other. These tables give a basic picture of two or more groups of data (subgroups) and the interactions between them—how they are related and how they may be different.

Contribution analysis is a step-by-step process of clearly outlining a contribution "story" by transparently following these six steps:

- Clearly defining the questions that need to be answered.
- Clearly defining the project's theory of change and associated risks to it.
- Collecting existing evidence supporting the theory of change (conceptual frameworks).
- Assembling and assessing the project's contribution story.
- Seeking out additional evidence where necessary.
- Revising and concluding the contribution story.

Correlation is a statistical measure (usually expressed as a number) that describes the size and direction of the relationship between two or more variables.

Critical thinking is a process of thinking that is clear, rational, open to different opinions, and informed by evidence.

Cross-tabulation table A visual representation of the frequency of values of an entire data set, including subgroups within the data set.

Data analysis is the process of bringing order, structure and meaning to the mass of collected data. It turns individual pieces of data into information that can be used. This is accomplished by applying systematic methods to understand the data: looking for trends, groupings or other relationships between different types of data.

Data cleaning Detecting and removing errors and inconsistencies from data to improve its quality.

Data flow maps illustrate the flow of data from each data collection form/process to the corresponding report.

Data interpretation is the process of attaching meaning to data. Interpretation requires judgments related to generalization, correlation and causation, and is intended to answer key learning questions about the project.

Data management is the process of managing data through the phases of its life, from data entry to cleaning, storing and its eventual disposal.

Data visualization is the process of putting data into a chart, graph or other visual format that helps inform analysis. Data visualization can also help with the interpretation and communication of results.

Descriptive data analysis describes patterns and characteristics of a particular group, usually the sample.

Disaggregation is the practice of dividing data collected from a population into groups according to key characteristics: gender, religion, age, etc. Disaggregation allows for the identification of trends, patterns or insights that would not be seen if the data was examined as a whole.

Domains of change are the broad strategic areas of intervention that most directly contribute to achieving the long-term goal of the project's theory of change.

Evaluation is the user-focused, systematic assessment of an ongoing (or completed) project's design, implementation and results.

Evaluation criteria are a set of principles that guide the development of evaluation questions and the overall evaluation planning process. They include:

- ***Relevance*** The extent to which the project is suited to the priorities, needs and opportunities of the target group, recipient and donor.
- ***Effectiveness*** The extent to which a project attains its objectives.
- ***Efficiency*** The extent to which the project uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.
- ***Impact*** The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended.
- ***Sustainability*** The extent to which the benefits of a project are likely to continue after support (monetary and non-monetary) has been withdrawn.

Evaluation questions are clear statements of what needs to be known as a result of the evaluation.

Feedback-and-response mechanism A two-way communications mechanism designed to gather and respond to feedback from project participants and other community-based stakeholders.

Focus group discussion A guided discussion between respondents in a group. It is a qualitative data collection tool designed to explore and understand the rich depth and context of a group's perspectives, opinions and ideas.

Frequency indicates how many times something occurred or how many responses fit into a particular category.

Frequency table A visual representation of the frequency of values on your data set.

Gantt chart A bar chart that illustrates the timing of a project schedule.

Generalization is possible when data gathered from a sample accurately represent the general population from which the sample was drawn.

Indicator A measure used to track progress, reflect change or assess project performance.

- ***Direct indicators*** measure change by directly examining the phenomenon that is of interest.

- ***Indirect or proxy indicators*** measure change by examining markers that are generally accepted as being proxies for the phenomenon that is of interest.
- ***Qualitative indicators*** measure judgments, opinions, perceptions and attitudes toward a given situation or subject.
- ***Quantitative indicators*** measure quantities or amounts. They enable project progress to be measured in the form of numerical information

Indicator Performance Tracking Table (IPTT) A standardized table that helps track, document and display performance against the indicators in a PMP.

Inferential data analysis enables the use of samples to make generalizations about the populations from which the samples were drawn.

Integrity (of data) Data have integrity when they are accurate. Data should be free of the kind of errors that happen, consciously or unconsciously, when they are collected and managed.

Interval data are expressed in numbers and can be analyzed statistically.

Leading question A question that prompts the respondent—through the specific words used or the way it is asked—to provide an answer that they would not have given if the question had been asked in a more neutral way.

Learning Making time and having processes for in place intentional reflection.

Learning-to-action discussions (LADs) are prompted by a set of questions for discussing and reflecting on data.

Logic model A systematic, visual way to present a summarized understanding of a project and how it works.

Logframe A logic model that describes the key features of the project (objectives, indicators, measurement methods and assumptions) and highlights the logical linkages between them.

Long-term change is the desired lasting impact that the intervention aims to support.

Margin of error The maximum expected difference between the true population and the sample estimate. To be meaningful, the margin of error should be qualified by a probability statement (often expressed in the form of a confidence level).

Mean The average of a data set, identified by adding up all of the values and dividing by the whole.

Measures of central tendency help identify a single value around which a group of data are arranged. They include the mean, the median and the mode.

Measures of variability identify the spread or the variation in a data set. They analyze whether data points are very different from each other over the scale of possible responses, or clustered in one area?

Measurement error This occurs when problems with the data measurement process result in inaccurate data.

Measurement methods identify how the project will gather the data to track progress of the indicators.

Median The middle point of a data set, in which half the values fall below the median and half above.

Mode The most commonly occurring answer or value.

Monitoring is the continual and systematic collection of data to provide information about project progress.

Nominal data are collected in the form of names (not numbers) and are organized by category.

Non-sampling bias includes errors that are unrelated to the specific sampling procedures. There are three common types of non-sampling bias:

- ***Sample frame problems*** occur when the sample frame is incomplete or incorrect. For example, the list of IDPs living in a particular village may significantly underestimate the actual number.
- ***Non-response issues*** occur when significant numbers of people may choose not to participate in a survey. This will have a negative impact on the data and the ability to form conclusions about the work. For example, there may be IDPs who do not participate because they are working outside the village at the times when the survey is conducted. Their perspectives will be lost.
- ***Measurement errors*** occur when information is systematically misreported. In other words, people specifically choose, for whatever reason, not to reply accurately to survey questions. Or, perhaps the person conducting the survey does not understand the question and consistently enters the data incorrectly on the form.

Open-ended question A question that allows someone to give a free-form response in their own words.

Ordinal data have an order to them. They can be ranked from lesser to greater.

Organizational learning is the process by which an organization discovers and adapts to new knowledge.

Participation Encouraging varying degrees of contributions of different types of stakeholders in initiating, defining the parameters for, and conducting, MEAL.

Pathways of change identify the connections between preconditions: their dependencies and their sequencing. Most initiatives have multiple pathways that contribute to the long-term goal.

Percentage A section of data as a proportion of the whole. It is expressed as a rate, number or amount in each hundred.

Population A set of similar people, items or events that is of interest for some question or experiment.

Precision (of data) relates to indicators and measurement methods that are detailed and focused enough to provide a good picture of what is happening in a project.

Preconditions are the building blocks of the theory of change. They are the requirements that must exist for the long-term change to take place.

Prevailing myths are misguided assumptions such as “access equals use,” “knowledge equals action,” and “activities equal outcomes.”

Primary data collection methods rely on information collected directly through the project’s team and stakeholders.

Pseudonymization Replacing personally identifiable information fields with a code that protects the respondent’s identity. Nevertheless, with the use of a data key, the individual’s identity can be rediscovered.

Purposive (selective) sampling A non-probability sample where sampling units that are investigated are based on the judgement of the researcher. Sampling units are selected based on characteristics of a population and the objective of the study.

Quantitative methods collect data that can be counted and subjected to statistical analysis.

Qualitative methods capture participants’ experiences using words, pictures and stories. This data is collected through prompting questions that trigger reflection, ideas and discussion. Qualitative data are analyzed by identifying themes, topics and keywords.

Questionnaire A quantitative, structured set of questions designed to elicit specific information from respondents.

Random sampling includes respondents that are selected from a list of the entire population of interest so that each respondent has an equal chance of being selected. Random samples are used when it needs to be stated that what is true for the sample is likely true for the entire population (or a subgroup of the larger population).

Range compares the highest score to the lowest score to indicate the spread. This is the simplest measure of variability.

Ratio data are expressed in numbers, with the added element of an “absolute zero” value.

Regression analysis gives an understanding of how changes to variable(s) affect other variable(s). It is a way of mathematically sorting out which independent variables have an impact on the dependent variable. It answers the questions: Which factors matter most? Which can be ignored? How do those factors interact with each other? And, perhaps most importantly, how certain are all of these factors?

Reliability results when indicators and measurement methods collect consistent data that can be replicated over time.

Results framework (RF) A logic model that organizes the results of a project into a series of if–then relationships. The statements in the RF articulate the project’s hierarchy of objectives—describing the causal (or vertical) logic of the project.

Sample A subset of the population selected to be studied that will help understand the population or community as a whole.

Sampling bias occurs when some members of the population are more or less likely than others to be selected for participation in the data collection efforts.

Sample frame A specific list of units (families, households, individuals, children, etc.) that is used to generate a sample. Examples could be a census list or a list of employed teachers, a registration log or a list of project participants.

Sampling unit The individual person, category of people, or object from whom the measurement (observation) is taken.

Secondary data collection methods rely on information that is already available through other sources (published or unpublished).

Semi-structured interview A guided discussion between an interviewer and a single respondent. It is a qualitative data collection tool designed to explore and understand the rich depth and context of the respondent's perspectives, opinions and ideas.

Stakeholder Someone who has an interest in and/or influence on the project.

Standard deviation identifies how far responses differ (deviate) from the mean (average). A high standard deviation means that the responses differ greatly from the mean. A low standard deviation means that responses are similar to the mean. A zero standard deviation means that the responses are equal to the mean.

Stratified sample A sample design that includes different layers or groups of people.

Statistical significance indicates that the difference or relationship between variables exists and is not due to a lucky sample selection.

Target The specific, planned level of change to be achieved during the life of the project.

Theory of change A comprehensive and visual description of how and why a desired change is expected to happen.

Triangulation Validation of data through cross-verification with more than two sources.

Type I error An error that occurs when statistical analysis wrongly concludes that a project has a significant effect on the target population when it does not. This is also called a false positive.

Type II error An error that occurs when statistical analysis wrongly concludes that a project does *not* have a significant effect on the target population when it actually does. This is also called an error of exclusion or a false negative. This is the opposite of a Type I error.

Validity describes data that accurately represent what is to be measured. There are three types of validity:

- **Face validity**: Do stakeholders and other experts agree that the data are a true measure of the result achieved?
- **Attribution**: Can the data realistically demonstrate that the project caused the changes identified?
- **Measurement validity**: Can the measurement method collect data using tools that are well designed and limit the potential for errors?

Variable Any characteristic, number or quantity that can be measured or counted.

MEAL DPro Learning Outcomes

Syllabus Area Code IM		Syllabus Area: Introduction to MEAL in Projects	Reference	Syllabus full code
Topic	Subtopic			
		Introduction to MEAL in Projects		
01	01	Explain why MEAL is the responsibility of everyone involved in the design, planning and implementation of a project		**IM.01.01**
01	02	Define the components, integrated structure, and purpose of MEAL		**IM.01.02**
01	03	Explain the benefits of a strong MEAL system		**IM.01.03**
01	04	Describe the relationship between MEAL and project management		**IM.01.04**
01	05	Explain the five phases of MEAL		**IM.01.05**
01	06	Describe the ethical standards and principles relevant to MEAL		**IM.01.06**
01	07	State the importance of participation and critical thinking in MEAL processes		**IM.01.07**
01	08	Explain how to integrate MEAL in the Detailed Implementation Plan		**IM.01.08**

Syllabus Area Code LM		Syllabus Area: Logic Models	Reference	Syllabus full code
Topic	Subtopic			
		Logic Models		
01	01	Describe how project logic models contribute to establishing a strong foundation for MEAL		**LM.01.01**
01	02	Compare and contrast the components, structure, and purpose of ToCs, RFs and Logframes		**LM.01.02**
01	03	Logic models: Identify gaps in the logic areas of logic models. Identify typical errors. Look at objectives.		**LM.01.03**
		Building a LogFrame		
02	01	Explain the purpose of identifying assumptions in project logic models		**LM.02.01**
02	02	Interpret the vertical and horizontal logic of Logframes		**LM.02.02**
02	03	Understanding the linkage between MOVs and Indicators		**LM.02.03**
02	04	Understand the characteristics of a SMART indicator		**LM.02.04**

02	05	Identify the most common measurement methods and when they are used		**LM.02.05**
02	06	Distinguish between good and bad indicators.		**LM.02.06**
02	07	Use mixed method approaches to address the inherent weaknesses of qualitative methods and quantitative methods.		**LM.02.07**
02	08	Choose the right method for what you're trying to measure.		**LM.02.08**
02	09	Differentiate between different sources of bias.		**LM.02.09**

Syllabus Area Code PT		Syllabus Area: MEAL Planning Tools for Monitoring and Evaluation	Reference	**Syllabus full code**
Topic	Subtopic			
		Identify and describe the purpose, process, and content of key monitoring and evaluation planning tools		
01	01	Identify and describe the purpose, process, and content of Performance Monitoring Plans		**PT.01.01**
01	02	Identify and describe the purpose, process, and content of Data Flow Maps		**PT.01.02**
01	03	Identify and describe the purpose, process, and content of Indicator Performance Tracking Table		**PT.01.03**
01	04	Identify and describe the purpose, process, and content of Summary Evaluation Table		**PT.01.04**
01	05	Identify and describe the purpose, process, and content of Evaluation Terms of Reference		**PT.01.05**
		MEAL Planning Tools for Monitoring and Evaluation		
02	01	Discuss the various types of evaluation and the data required for each process		**PT.02.01**

Syllabus Area Code AL		Syllabus Area: MEAL Planning Tools for Accountability and Learning	Reference	**Syllabus full code**
Topic	Subtopic			
		Identify and describe the purpose, process, and content of some key MEAL planning tools		
01	01	Identify and describe the purpose, process, and content of Communications plans		**AL.01.01**
01	02	Identify and describe the purpose, process, and content of FRMs		**AL.01.02**
01	03	Identify and describe the purpose, process, and content of Learning Plans		**AL.01.03**

Syllabus Area Code CD		Syllabus Area: Collecting MEAL Data	Reference	**Syllabus full code**
Topic	Subtopic			
		Collecting MEAL Data		
01	01	Explain the 5 elements of data quality		**CD.01.01**
01	02	Describe the components of a basic data collection tool outline		**CD.01.02**
01	03	Explain the basic principles of sampling		**CD.01.03**
01	04	Understand the definition and main components of random sampling (sampling bias, generalization, convenience sampling bias, voluntary response bias, population, sampling unit)		**CD.01.04**
01	05	Explain random sampling methods and sampling size alternatives and components		**CD.01.05**
01	06	Understand the definition and main components of purposive sampling (methods, size)		**CD.01.06**
01	07	Describe key steps in preparing to implement data collection tools		**CD.01.07**
01	08	Identify generally accepted protocols and standards for responsible data management		**CD.01.08**
01	09	Differentiate between types of sampling methods and identify the contexts they are most appropriate for.		**CD.01.09**
01	10	Identify good and bad examples of closed ended and open ended questions; good and poor practices in [1] interviewing [2] focus groups [3] participatory activities		**CD.01.10**

Syllabus Area Code AD		Syllabus Area: Analyzing MEAL Data	Reference	**Syllabus full code**
Topic	Subtopic			
		Analyzing MEAL Data		
01	01	Explain how your MEAL planning documents guide data analysis, visualization and interpretation		**AD.01.01**
01	02	Describe the purpose and process of data visualization		**AD.01.02**
01	03	Select the best option for visualizing a particular data set (consider contextual considerations like comparison groups, etc.)		**AD.01.03**
01	04	Describe four categories of data limitations that can adversely impact the quality of data interpretation		**AD.01.04**

01	05	Compare and contrast the four classifications of data measurement		**AD.01.05**
01	06	Describe the purpose and processes of quantitative data analysis		**AD.01.06**
01	07	Compare and contrast the two kinds of quantitative analysis (descriptive and inferential)		**AD.01.07**
01	08	Identify the three categories of calculation that are used to analyze data using descriptive statistics		**AD.01.08**
01	09	Describe the tools used to calculate measures of frequency		**AD.01.09**
01	10	Describe the tools used to calculate measures of central tendency		**AD.01.10**
01	11	Describe the tools used to calculate measures of variability		**AD.01.11**
01	12	Identify the factors that inform which measure of central tendency is most appropriate for analyzing a data set		**AD.01.12**
01	13	Explain the purpose of inferential analysis		**AD.01.13**
01	14	Define regression analysis and how it relates to correlation and causation		**AD.01.14**
01	15	Explain the difference between Type 1 errors and Type 2 errors		**AD.01.15**
01	16	Describe the purpose and processes of qualitative data analysis		**AD.01.16**
01	17	Perform quantitative analysis		**AD.01.17**
01	18	Describe the three step process used to conduct qualitative analysis.		**AD.01.18**

Syllabus Area Code UD		Syllabus Area: Using MEAL Data	Reference	**Syllabus full code**
Topic	Subtopic			
		Using MEAL Data		
01	01	Explain how analysis leads to appropriate interpretation and the development of conclusions and recommendations.		**UD.01.01**
01	02	Identify the key principles of adaptive management, including how they are incorporated into the MEAL cycle		**UD.01.02**
01	03	Describe how data is used in reporting and communication with stakeholders		**UD.01.03**