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MERCY CORPS

A Toolkit for Reduced Access Analytical Methods

RAAM TOOLKIT

Acknowledgements

This toolkit is made possible by the support of the American People through the United States Agency for International Development (USAID) Bureau for Humanitarian Assistance. The contents of this toolkit are the sole responsibility of Mercy Corps and do not necessarily reflect the views of USAID or the United States Government.

This toolkit is indebted to the feedback and input provided by its volunteer Advisory Board, especially Muhammad Othman and Roland Gillah. The Board included representatives of multiple NGOs as well as academic and donor organizations, and the RAAM Project is grateful for their time and effort, as well as the information provided by other peer organizations consulted for background research. Graphic design of this toolkit was done by Scalegate LLC.

Acronyms

CBO	Community-based organization
CVA	Cash and voucher assistance
EO	Earth observation
FSP	Financial service provider
GPS	Global Positioning System
HR	Human Resources
IDP	Internally displaced person
INGO	International Non-governmental organization
KII	Key informant interviews
MEL	Monitoring, Evaluation, and Learning
NGO	Non-governmental organization
PDM	Post-distribution monitoring
POS	Point of sale
RAAM	Reduced Access Analytical Methods
RS	Remote sensing
RT	Rumor tracking
SC	sub-contractor
TA	Transaction analysis
UN	United Nations
WASH	Water, Sanitation, and Hygiene

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Introduction

Following the aftermath of a severe natural disaster and ongoing conflict, a Mercy Corps country office faced significant challenges in conducting remote data validation and collecting timely information to monitor and adapt cash distribution activities in the field...

An ongoing conflict in several regions of a country has exacerbated the humanitarian situation, but security concerns limit the ability of program staff from the Mercy Corps country office to directly collect information about the conflict's impact on IDP movements and market access. The Mercy Corps program teams face challenges in making decisions about where and when to target cash and shelter activities...

An ongoing conflict has resulted in a severe regional humanitarian crisis, leaving millions grappling with food shortages, inadequate healthcare, and displacement. The context is profoundly affecting data collection and posing significant challenges to regular monitoring of essential humanitarian operations...

For more about how RAAM helped in these contexts, read the Case Studies.

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What is RAAM?

Reduced Access Analytical Methods (RAAM) are a response to the reality that humanitarian practitioners increasingly operate in **reduced access environments**. Environments can become reduced access due to natural disaster, conflict, political instability, or other factors, and the severity of the reduced access can vary, but any level of reduced access tends to present challenges to monitoring program implementation. Normal monitoring tends to be done through direct data collection and observation, and a reduced access environment is highly likely to limit these kinds of activities. Therefore, to effectively monitor implementation in a reduced access context, additional tools and strategies are necessary and programs must develop monitoring information flows that supplement (but do not replace) typical direct monitoring flows.

What counts as "reduced access"?

A program is described as "reduced access" when it experiences a change, decrease, restriction, or elimination of its ability to reach populations affected by crisis, resulting in a situation in which normal standards and programming practices are constrained. In reduced access environments, teams also may face different **levels** of reduced access. Some examples include:

1. Access is restricted for middle and senior program management; but field staff and local staff have unrestricted access to implementation regions.
2. Assistance is provided through local partners, with the lead implementation partner team sometimes able to visit the implementation regions.
3. Assistance is provided through local partners with the lead partner able to visit regularly, but access for the lead partner is periodically restricted due to political or environmental issues.
4. Assistance is provided through local partners only (indirect implementation), the lead implementation partner team cannot access implementation regions, and monitoring is done with third-party contractors.

Level of reduced access can and frequently does change over the course of a program, in either direction. This means RAAM is applicable even if the current restrictions are mild.

Implementing organizations must increasingly learn to mitigate risks to data quality and data availability that result from working in these types of environments. While all reduced access programs can benefit from the RAAM toolkit, programs should especially consider exploring it in situations where there are *frequently changing access or context conditions*, where there is significant use of *third-party monitoring*, where *program leadership is remote*, and where there is *significant risk of climate or conflict shock*.

What are common reduced access monitoring challenges?

Due to physical access being partially or fully restricted, reduced access monitoring often depends heavily on data provided by local partners, contacts, third-party monitors, or remote surveys. However, reliance on these sources can create challenges, including:

Ensuring data quality: Where the program is relying on only a few primary data sources (or only one) and field-based colleagues are not available to validate them, data quality naturally becomes a concern. Programs often look for ways to mitigate the risks associated with this but struggle with the practicalities of assessing the quality and reliability of data.

Information deficits and delays: When access is intermittent, for limited periods of time, and/or for limited program staff, data can be delayed or incomplete. Programs covering multiple geographic areas may find themselves unable to reach certain regions or gather all the data they need from those regions, forcing them to make difficult choices about what information to collect. When access is limited, programs have a natural tendency to focus on critical activities and tasks, leaving little time left to gather contextual information that might impact the program or conduct in-depth monitoring activities that would facilitate deeper understanding.

Building and maintaining trust in program implementation areas: Establishing trust with local partners, contacts, and stakeholders is crucial for effective program implementation and monitoring. This is more challenging in reduced access environments due to limited interactions and physical presence, and impacts monitoring quality because it also limits the availability of trusted contacts to verify information and validate monitoring findings.

Limited information flow between and within implementing partners: While not unique to them, reduced access programs tend to suffer from instincts to “silo”, meaning different implementing groups focus on only their activities and do not engage in constant communication with other groups. This happens both within organizations (i.e. programs, MEL, Accountability, technical units) and across implementing partners. While, in a full-access operating context, these siloes might be organically broken down over time through regular in-person interactions, reduced access programs frequently struggle to establish good norms of information sharing in the absence of physical proximity to the implementation regions.

How does RAAM interact with traditional MEL and program implementation?

RAAM methods **do not** replace traditional monitoring tools and approaches, including remote data collection. They specifically focus on generating information that would **supplement** traditional monitoring and be useful **during program implementation**. In most cases programs will benefit from starting RAAM development in the program setup phase, as RAAM requirements may influence program data collection and activity design, and vice versa.

Generally, the RAAM methods and approaches are not new. They have been used extensively for crisis analysis or context monitoring by both implementers and research groups and have proven to be effective for routine MEL purposes as well. Some methods may be familiar for large international organizations but less well-known in mid-size or small organizations, who can equally use and benefit from data generated through these methods.

What does the RAAM toolkit do?

The RAAM toolkit directly addresses reduced access challenges by providing guidance and tools for program teams to complete end-to-end development of a variety of supplementary monitoring methods. The toolkit was built to address *technical and managerial barriers to implementing RAAM*, with a significant focus on managerial barriers. This is because while availability of technical skills can often be a challenge for programs, usually the more critical blockages are managerial; i.e. the programs struggle to achieve a common multi-stakeholder vision for what is needed and make practical plans, and therefore cannot take advantage of the skills and resources they already have or could procure. Where this is the case, any use of RAAM tends to be personality-driven rather than system-driven.

Put simply, programs can recruit or build technical know-how in their teams, but they cannot recruit someone else to define a vision and align the team behind it.

The RAAM toolkit therefore provides:

1. Tools for those in managerial roles to use in defining **what, why, when,** and **who** of RAAM for their program. These include in-depth method descriptions, workflow guidance, and tipsheets.

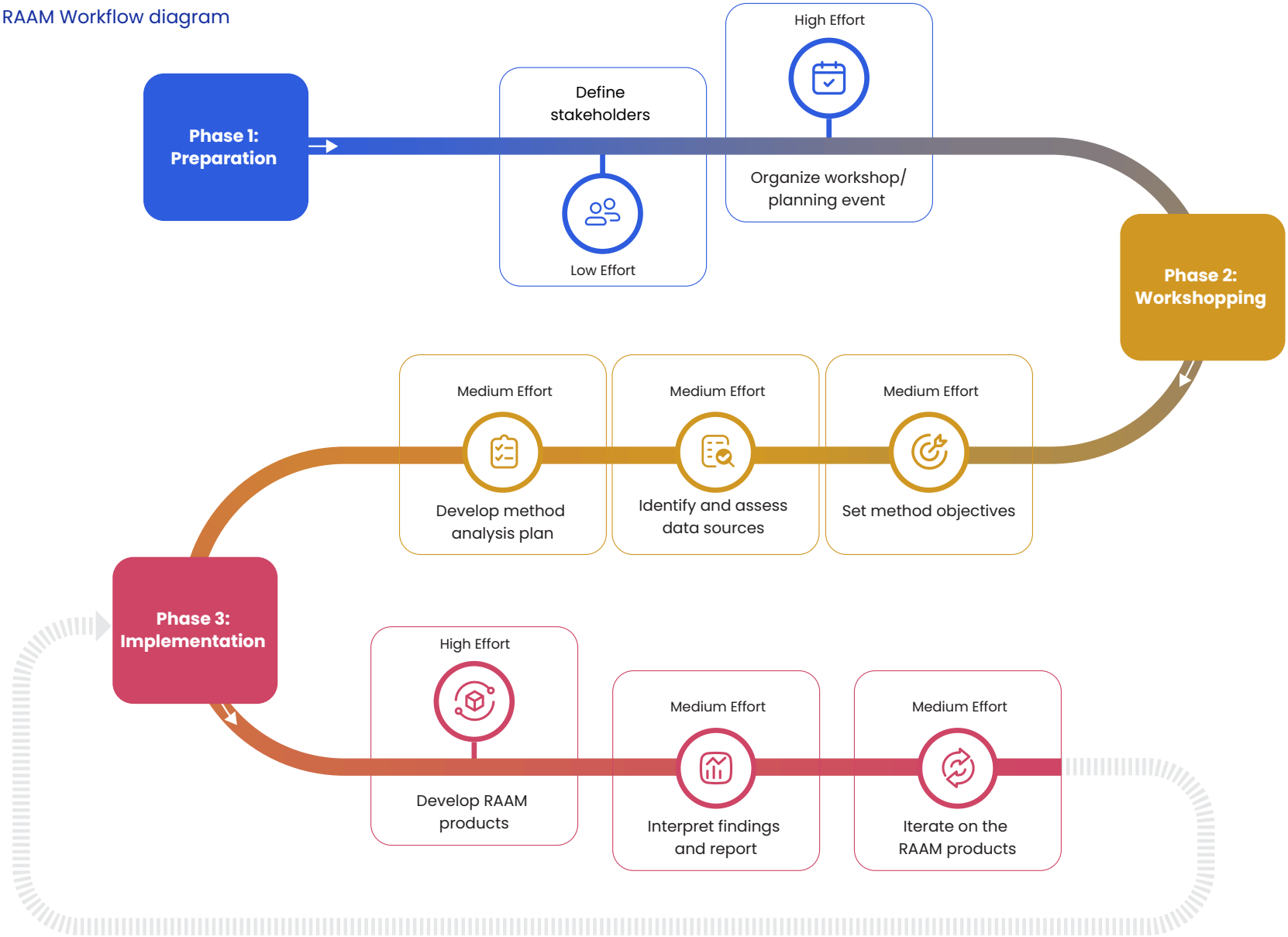
2. A mechanism for the program to think about its design systematically, and about how monitoring could better respond to the design and feed learning about it.

3. Tools for those in more technical roles who will be responsible for the how of RAAM analysis. These include technical tutorials, demos, and resource lists.

The toolkit methods focus on supporting programs to *better leverage existing but underutilized information and data sources*. This often includes generating novel analysis from primary data sources the program already collects or adapting plans to collect primary data (for example, inserting questions into a post-distribution monitoring survey). The toolkit does not focus on supporting programs to develop novel primary data collection channels, as this falls more under traditional monitoring and can usually be served by existing guidance on remote data collection.

RAAM works best in environments where multiple stakeholders in the program (including non-MEL departments, program partners, contractors, and other external groups like local governments or subject matter experts) are engaged in collective brainstorming, knowledge sharing, and analysis. The recommended RAAM workflow is structured to promote this collective engagement.

Figure 1: Generic RAAM Workflow diagram



What are the RAAM methods?

The toolkit supports the following methods:

- **Data triangulation** builds a more complete picture of the context of your program target area by implementing a structured, systematic comparison of data sources that allows the program to take informed decisions on the reliability and accuracy of the data they are relying on. Triangulation is a method designed to address data quality issues and concerns, helping the program to build confidence in their information sources or identify where they might be weak and in need of improvement.

  - *Example: A program triangulates different sources of information about IDP movements to estimate where, how much, and what type of shelter will be needed.*

- **Context mapping** involves layering multiple sources of primary and secondary information on a map to understand patterns that may impact program activities, including potential access changes, physical barriers or hazards, trends in conflict, and more. Context mapping pushes programs to think deeply about contextual factors that affect them, how those factors manifest in measurable phenomena, how they interact with other aspects of the physical and social context, and how they interact with the specific locations relevant to the program.

  - *Example: A program creates a context map that includes layers showing program village locations, market locations and status, road checkpoint status, market price data, and flood risk. The program regularly reviews this map to note trends that would impact distribution activities and program outcomes relating to participant use of food vouchers.*

- **Rumor tracking** is the systematic tracking of unverified information in target communities critical to the program. This can help the project team to better understand potential program gaps, implementation problems, and accountability issues, and respond appropriately. Rumor tracking processes can function as an early indicator of violence, context shifts, or precarious conditions, thus enabling timely intervention and preventive measures to protect people from harm.

  - *Example: A program operating in a context with high volumes of feedback sent to Accountability channels sets up a process to conduct qualitative analysis of the anonymized data, and identify rumors and perceptions among communities about the fairness of program participant selection.*

- **Remote sensing** provides detailed information about physical conditions in implementation areas that are observable from a distance. Remote sensing analysis (or use of data products derived from remote sensing analysis) can help humanitarian aid and development implementers observe changes in vegetation cover, soil erosion patterns, land cover, built-up environments, and more at regular intervals without having to visit the locations physically. It can also serve to validate presence or absence of different features on the earth's surface which are relevant to the program.

  - *Example: A program operating in a context recently affected by a natural disaster uses UNOSAT analysis produced just after the disaster to identify areas most affected by infrastructure damage, then sets up analytics to monitor long-term vegetation cover trends in program agricultural regions, which might indicate lingering impact on supply chains and livelihoods.*

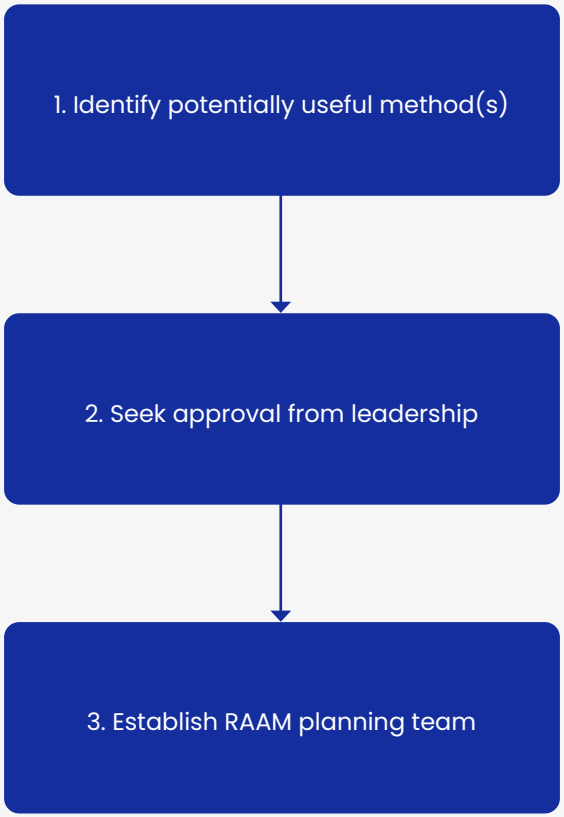
- **Transaction analysis** uses digital transaction data (electronic data about distribution of cash, vouchers, or in-kind assistance collected by the organization or by a financial service provider) to examine trends in prices, volumes, sellers and other outputs or outcomes. Transaction analysis can support teams to ensure an adequate number of vendors with the required capabilities to achieve program objectives, ensure the relevancy of cash and voucher assistance (CVA) programming, and monitor how assistance is being used to draw conclusions about needs, commodity availability, and more.

  - *Example: A CVA program in a context with heavy government restrictions on in-person data collection works with the financial service provider to record detailed transaction data and understand how participants are using the assistance.*

The methods supported by the RAAM toolkit were specifically chosen to address problems of **information gaps** and **information quality**, and while they are not exhaustive of all potential analytical methods that could support reduced access programs, they cover the most common challenges and offer a framework for teams to start exploring needs. The method-specific guidance and tools are built to ensure "entry-level" users can leverage them, while also providing value to those who have background in one or more methods.

In many cases more than one method will be applicable, but programs are strongly encouraged to try **no more than two methods at one time**, as past experience has shown this is usually the maximum a team will have the capacity to explore in tandem with regular program responsibilities.

How do I get started?



Identify potentially useful method(s)

To get started, at least one team members needs to review the RAAM methods and decide if one or more are potentially useful to the program. This selection does not need to be final, and the team member will not necessarily lead RAAM development if approved.

If the program is already in implementation, it is usually straightforward to identify one or more methods that seem most relevant, as the program will already have experienced some field challenges that highlighted certain gaps. Program sector and modality can also influence decisions. To demonstrate, in past RAAM implementations:

- Programs doing CVA activities have made different method decisions based on the complexity of the reduced access challenges. For those facing an environment where the movements of governmental militaries, local armed groups, IDPs, and other actors were constantly shifting and impacting access, context mapping was judged to be a priority method because it provided a mechanism for structuring and understanding the impact many different context shifts could have on activities. By contrast, for a CVA program facing different restrictions (i.e. a government ban on certain forms of data collection and on travel to certain areas) transaction analysis was seen as a greater priority because the focus was more on understanding how assistance was used and could be adapted given the known and relatively stable restrictions faced.
- Programs focusing on infrastructure development and agricultural systems have tended to prioritize the remote sensing and context mapping methods, given the critical importance of spatial information to these sectors. While different programs faced very different contexts and reduced access challenges, the commonalities they shared due to the sectoral focus on the built/cultivated environment naturally led them toward those methods to start.

In other words, nature of the reduced access environment **and/or** sector can influence a program to choose one method over another.

If the program is not yet in implementation, you can generally use a simple process flow for thinking about which method could be useful:

- Do you expect to experience monitoring challenges primarily from significant information gaps, or significant problems with information quality?
  - If information quality is the chief concern, start with **Data Triangulation**.
- If information gaps are expected to hinder monitoring, what kind of information tends to be missing?
  - If the program is missing information about how communities are receiving assistance, attitudes toward implementing partners, intra-communal and inter-community dynamics, concerns about potential political or social shifts, and similar concerns, consider **Rumor Tracking**.
  - If the program is missing information about phenomena that are likely observable from space, such as infrastructure damage or surface water changes, consider **Remote Sensing**.
  - If the program is missing information about use of cash or voucher assistance, for example about the patterns of voucher redemption on certain commodities or with certain vendors, consider **Transaction Analysis**.
  - If the program is missing information or a holistic picture of the social, political, and/or economic trends impacting the implementation regions, consider **Context Mapping**.

The RAAM Decision tree, Case studies, and Frequently Asked Questions tools can provide further food for thought when considering different methods.

Seek approval from leadership

RAAM requires buy-in/collaboration from many stakeholders across the program and implementer organizations, and may also require budget for a workshop, technical expertise, and data. Therefore it is essential to seek approval from relevant leadership before proceeding. Leaders should be told:

- What the identified RAAM method(s) are and what they could potentially do for the program
- What budget and LOE might be required (see below)
- What would be required of them, including any support needed to advocate for cross-departmental and cross-partner engagement in RAAM

Do I need budget?

Most RAAM methods can be done on a low budget, with existing personnel and free or low-cost data and technology. See the RAAM Roles and Responsibilities section for guidance on profiles of existing program personnel who have taken on various managerial and technical roles for RAAM. However it is strongly recommended that RAAM teams conduct an in-person workshop to plan development. Programs are encouraged to consider if they have an upcoming program meeting or convening which RAAM can be included in to save budget, or otherwise use online meeting tools for the Workshopping phase.

How long will it take?

The full LOE to develop a RAAM method usually depends on how complex the **Implementation** phase becomes, which will depend on the RAAM method and objectives chosen. For development of one RAAM method, you can expect to commit:

- Around 20-30 hours of LOE (total) for **Preparation**
- Around 20-40 hours of LOE for **Workshopping**
- Anywhere from 40-120 hours of LOE for **Implementation** (excluding iteration)

If the phases proceed at a normal pace, programs can expect to have a RAAM method developed and information flowing in around **3 calendar months**. Because of the level of effort involved, *it is recommended that no more than 2 methods be selected and developed at one time*.

Establish RAAM planning team

To get started, you need at a minimum:

- A **designated RAAM Lead** who will coordinate the Preparation and Workshopping phases. The RAAM Lead role can be filled by different team members depending on availability and interest. Past RAAM Leads have been program or country MEL Managers, Crisis Analytics officers, or Program Managers.

- Coordination with leadership to agree on critical stakeholders and supporting team members.

The RAAM Lead then kicks off the RAAM process by reviewing the guidance chapters for identified method(s) and working through the steps. For smaller programs, a single RAAM Lead may be able to guide programs through Preparation and facilitate Workshopping. However, if there is a larger team to coordinate and complex technical needs, the RAAM Lead should organize a team to support them (See RAAM Roles and Responsibilities).

Using the RAAM Toolkit

The RAAM toolkit contains the following resources :

- **Understanding what RAAM is and selecting method(s)**
  - RAAM Decision tree
  - RAAM Case studies
  - RAAM FAQs
- **Developing a method from Preparation to Workshopping to Implementation**
  - Comprehensive method-specific guidance covering all phases and steps
  - Method-specific tutorials
  - Lists of method-specific case studies, data sources
  - (For some methods) Feasibility assessment tools
  - (For some methods) Template analysis databases
- **Planning and organizing a RAAM workshop**
  - Workshop facilitators' guide
  - Template workshop slides
- **Conducting effective interpretation and sharing of RAAM products**
  - Information dissemination guidance

RAAM addresses several very technical methods, for which the universe of relevant technologies, analytical techniques, and publicly accessible resources frequently change. At the same time, humanitarian users frequently work in low-bandwidth environments and need to minimize the number of online links they must access. As a result, the toolkit was designed to be usable offline and online.

Online: This main toolkit resource is designed as an interactive PDF, to give users a single guide which can be quickly consulted for information and instructions. Associated tools are linked throughout the document, and most links lead to live, online, publicly accessible documents. The online links represent the most recent versions of the tools – any updates to resource lists, tutorials, etc. will be made at the online links first. Users with internet connectivity who wish to ensure they are accessing the most recent information should consult these online versions.

Offline: Users who download the zip file with this main toolkit resource will have copies of all associated tools (including those with online links) included with the zip file. These copies will only be current as of the most recent download packaging, which will be clearly marked on the toolkit homepage. Users in low-bandwidth environments are encouraged to download the full toolkit package while noting the date of the most recent updates.

To plan and implement this workshop the program managers and their identified facilitators should become familiar with the content, the exercises and resources in this toolkit.

Context Mapping

What is context mapping?

Context mapping is a systematic approach to identifying and visually mapping contextual factors that may influence a program's success. It draws on both primary program data and secondary data sources to build more comprehensive understanding of the context in which the program is implemented. It provides critical insights for program managers, especially in restricted access environments, enabling them to determine necessary adaptations to the program interventions and track progress on agreed-upon improvements over time. As a RAAM method, context mapping directly benefits programs with reduced access by ensuring continuous monitoring of potential risks to access and trends that may impact implementation. This monitoring is crucial, especially in situations when teams have no ability to directly track these factors through physical presence and direct data collection.

Context mapping can include social, economic, political, and environmental conditions in the program's operating environment. Teams that have implemented RAAM have used the context mapping process to develop their understanding of factors both within and outside their control, to seek out and use data sources external to the program for informed decision-making, and to adapt program implementation strategies and interventions. A context map can be created with free or low-cost technology and offers an easy visual interface for program managers and teams to reference. An interactive context map supports deep analysis and engagement with data and promotes integration with other departments and stakeholders.

Context mapping plays a crucial role in reduced access programs, especially those implementing in conflict or climate-affected communities. As an example, a program implementing in a reduced access context recently affected by heavy rains and resulting flooding must understand the impact on program areas to respond appropriately. Where context mapping has already been conducted and the program has already identified flooding as a context mapping indicator, the program will have pre-set data flows and map layers to provide critical information to program teams to inform their planning. This proactive approach saves time and minimizes confusion at the time of a crisis.

Who are the intended users of the context mapping tools

- RAAM leaders who work to convene stakeholders and organize the Workshop phase.
- Team members and managers from MEL, Programs, Crisis Analytics, and any other relevant departments who are engaged in producing evidence, data, and program decisions.
- Team members from other departments who play an important role in determining appropriateness or technical soundness of any program data systems, for example Security, Accountability, and IT.

To access the relevant RAAM tools for the Context Mapping module, please visit the Tools page. →

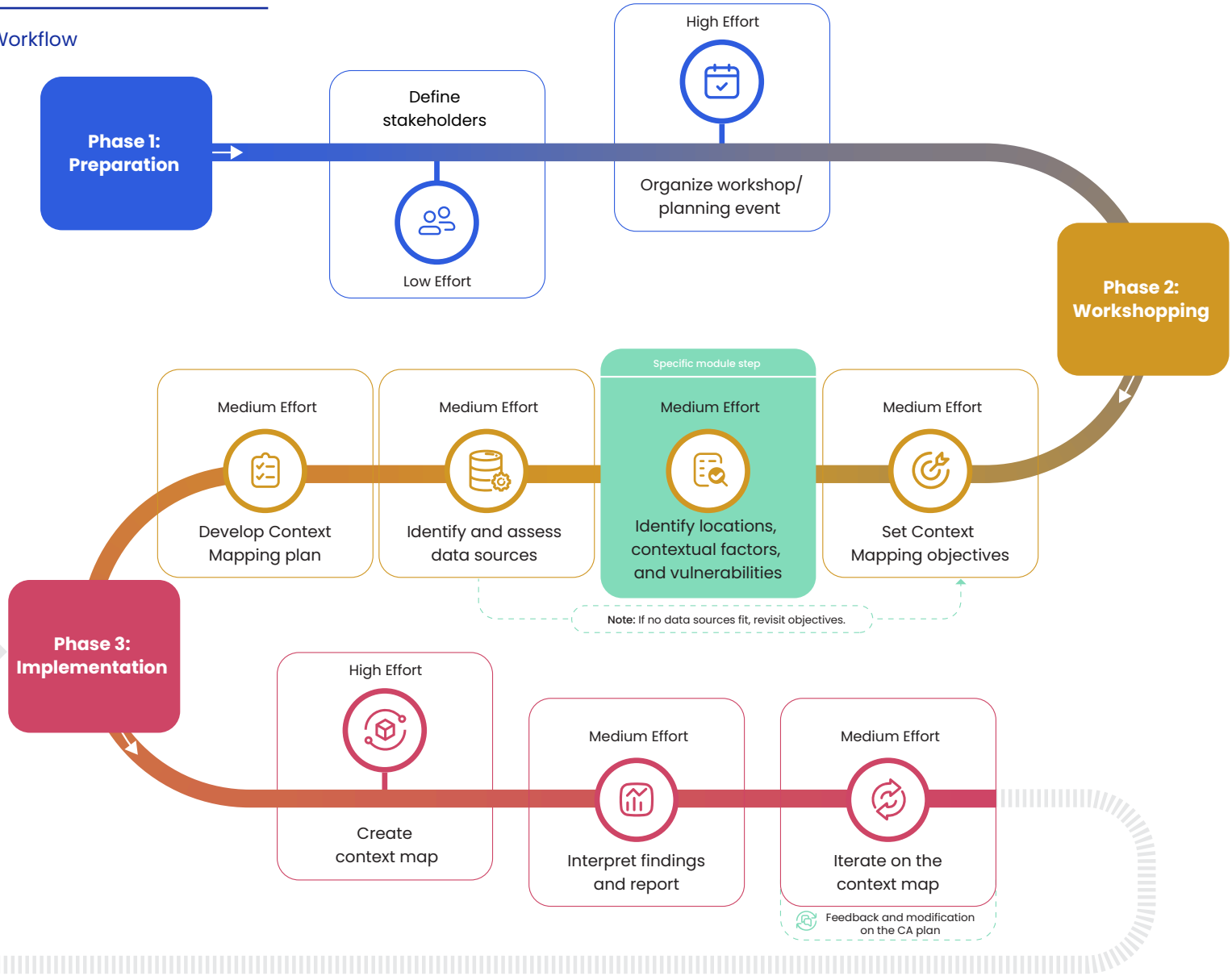
Context Mapping Workflow

Context mapping mostly follows the RAAM roadmap steps. The process starts with **Preparation**, i.e. defining the stakeholders in the process and the timeline and mechanisms for stakeholders to work together to create a plan. Then stakeholders collaborate in the **Workshopping** phase to define analytical objectives, list out available data sources, develop an analysis plan, and define roles and responsibilities for implementing the context map. Stakeholders then move into **Implementation**, where responsible team members build the analytical outputs, interpret the findings and report them to decision-makers, and revisit and refine the analysis plan as needed.

The key differences of the context mapping process compared to the generic RAAM roadmap are found in the specific steps included for identifying mappable program locations, contextual factors, and pre-existing vulnerabilities (see diagram below). These are important concepts for context mapping (explained in the tools and RAAM guidance) which must be addressed during the planning, and leaders of RAAM implementation must take care to ensure that they are clearly defined for the program's specific context alongside stakeholders.

As with all RAAM methods, it is recommended that the **Workshop** phase include an actual in-person workshop, in which different stakeholder departments in the program (e.g. MEL, Security, relevant Context Analysis teams) come together to share information, discuss, and agree on the plan. Cross-departmental collaboration is an essential part of RAAM. The Workshop phase should include all stakeholders who have formal or informal information sources or knowledge of the context, as well as those who have data skills and technical capacity in GIS or mapping. It is likely that not all stakeholders will be deeply involved in RAAM after the workshop, but their input in planning is vital. Many programs may have pre-existing country context analysis and program information flows which can feed into planning for context mapping, and it is advised that those data sources be collected by RAAM leaders prior to the Workshop phase for reference, since it will help to minimize duplication of efforts.

Figure 2: Context Mapping Workflow



The table below walks through the steps associated with the **Preparation**, **Workshopping**, and **Implementation** phases of context mapping, and the tools that support each step. The main tool to be used throughout this process is the RAAM Context Mapping Matrix.

Table 1: Context Mapping Workflow and associated tools

Phase	Step	Description	What does this achieve?	Relevant RAAM tools	Time Spent
Preparation	**Define stakeholders**	Identify departments or partners who have relevant context knowledge, expertise, or access to data sources, and target users of the context map.	Generates a list of people to include/invite to the workshopping phase and subsequent communications	• RAAM Workshop facilitators' guide • RAAM case studies	short period of time
	Organize workshop/ planning event	Determine how stakeholders will collaborate on planning, organize logistics of collaboration, and create supporting materials (e.g. slides)	Sets a concrete time and date for stakeholders to convene, and prepares the framework to structure discussions	• RAAM Workshop facilitators' guide • Secondary literature sources for context mapping	spread out over a longer period
Workshopping	**Set Context Mapping objectives**	Brainstorm a list of things the program would like to know about the context, and how knowing it would concretely serve program needs.	Creates a list of potential objectives for mapping, which informs subsequent steps exploring how they could be mapped	• Tab 1 of Context Mapping Matrix	short period of time
	Identify locations, contextual factors and vulnerabilities	Identify the program locations of interest, identify the contextual factors that influence the mapping objectives, and identify pre-existing vulnerabilities related to those factors. Select priority factors for mapping.	Draws clear logical links between each desired objective and the specific data-based layers that are needed for the context map.	• Tab 1 of Context Mapping Matrix • Tips and methods for identifying program-relevant locations and pre-existing vulnerabilities	short period of time
	Identify and assess data sources	Identify internal and external sources of data which can be used to generate needed map layers and discuss access or sensitivity conditions with stakeholders.	Produces a realistic picture of which objectives can be met with already-accessible data, and whether missing data could be generated or acquired.	• Tab 2 of Context Mapping Matrix	short period of time
	Develop context mapping plan	Develop a plan and assign roles and responsibilities for the technical creation of the context map, including contextual factors to be included, dependencies, and triggers for reporting/action.	Formalizes the Workshop phase into an actionable plan/next steps for the Implementation phase.	• Tab 3 of Context Mapping Matrix • RAAM Roles and Responsibilities tool	short period of time
Implementation	**Create context map**	Using the context mapping plan, analysts create the context map with available data sources. Verification is conducted as needed to ensure findings are reliable.	Creates the Context Mapping core output: a map with multiple layers for program locations, contextual factors, and pre-existing vulnerabilities.	• Context mapping using MyMaps and using QGIS	spread out over a longer period
	Interpret findings and report	Monitor context maps for findings that meet thresholds/triggers for action identified in the context mapping plan, and/or produce regular summary reports.	Connects findings from the map with decision-makers according to urgency.	• Information Dissemination Guidance	intermittent and recurring
	(If relevant) Iterate on the context map	If the map will be used multiple times, update it with feedback and observations from stakeholder use. This could include adding data sources, adding a verification step, updating a trigger for action, etc.	Pushes the RAAM implementers to improve the context map or improve reporting processes.		intermittent and recurring

Phase 1: Preparation

1.1 Define stakeholders

MEL and Program departments are always stakeholders in the context mapping process and should be well-represented throughout it. Depending on your context, other stakeholders could include:

- **Context analysis or other analytical units** who are producing or have produced relevant reports or other products about the implementation regions
- **Security teams** who are regularly monitoring threats in the implementation regions
- Any **Program partners** who can contribute ideas, contextual knowledge, analytical capacities, and/or feedback
- **Accountability and Safeguarding** teams who have knowledge of the context and gather information from program participants about their experiences
- **Subject matter experts** both internal and external to the organization
- **Local government partners**

Simple stakeholder analysis/mapping methods can help teams to identify appropriate persons to involve in the RAAM context mapping workshopping phase.

1.1 Output: List of stakeholder groups and named representatives

1.2 Organize workshop or planning event

RAAM products are best created in an environment where different stakeholders have a chance to meet in real time, share ideas, discuss limitations and challenges candidly, and develop plans together. In most cases, the best way to accomplish this is to hold a **dedicated in-person workshop**. In some cases, a RAAM workshop is included as part of another previously planned gathering, while in others, it is done as an independent effort and even resulted in different departments within the same office meeting and collaborating for the first time.

While an in-person workshop is ideal, it may not be feasible depending on the availability and physical location of required stakeholders, budget, and program timelines. If it is not feasible, it is recommended that RAAM Managers schedule online convenings. The Workshopping phase may be completed asynchronously over email and online chat platforms, but it is not recommended to pursue this unless the stakeholders already have well-established patterns of working together asynchronously.

The RAAM Workshop Facilitators' Guide and Workshop template slides are the key tools for organizers of the Workshopping phase to consult when planning to walk the group through the context mapping method. Facilitators are instructed in the guide to conduct a document review to help **integrate any existing program plans and Context Analysis into the context mapping process**. Most programs typically include a Program Plan, Activity MEL Plan, context analysis or risk register by the time context mapping commences, and would cover considerations related to security, context analysis, program and MEL priorities. If these documents are comprehensive and up to date, they will likely be helpful in the Workshopping phase, especially Step 2.1. This not only ensures that the Workshopping phase is targeted toward actual program needs, it also helps prevent creating parallel and repetitive systems and collecting information that may already exist. Below is a list of questions you can explore as you review existing documents and data sources, to ensure that the purpose of conducting a context mapping exercise is aligned with the overall program goals and objectives, and its use, users and stakeholders have been clearly identified.

Table 2: List of potential documents, exploration questions related to context mapping, and examples

Source of document review	Exploration questions	Example
Theory of Change	Is there a clear link between the program and the context laid out in the theory of change? Can the context mapping process help enhance that connection in order to allow the program stay attuned to the changes that may be happening in the geographic locations where the program is being implemented?	Theories of change may have clear contextual factors are to be monitored throughout the program lifecycle, such as floods, rains, road closures, security incidents etc. The programs not only need to be aware of when, where and how they occur, but must also have mechanisms to adapt once the information is made available.
Program logic model (Logframes, Results Frameworks, Results Chains and others)	Do the assumptions included in the logic model include any contextual factors that should be mapped and/or monitored?	Results frameworks frequently include assumptions that the context will remain relatively stable in some respect (e.g. environmentally), and programs may find it useful to monitor that contextual factor for signs of change which would impact results.
Risk Register	Are there particular risks in the risk register that might hamper the program team's ability to collect data in particular locations? Any specific groups of participants that may be associated with this risk? Are the risks seasonal? Are the drivers of risk known and clear?	The risk register may have identified organized gangs as a risk, who may put the lives of program teams in danger during a data collection process. This is critical information to be considered during context mapping process since it will help identify the specific risks associated with certain geographic locations and prevent harm.
Context analysis reports	Do the context analysis reports track trends over time - such as price shifts, market or port access, or crop yields – which may be of relevance to program outcomes? Do they identify/track any contextual factors which are not previously mentioned in program documents? Does the analysis team have access to data sources that could be used for context mapping?	Context analysis reports produced for one reduced access region affected by prolonged conflict frequently included original information on market accessibility and prices gathered through contacts in the region. This information was more recent than the official program market assessments and useful for decision-making.
Project work plan	Are there clear protocols for stakeholder engagement? Is there a plan for regular review and adjustment of the work plan to address emerging issues or improvements? Where would more regular context information plausibly alter deliverables or timelines?	Using information from the project work plan, the RAAM team may decide to sequence the development of certain layers based on when they are expected to become critical to the project.
Project proposal	Is the project context and rationale clearly explained? Are relevant data or statistics provided to support the need for the project? Are gaps in current knowledge or practice identified, and are sources of background information and data properly cited? Does the proposal reference relevant literature, reports, or case studies?	The project proposal may highlight previous research on the context that could be consulted for further ideas for the context mapping process, and may also identify gaps in knowledge that context mapping could help fill.

The table above is not exhaustive, and other documents may be relevant to you. In addition to primary program/organizational documents, secondary literature may also help identify important background information (see Secondary literature sources for context mapping for more). As you review documents, try to take notes of the critical information you extract and consider referring to them after the objectives of context mapping are developed, to check for alignment and to ensure that the context mapping exercise will be useful for the program.

1.2 Output: Workshop agenda and slides

Phase 2: Workshopping

2.1 Set context mapping objectives

Setting clear overall objectives is crucial when creating a context map for your program. They narrow the scope of the exercise to keep it useful and achievable. By the end of this step the users of this toolkit should have 2-3 clear objectives developed and entered into the first tab of the Context Mapping Matrix. Findings from any document review conducted by the workshop organizers should be presented during this step to facilitate brainstorming among the group.

How to develop context mapping objectives

During Workshopping discussions with stakeholders, use Tab 1 of the Matrix tool to list potential objectives ("what would you like to know?") of context mapping. *You should list all objectives that stakeholders feel would contribute to sound program decisions, regardless of whether you think there is data available.* You will prioritize objectives for monitoring and assess availability of data in later steps (2.2 and 2.3).

Here are a few examples of objectives taken from past examples of RAAM implementation. You can modify them or use them as thinking prompts for developing your own:

- Track changes in accessibility of community outreach workers to screen children under 5 for malnutrition, for project X over [project implementation duration]
- Monitor trends in security incidents in XYZ region during program cash distribution periods
- Monitor trends in influxes of new IDP arrivals into locations being served by project X
- Track most recent status of availability of financial service providers (POS agents) and mobile service providers
- Understand availability and suitability of land for emergency shelter construction during Years 2 and 3 of the project
- Understand trends in suspected cholera cases within X county over Y period of program implementation
- Monitor approximate coverage of land in X county impacted by flooding during the rainy seasons
- Understand trends in households in X county having to leave their primary house due to flooding during the rainy season

Please note that the tool prompts you to also clarify which specific indicators and/or program assumptions the context mapping objective will contribute to, if there are any such indicators/assumptions.

You may end this step with a longer list of objectives than you can plausibly analyze, which is fine! Subsequent steps will help you prioritize these with stakeholders. Creating a "longlist" in this step ensures that stakeholders explicitly lay out their rationale for each potential objective, debate it with other stakeholders, and increase their understanding of others' perspectives.

2.1 Output: At least 2-3 completed context mapping objectives and any associated project assumptions/indicators listed in Tab 1 of the Context Mapping Matrix

2.2 Identify locations, contextual factors, and vulnerabilities

This step is the beginning of the process of conceptually converting the context mapping *objectives* into *mappable layers*. Stakeholders should identify **program-relevant** locations of interest for the objectives, **contextual factors** that influence the objectives, and **pre-existing vulnerabilities** that affect how the contextual factors manifest. After listing all potential contextual factors, the stakeholders will also select which factors to prioritize for the context map based on risk severity.

Program-relevant locations include:

- the locations of the physical spaces where program activities are either implemented or depend on (e.g. markets, stationary vendors, distributions points, community centers, religious establishments, and others)
- physical locations of infrastructure, or inputs needed for the program to succeed (main supply roads, land for agriculture, water sources)
- the location of the program participants residential spaces (community demarcations, houses, etc.)

Teams need to select which locations should be included in the context map by prioritizing those that have a direct relevance to the program's interventions and objectives. For example, if a program is implemented in a community that is impacted by flooding, the context map must have a layer showing all program-relevant locations to be able to analyze which areas may be impacted by the floods (directly or indirectly), and how that may affect the program's interventions and community livelihoods. Multiple teams may need to give input on what counts as a program-relevant location to ensure comprehensive coverage and layering of important datasets.

NOTE: We refer the process of building different data points into a context map as the *layering* of data: one layer includes the program locations with their geospatial maps, and the second layer is the physical locations of the events within the context affecting the program.

The table below gives examples of context mapping objectives linked to activities, target populations, and other program-relevant locations.

Context map objective ('We want to know…')	Program-relevant location	Can the location be identified on a map?
Changes in accessibility of community outreach workers to screen children under 5 for malnutrition, for project X over [project implementation duration]	Defined area of intervention and target population	Depends on if the outreach is implemented in a set of pre-defined locations or conducted ad hoc
Trend in security incidents in XYZ region during program cash distribution periods	IDP Camps Host communities broken down by neighborhood	Yes
Trend in influxes of new IDP arrivals into locations being served by project X	IDP Camps Host communities broken down by neighborhood	Yes
Most recent status of availability of financial service providers (POS agents) and mobile service providers	Camps (for shelter and MPCA assistance) and host communities (only shelter) The main road between the capital and the program's target location	Yes
Availability and suitability of land for emergency shelter construction during Years 2 and 3 of the project	Current IDP camps Approved sites for new camp construction	Yes

Not all programs will have geospatial data for their relevant locations, and in these cases, teams will need to discuss whether and when they can collect that data and how to capture it appropriately. This may require the teams to answer questions like: Can the locations be adequately tagged through GPS points, or do polygons need to be drawn around implementation boundaries? Will program staff or partners be able to directly capture geodata about the locations? If not, how can this be done remotely?

In cases where GIS information on program-relevant locations does not already exist and cannot be directly collected, RAAM recommends several methods for location identification, including digitization of existing documents/knowledge, mixed-method mapping, and participatory mapping. These methods offer valuable alternatives in such situations. The RAAM toolkit contains a short document explaining how to apply these methods.

In one previous implementation of RAAM, a program team which lacked geospatial data on their implementation locations called in their field coordinators to engage in a participatory mapping exercise to identify camp locations. In another example, a program team had previously conducted focus groups with community members to write down their knowledge of the relative locations of important infrastructure and noteworthy sites, and they were able to consult this documentation to create a digital map of the program-relevant locations.

Effective context mapping depends on the implementing team ensuring they are very familiar with the program-relevant locations and have as detailed data as possible on their exact spatial position and other features. It is very common for reduced access programs to not have detailed geospatial data on their locations, but you must ensure you have a plan to create it before proceeding.

After program-locations are identified, **contextual factors** are listed. Contextual factors are measurable events, trends, or other phenomena that may influence a given context mapping objective. For example, *political instability* is too vague to be a contextual factor on its own; it requires more details and must be directly linked with the objective and with observable events, e.g. violence between followers of different political parties. RAAM teams should ask questions while brainstorming like:

- *How can you observe the contextual factor happening?*
- *What is the effect of the contextual factor on the ground?*
- *How does the contextual factor materialize?*

RAAM teams should first list *all* contextual factors relevant to the identified program locations and to each context mapping objective at this step - the list of contextual factors will be reduced later. The information drawn from the document review, along with facilitated discussions among stakeholders, should help with this step. A list of example contextual factors can be found in Annex 1 of this guidance for reference.

After the contextual factors have been identified for each objective, the RAAM team should select specific factors to monitor based on the contextual factor risk to the program. A recommended process to do this is:

1. **Score impact and likelihood of all identified contextual factors/events** - the Context Mapping Matrix tab for this step contains a column to assign a numerical score to each identified contextual factor. This scoring should be assigned collaboratively, with multiple perspectives involved. The UNHCR Emergency Guidebook on Risk Analysis and Monitoring – Multi-Hazards has guidance on scoring, and a discussion of impact and likelihood scales can be found in Annex 2.
2. **Calculate risk severity** - multiply the impact score with the likelihood score *(risk = impact X likelihood)*.
3. **Prioritize contextual factors/events to monitor** - The risk matrix in the table below provides suggestions for categorizations of risk severity (e.g. a score of 1-6 is a low risk, scores of 8-12 are medium risk, etc.) and can be used to prioritize the most important contextual factors to map.

Table 3: Example matrix classifying risk severity

	Impact level				
Likelihood	*Negligible (1)*	*Minor (2)*	*Moderate (3)*	*Severe (4)*	*Critical (5)*
Very unlikely (1)	1	2	3	4	5
Unlikely (2)	2	4	6	8	10
Moderately likely (3)	3	6	9	12	15
Likely (4)	4	8	12	16	20
Very Likely (5)	5	10	15	20	25

Risk severity scoring is not meant to be used rigidly – teams may decide to prioritize some contextual factors that score lower than others, so long as they document the reasoning.

After contextual factors are prioritized, **pre-existing vulnerabilities** are identified. Pre-existing vulnerabilities should be seen as circumstances or phenomena (physical, social, economic, and environmental) already in the locations, which may influence the impact level of the contextual factor. For example, untarmacked roads may be a pre-existing vulnerability relevant to flooding; if an airstrip is not tarmacked, landing there during a flooding is close to impossible, but if the airstrip is tarmacked, landing may be possible.

Pre-existing vulnerabilities are often useful to include in the context map, as they add geographic nuance to the contextual event's impact, if or when it occurs. For example, a context map that tracks both flooding (contextual factor) and untarmacked roads (pre-existing vulnerability) is more comprehensive in estimating the potential impact. RAAM teams are recommended to only list pre-existing vulnerabilities for those contextual factors prioritized for monitoring, but they may choose to identify more, or none. Examples of pre-existing vulnerabilities include:

- **Physical**: Unstable house structures; untarmacked roads; poor WASH infrastructures
- **Social**: Movement restrictions for women, low income, and female headed households; large household sizes; reduced access to service providers for marginalized groups; low education rates
- **Environmental:** Large areas of wetland areas with eroded soil

How frequently should I update contextual factors and vulnerabilities?

As the context may change over the program cycle, so may the contextual factors relevant to the program. It is therefore important to update the contextual factors relevant to your program to ensure that you keep monitoring the factors/event of highest risk. The frequency of this depends highly on the context of where the program is being implemented, and the availability of staff to complete the update. If you are looking for examples of how and when to do this, check Annex 3.

A helpful guide to finding and identifying pre-existing vulnerabilities can be found at Tips for identifying pre-existing vulnerabilities.

2.2 Output: Contextual factors (and if relevant, pre-existing vulnerabilities) listed for all objectives in Tab 1 of the Context Mapping Matrix

2.3 Identify and assess data sources

In this step, the prioritized contextual factors for mapping (and any associated pre-existing vulnerabilities) are linked with primary sources of data (internal to the program/project) and/or secondary sources (which may come from other organizational departments or program stakeholders, or from third-party actors). At least one data source must be identified for each factor and associated vulnerability for it to be included in the context map. Data sources must contain either geospatial fields (GPS points, shapefiles, Well-Known Text (WKT), geoJSON strings, etc.) or text fields detailing the geography which can plausibly be digitized (for example, if a dataset lists the village names associated with events, it can be possible for analysts to merge that dataset with a geospatial table of village names and GPS points kept elsewhere).

It is important to use the Workshopping stage to thoroughly document the primary and secondary data sources known to all stakeholders participating. Internal data sources may be generated through existing MEL or program activities, such as baseline assessments or post distribution monitoring. Internal secondary sources of data might come from Security teams who monitor conflict-related events, other programs within the same organization who are collecting data in the implementation regions, dedicated context analysis or technical units collecting relevant information like market assessments and/or situation updates, or finance and logistics teams that keep regular data on price fluctuations, exchange rate variance, and market stability.

External secondary sources of data to use for your context monitoring should build on the secondary sources you used to identify the objectives and contextual factors. However, these sources might not be able to give you updated or ongoing information about the events that you are monitoring. For example, you may have used an analysis from the past year to understand the contextual factors for your location, but this report will not provide ongoing information for you to monitor. Some sources of information may be timelier than others (e.g., INSO or ACLED) while others may not be made available until one to two months after the event has occurred.

Once listed, Tab 2 of the Context Mapping Matrix provides an overview to assess attributes of the data, including:

- *Relevance*: Does the data source provide information directly relevant to the contextual factor and/or vulnerability?
- *Format:* Does your data source provide the exact number of incidents in an excel or other machine-readable document? Will manual reviews of a text or PDF report and manually identify the information you are monitoring?
- *Geospatial information:* Does the source provide mappable geodata of the events, or a detailed description of the location?
- *Preprocessing needed:* Will there be data cleaning, manual structuring, or other steps needed to make the data source feed into the map?
- *Frequency of data and alignment with mapping timeline:* Determine the earliest date the data source will be available, considering the time needed to implement activities and prepare the context map. Can the data be collected within an appropriate timeframe for the project?
- *Accessibility of data:* If this data is available externally, are there any access steps or cost involved? If the data is internal or will be collected through existing MEL and/or program data collection systems, are there any limitations on the team's capabilities, local acceptance, etc.? Are there technical reasons why the data may not be accessible regularly?
- *Reliability:* It is essential to ensure that external data sources are reliable and free of bias to the extent possible. There might be circumstances in which trustworthy data sources are unavailable or inaccessible, for example emergency situations with strict time constraints, limited resources, and/or limited access to the field. In these situations, RAAM teams may need to use unreliable sources, but must have clear documentation or the potential for bias or error. Ideally, reliable data would include:
  - Source Credibility: Credible sources may include academic experts in their respective fields, organizations without a direct stake in the context/situation, etc.
  - Availability of supporting evidence/ documentation
  - Consistency: The data itself is consistent across time and aligns with other reliable sources and facts
- *Sensitivity:* Is the data sensitive, meaning it contains personal data on individuals or information about vulnerable groups or other phenomena that might have negative consequences if it were generally accessible? If so, RAAM teams must plan strict access controls and other measures to ensure the sensitive data is appropriately anonymized, aggregated, or excluded from the final Context Map.

Verification

Availability of data to monitor contextual factors may vary between and within countries and may not always be reliable/credible. Data verification through local contacts is an essential step where sources are not complete or credible. Your contacts should be trusted, physically located in one of the program locations, and have access to the type of information you wish to verify. They can be (but are not limited to):

- **Partner organizations or partner focal points**. Often partners will have a designated security focal point who can comment on the data
- If your organization has a **designated analysis unit**, they may have contacts on the ground to provide contextual updates
- **Community volunteers** connected to your organization or field of interest
- Other **INGO or CBO focal points** physically present in your location of interest
- **Local authorities** connected to the program you are monitoring

When identifying your local contacts, ensure that you critically reflect on their trustworthiness and access to the information you want them to verify.

Output 2.3: Tab 2 of the Context Mapping Matrix with complete information for all data sources identified

2.4 Develop Context Mapping Plan

This step completes the Workshopping phase by summarizing the outputs of all the previous steps (objectives, contextual factors and vulnerabilities, and data sources) into an actionable plan for creating and using a context map. A plan entails setting timelines, technical and managerial responsibilities, and crucially, triggers for action based on the elements to be mapped. This plan puts the next phase of the context mapping process – **Implementation** – into motion.

The first step in developing your context mapping plan is to set your *context mapping indicators*. You must develop at least one SMART context mapping indicator for each of the contextual factors and vulnerabilities. These context mapping indicators will form layers on the context map. The indicators operationalize at least one prioritized contextual factor/vulnerability and use one or more of the identified data sources. Context mapping indicators **should not** overlap with program objectives and indicators, or duplicate existing monitoring done by any department.

Define triggers for action

Not every update to the context needs to be shared with decision makers. A well-designed context map will define what thresholds need to be reached or changes seen in the context mapping indicator to merit action. This involves defining **triggers for action**, such as:

Context mapping indicator	Trigger for action
# of days that the military closes the market in the program target location per month, during the project duration	When the number of days the market is closed exceeds six consecutive days
The influx of new arrivals into program location (# of displacements and movements in/out of town, location of IDPs, camps vs. host communities), during implementation period	If it is expected that the influx of IDPs and refugees into the program location is 500 HH or above
Availability of financial service providers (POS agents) in the program target location, during implementation period	When 3 POS agents experience restrictions from entering the program location due to cash restrictions

Triggers depend on the objective, context, and program needs, and the role of the RAAM team in this stage is not to define what action should be taken in response to a trigger but to define how important findings will be brought out of the map and disseminated appropriately.

Define Roles & Responsibilities for the Implementation phase

Both technical and managerial responsibilities for the context mapping Implementation need to be defined. Responsibility may be spread over many roles or centralized in a small group. Depending on the data sources, complexity of the map, and frequency of monitoring needed, responsibilities may include:

- **Technical:**
  - *Accessing, receiving, or organizing data* – Some data may be received via personal connections, specialized account access, or other mechanisms which require there to be a dedicated responsibility for "collecting" it for use in the map.
  - *Establishing data connections and models in the GIS software* – A person with technical ability to use or learn to use mapping software like Google My Maps or QGIS will need to establish connections to data (either live connections to the updated source, or static connections to a stored copy of the original data) and do necessary processing to represent it on the map as a layer.
  - *Design map layers* – Interpretable symbology, color schemes, formatting, and other map elements will need to be established to make it as simple as possible to identify changes in the context mapping indicators, triggers for action, etc.

- **Managerial:**
  - *Advocating for data access or new data collection* – If a dataset does not already exist or the RAAM team does not have access, someone may need to advocate to program leadership or another decision-maker to collect it or grant access.
  - *Regular monitoring and reporting* – For most RAAM teams, a context map will need to be reviewed regularly after updates to identify trends of interest and especially triggers that should be reported to decision-makers.
  - *Collecting feedback and impressions for technical action* – A person engaged in the interpretation and decision-making process should ideally collect direct or indirect feedback about how well the information and presentation served the program needs, so that the technical team can make changes if needed.

Tab 3 of the Context Mapping Matrix contains suggested Roles and Responsibilities. These may be modified based on the RAAM team's needs. Teams may also choose to assign different people for different indicators if needed.

2.4 Output: Tab 3 of the Context Mapping Matrix completed with at least one indicator for all contextual factors/ vulnerabilities selected for monitoring

Phase 3: Implementation

3.1 Create context map

This step involves the technical creation of a context map in a GIS software. If the desired context map layers and data sources have been well-defined, then analysts will be able to start working quickly on issues of data processing, data verification, and formatting the map. There may be one or more analysts and one or more iterations of the map to start with.

Basic data processing and verification (from raw to clean data)

Once collected, data may need cleaning and verification. Basic data cleaning includes steps like removing Personally Identifying Information (PII) from datasets, checking for outliers, and checking that column formats are consistent. Analysts will also likely need to format the data to use consistent geospatial projections and coordinate reference systems, and reconcile any conflicting naming conventions, such as different names for administrative divisions. Experienced data analysts should be able to conduct basic data cleaning and processing without an explicit plan to do so but may need help from other stakeholders in resolving questions about the data.

Verifying data for context monitoring

When verifying data for context mapping, follow these steps:

- Review the raw context mapping datasets and ensure that any data cleaning/processing steps have been recorded either in a data cleaning log or in the programming script (e.g. Python).
- Review the data cleaning log/script and ensure that all necessary data cleaning actions were addressed in the cleaned data, and any necessary follow-up, feedback, and/or additional information was collected.
- Check whether data records with only one source of information need additional verification, using either additional secondary sources and/or by using local contacts.
  - The reliability of the data and/or need for verification should have been recorded in the context mapping plan.

It is crucial to ascertain that information is based on *multiple and trustworthy* sources of information. You must critically assess and verify all information collected before it can be considered validated for further analysis.

The checklist and questions below can be used as a guidance to critically assess your information:

- Identify information where you only have one source of information for an event.
  - Can you identify other (primary or secondary) data sources to verify the data collected?
- Identify information where you have multiple data sources.
  - Are your data sources giving you the same information?
  - If yes, do you trust both sources of information?
  - If not, critically assess the credibility of the source of your information. Does one of your data sources have an interest in making the situation on the ground look worse or better than it is, or provide inaccurate information?
- Does your information match with the context, season, and location?
  - If not, can you follow up with primary sources to understand why the event is not matching with what you expected? Or do you have any secondary data sources that can verify your findings?
- Do you have a contact physically present in the location that can verify your information?
  - If yes, do so!
- How does your data match with what you expected to happen at this time of the year?
- Are you willing to accept any difference in information sources of the same event
  - If yes, justify why.

Ideally, all map layers should meet these criteria:

- ✓ Primary data is verified by at least one external/ secondary source or verified by a person physically present in the implementation area.
- ✓ Secondary data aligns with or at least does not directly conflict with other data sources used.
- ✓ If a map layer is based on a single external/ secondary data source, there is a justification for why it has been included in the context mapping plan (e.g., expected seasonal event, highly trusted source of information with own verification process, only source available).

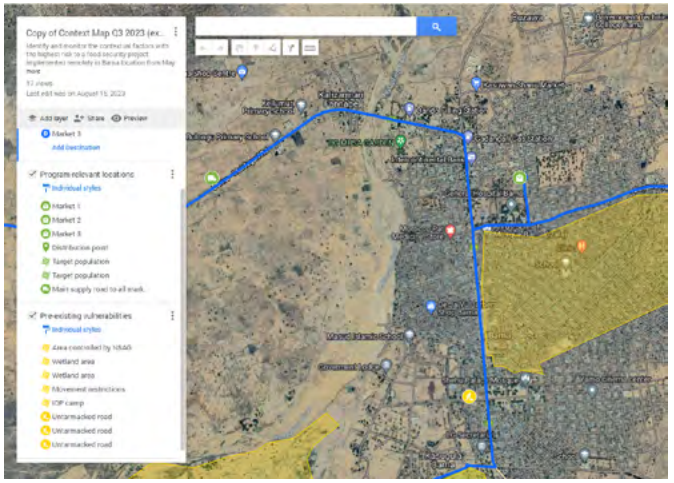
The RAAM toolkit provides two Context Mapping tutorials demonstrating how to create a context map using Google My Maps and QGIS. Google My Maps is a web-based mapping application that allows users to create customized maps by adding markers, lines, shapes, and layers, and sharing them with others. QGIS is an open-source desktop GIS application that allows users to view, analyze, edit and create maps, and analyze and manage geographic data.

There are some important differences between the two for RAAM purposes:

- › Google My Maps can be accessed from any web browser, while QGIS requires installation on a computer
- › QGIS features and capabilities are more advanced than those of Google My Maps, it offers more advanced analysis tools, more formatting options, and support for more data types (such as satellite imagery) and map types (such as 3D maps)
- › Google My Maps has integrations with other Google products, such as Google Drive, which allows easy sharing and collaboration
- › Google My Maps is easier to use and can be a great tool for creating simple maps quickly and easily, without specialized skills

The choice between Google My Maps and QGIS (or another platform) depends on the RAAM team's specific needs, existing skills, and preferences. Both My Maps and QGIS are extremely well-documented online, and teams can consult many sources for more in-depth information.

Image 1: Example of a context map



3.1 Output: Final context map with at least three layers: 1) program-relevant locations, 2) one or more context mapping indicators associated with pre-existing vulnerabilities, and 3) one or more context mapping indicators associated with selected contextual factors.

3.2 Report and interpret findings

This step involves monitoring the context map for findings of interest, or trends which meet the triggers for action defined in the context mapping plan. Findings should be shared with pre-identified decision-makers using appropriate channels to support adaptive program management. The Information Dissemination Guidance is helpful for defining when and how findings should be elevated. There are several things users might look for when interpreting the map:

- Observed (or expected) **direct impacts** from the findings. One example would be identifying that routes to program markets (program-relevant locations layer) are flooded (contextual factors layer), and particularly in zones where more female-headed households are located (vulnerabilities layer). Another example would be identifying that IDP migration patterns are shifting (contextual factors layer) toward villages in a particular administrative zone (program-relevant locations layer).
- Assess the potential influence the direct impact could have on the **project/program** you are monitoring, and how pre-existing vulnerabilities may increase the risk to the program. Considerations could include:
  - whether the direct impacts mapped close to any of your program-relevant locations. If yes,
    - *What specific activities may be impacted (if any)?*
    - *Does the direct impact affect access to your program-relevant locations? How would that affect existing program activities?* (e.g., participants cannot use e-vouchers at approved vendors, decreased access to food)?
    - *Does the direct impact prevent program activities from being implemented?* (e.g., armed attacks at or near health clinic supported by the program preventing program activities from taking place, flooding of land use for agricultural program preventing farmers from sowing seeds provided be the program)
  - whether any pre-existing vulnerabilities are within or close to the area where the event occurred. If yes:
    - *How does the pre-existing vulnerability affect the impact of the change* (e.g., untarmacked roads are increasing the risk of main supply roads for being flooded causing a road blockage)

Table 4: Examples of interpretation of context map

Finding/trend	Direct impact	Pre-existing vulnerability	Impact on program
Flooding levels have increased	The market near the flood is inaccessible due to high water levels	None identified near the program-relevant locations relevant to flooding	People cannot redeem their e-vouchers at approved vendors (program-relevant location)
	Main supply roads are being flooded	The main supply road has been identified as being untarmacked, which could increase the risk of the road being further damaged due to the flood. Inflation has slowly led to increased prices of essential goods.	The road that is being blocked is also the main and only supply road to the market. If the road does not open soon, the vendors where participants can redeem their e-vouchers risk running out of stock or being forced to increase prices. This could mean that participants cannot get the same value for money from the vendors where they have to use the e-vouchers. This could have implications for the program activities.
Kidnapping of 5 girls and 2 women	Fear of moving near the area where the incident took place. Increased enforcement or additional movement restrictions might be expected to be enforced formally by local authorities of informally by head of households	In the area where the incident took place, movement restrictions were already in place prohibiting women to move at night.	The kidnapping took place near one of the markets where the program has pre-approved vendors where participants can redeem their e-vouchers. With fear of moving and potentially enforced movement restrictions for women they might have difficulties accessing the market, which would reduce their access to the vendors where they can use the e-vouchers. This would have consequences for the uptake of program activities.

Interpretation of findings is usually predictive at this stage, meaning it is trying to use elements that *have occurred* to understand impacts on the program that *have not occurred yet*. To make sure this prediction is as accurate as possible, consider whether similar events happened in the past and what the impact was, and include inputs from different units.

Triggers for action should be one of the principal considerations in the interpretation. In most circumstances the first action to be taken would be to inform your line manager and/or head of programs of the specific event. The specific action to be taken may already be included in a risk response strategy and/or contingency plan. In some cases, the information defined by the trigger may be straightforward and time-sensitive, and the information should be communicated to decision-makers without doing any in-depth interpretation as detailed above. In other cases there may need to be in-depth interpretation in order to understand if the trigger has occurred. This may also be requested by your decision makers to understand the impact of the event(s) further.

Depending on your capacity and access to the project location you may decide to conduct a rapid needs assessment, an access assessment, a market assessment or something else depending on the type of event(s) you are interested in. If you are using your local contacts to understand the impact of specific events, you may choose to develop a structured or semi-structured interview guide to gather additional information. Depending on your access constraints and number of local contacts you may only have one or two opportunities to get the information you need. Interpreting the map as part of regular program review, stakeholder meetings, or other venues can add additional value.

The context map will likely be updated several times through the program, and at some point you may want to conduct a more long-term analysis looking at trends across multiple updates, and informing longer-term program planning. Multiple reports can be analyzed to produce a longer-term analysis, or ideally an interactive context map should be set up to facilitate understanding trends across time.

3.2 Output : Regular interpretation of Context Mapping products, either ad hoc or in scheduled times and/or meetings.

3.3 (If relevant) Iterate on the context map

A context map is a monitoring tool, and as such should be used throughout program implementation. This means that if there is still an expected need for the tool, the analysts/technical leads responsible for maintaining it should incorporate feedback collected both from users of the context map and decision-makers. Responsibility for collecting feedback should have been assigned in the context mapping plan step of the Workshopping phase, but RAAM teams should take advantage of regular program review meetings and other venues where data is shared to assess what is useful and what needs improvement in the context map. Elements of a context map frequently iterated on in practice include:

- **Number of layers** – New layer(s) may be added if it has been noted in previous reporting and interpretation cycles that users/decision-makers frequently want to see information about a contextual factor, vulnerability, or program location not included on the map. Layer(s) may also be removed if they are not being used.
- **Changes to formatting** – If it has been noted that particular layer(s) are confusing or misleading for users, or that there is not enough context/metadata about the layer included in the map for interpretation, then the map symbology (e.g. choice of icons, colors, markers) and elements like legends and text boxes may need adjustment.
- **Additional processing or verification of data** – If layers do not represent the data in the most interpretable way (e.g. in % terms rather than # terms) then additional processing/calculation may need to be done in the map software or the stored data source. Additional verification of data may also need to be done if users and/or decision-makers are skeptical of the reliability of the existing source(s).
- **Updated triggers for action** – As users build experience with the context map and make decisions with the information, the original triggers for action and thresholds for meeting that trigger may prove to be too conservative or too liberal. These should be updated as the program progresses.

Once the iteration of the map is done, the Implementation phase is repeated. **This constitutes the functional use of Context Mapping for RAAM.**

3.3 Output: Revisions to the Context Mapping Plan in Tab 3 of the Matrix.

Final notes on context mapping

During the context mapping process, RAAM teams may identify a need for data sources that can be generated using other RAAM methods. For example, a cash distribution program may want to know which areas of their implementation zone have experienced higher than average crop failure but may not have any available datasets to access for this. Therefore, they may decide to use the Remote Sensing method to try to generate proxies for crop failure. Guidance and tools for the other RAAM methods can be accessed through the RAAM Toolkit Homepage.

Context Mapping Tools

Phase 1: Preparation

Define stakeholders

RAAM Workshop facilitators' guide

RAAM case studies

Organize workshop/ planning event

RAAM Workshop facilitators' guide

Secondary literature sources for context mapping

Phase 2: Workshopping

Set Context Mapping objectives

Tab 1 of Context Mapping Matrix

Identify locations, contextual factors and vulnerabilities

Tab 1 of Context Mapping Matrix

Tips and methods for identifying program-relevant locations and pre-existing vulnerabilities

Identify and assess data sources

Tab 2 of Context Mapping Matrix

Develop context mapping plan

Tab 3 of Context Mapping Matrix

RAAM Roles and Responsibilities tool

Phase 3: Implementation

Create context map

Context mapping using MyMaps and using QGIS

Report and interpret findings

Information Dissemination Guidance

Remote Sensing

This guidance describes how remote sensing (RS) can be useful for MEL in reduced access contexts. The document introduces the RAAM tools that support programs to assess feasible uses of RS based on context and resources, and plan development of RS analytics accordingly. This document should be considered in conjunction with the other analytical approaches and supporting materials included in the RAAM toolkit.

What is remote sensing analysis?

Remote sensing analysis refers to the practice of using data gathered about the Earth from a distance with the use of specific technologies, to generate information about the characteristics of a site, region, or even the entire globe. Remote sensing is a broad field, with many potential applications for monitoring program implementation (directly or indirectly) or monitoring aspects of the context that affect program implementation, including:

- Long-term change in the physical environment(s) , including changes in the natural environment such as deforestation, water surface change, vegetation growth, and soil erosion, or changes in the built environment such as urbanization, road network, and fluctuation in IDP settlement boundaries.
- Rapid-impact climate hazards such as drought, fires, or flood.
- Conflict or disaster-related shocks impacting program areas, such as urban damage or blackouts.
- Weather trends localized to the program area, which potentially affect activities, such as humidity and heat trends.

Remote sensing is sometimes also referred to as "Earth observation" (EO), and both can be used when referring to the practice of using satellite imagery to analyse the earth. For the purposes of the RAAM toolkit, RS primarily refers to satellite and/or aerial data, i.e. imagery collected from the air or space, because this data is more accessible and practically useful for humanitarian and development program s compared to other forms of RS data, such as sonar.

Remote sensing can provide information about a reduced access area that would be difficult or impossible to gather through other means,

specifically about phenomena that leave observable impacts on the earth's surface. For example, a team seeking to deliver humanitarian aid to a community with no direct access may want to get an estimate of how many shelter structures already exist and where they are situated. This may be done with a manual analysis of satellite images obtained covering the area of interest. In another example, a team implementing a road rehabilitation program remotely may want to know about the expected heat and humidity conditions in the construction areas, to decide whether conditions will be safe for workers to proceed. This can be done with an index-based analysis from freely available RS data.

The level of effort and skills needed for RS analysis can be high, but humanitarian and international development programs often have significant opportunity to leverage pre-existing derived data products or simpler RS-based indices. These opportunities are frequently missed because humanitarian and development programs are not clear about what they can access or how to practically explore the options. Such programs do often face challenges of cost and availability of geospatial analysis skills. However, the most critical barrier to integrating remote sensing into reduced access monitoring tends to be in the capacity of the implementing team to define objectives that can be measured with RS, explore available resources, and make concrete plans. Therefore, this guidance does not attempt to be a comprehensive reference on RS; rather, it provides implementers with a practical pathway to integrate RS use for their program.

To access the relevant RAAM tools for the Remote Sensing module, please visit the Tools page. →

Who are the intended users of this guidance?

- RAAM leaders who work to convene stakeholders and organise the Workshop phase.
- Team members and managers from MEL, the program implementation team, context analysis teams, and any other relevant departments who are engaged in producing evidence and data, and make data-informed decision in the implementation.
- Team members from other departments who play an important role in understanding the physical environment and community sentiments in the implementation context, such as Security and Accountability.
- Team members from departments involved in guiding program data systems, such as IT.

Note that this guidance document is not intended for and does not include technical guidance for developing RS analytics. Instead, it focuses on supporting multi-stakeholder RAAM teams to determine if RS is feasible in a particular context, define actionable analytical objectives, and set clear roles and responsibilities (including technical roles) for researching and developing the analytics. The RAAM toolkit contains supplemental documents more relevant for technical analysts.

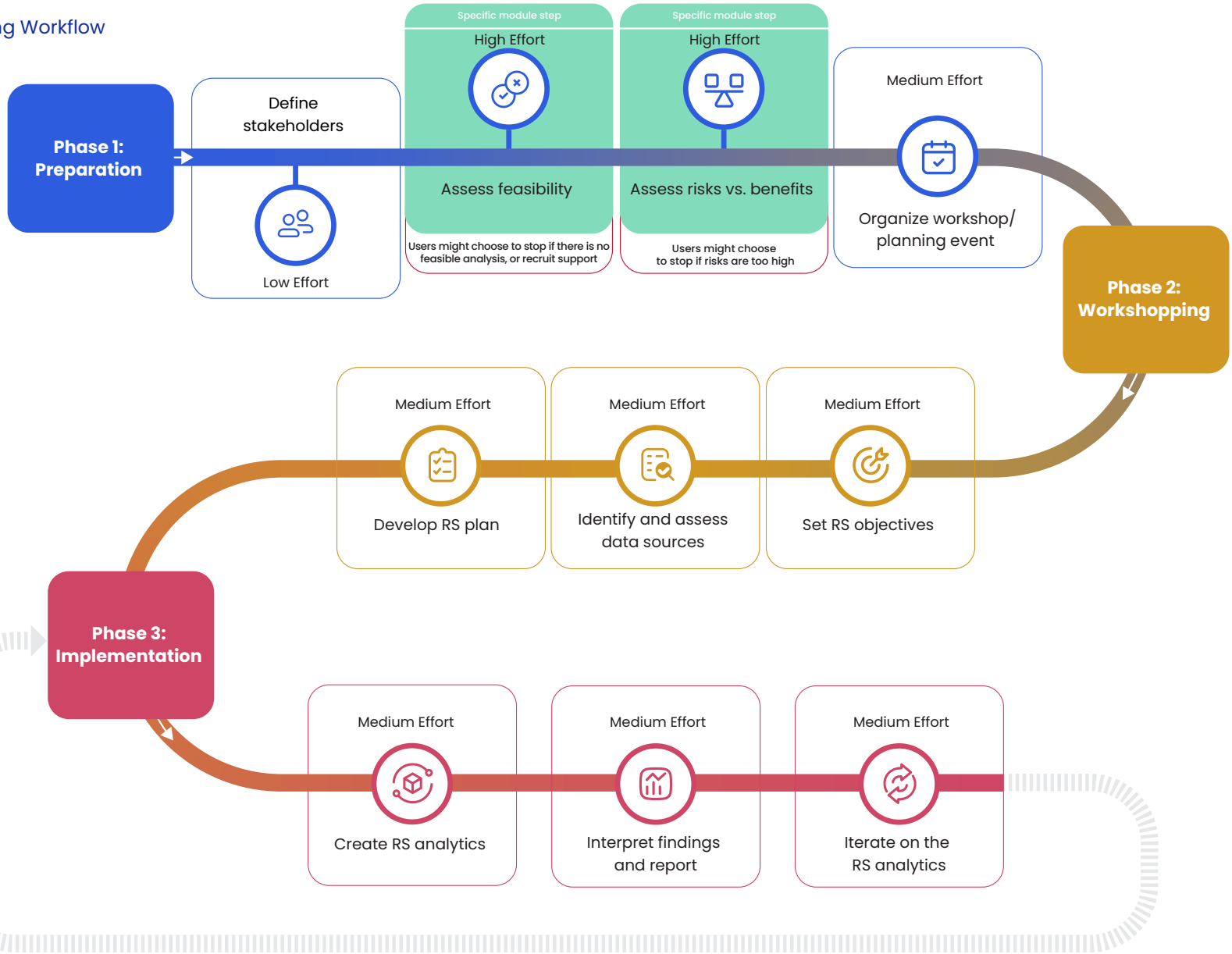
Remote Sensing Workflow

Remote sensing mostly follows the RAAM roadmap steps. The process starts with **Preparation**, i.e. defining stakeholders, timeline and mechanisms for stakeholders to work together. Then stakeholders collaborate in the **Workshopping** phase to define analytical objectives, list out available data sources, develop an analysis plan, and define roles and responsibilities for implementing remote sensing analytics. Stakeholders then move into **Implementation**, where responsible team members build the analytical outputs, interpret the findings and report them to decision-makers, revisiting and refining the analysis plan as needed.

The RS process also has distinct steps in the Preparation phase included for assessing the feasibility of using RS and for making a risk-informed decision about whether to proceed to the Workshopping phase. These steps are needed because the technical difficulty of utilising RS tends to be higher than in other RAAM methods, and because use of satellite imagery can sometimes have significant security implications or be perceived negatively by communities or other stakeholders.

As with all RAAM methods, it is recommended that the **Workshopping** phase be done in person, where different departments in the program (e.g. MEL, Security, relevant Context Analysis teams) come together to share information, discuss, and agree on the plan. Cross-departmental collaboration is an essential part of RAAM. The Workshopping phase should include program stakeholders who have formal or informal information sources or knowledge of the context, as well as those who have data skills and technical capacity in GIS or mapping. It is likely that not all stakeholders will be deeply involved in RAAM after the workshop, but their input in the planning is vital.

Figure 3: Remote Sensing Workflow



The table below walks through the steps associated with the **Preparation**, **Workshopping**, and **Implementation** phases of the remote sensing method, and the tools that support each step. The guidance below gives detailed instructions on each step.

Table 4: Remote Sensing Workflow and associated tools

Phase	Step	Description	What does this achieve?	Relevant RAAM tools	Time Spent
Preparation	**Define stakeholders**	Identify departments or partners who have relevant contextual knowledge, technical expertise, or a stake in the potential outputs of implementing RS analytics.	Generates a list of people to involve in Preparation and include in the Workshopping phase.	• RAAM Workshop facilitators' guide • RAAM case studies	short period of time
	Assess feasibility	Work through a decision tree to assess if the phenomena of interest are measurable with RS, whether any pre-existing data products address the phenomena, and whether the program can access technical skills and data it may need.	Ensures that Preparation only proceeds if there is good reason to believe RS analysis is feasible given program context and constraints.	• Tab 1 of RS Preparation Matrix tool • Budgeting guidance	spread out over a longer period
	Assess risks vs. benefits	Discuss the context-specific risks and benefits of RS analysis known to stakeholders.	Documents known protection or security risks and makes an informed decision about whether to proceed.	• Tab 2 of RS Preparation Matrix tool	spread out over a longer period
	Organise workshop/ planning event	Determine how stakeholders will collaborate on planning the RS analysis, organise logistics of collaboration and create supporting materials.	Sets a concrete time and date for stakeholders to convene, and prepares the framework to structure planning.	• RAAM Workshop facilitators' guide	short period of time
Workshopping	**Set RS objectives**	Brainstorm a list of physically observable things the program would like to know about the context and link them to program activities and outcomes.	Creates a list of potential objectives for RS analysis.	• Tab 1 of RS Workshopping Matrix tool	short period of time
	Identify and assess data sources	Identify internal and external available sources of RS data and identify the source or method by which the area of interest (AOI) will be defined.	Ensures that available data and relevant existing products are leveraged and that a feasible objective is selected.	• RS Derived Data Products & Technical Tutorials	short period of time
	Develop RS plan	Develop a plan and assign roles and responsibilities for the development of RS analytics to meet objective(s), identify any validation steps and triggers for action.	Formalises the Workshop phase into an actionable plan/next steps for the Implementation phase.	• Tab 2 of RS Workshopping Matrix tool • RAAM Roles and Responsibilities tool	short period of time
Implementation	**Create RS analytics**	Using the RS plan, responsible team members research specific technical methods that meet the objective, develop and test the analytics product(s) and verify findings.	Creates the RS-based analytics for program team interpretation and decision-making.	• Tutorial – Calculating SOCI with QGIS • RS Derived Data Products & Technical Tutorials	short period of time
	Interpret findings and report	Monitor analytics for findings that meet thresholds/triggers for action identified in the RS plan and/or produce regular summary reports.	Connects findings from the analytics with decision-makers according to urgency.	• Information Dissemination Guidance	intermittent and recurring
	Iterate on the RS analytics	Update the analytics with feedback and observations from stakeholder use. This could include adding a validation step, updating a trigger for action, etc.	Incentivizes the RAAM implementers to improve the analytics or improve reporting processes.		intermittent and recurring

Phase 1: Preparation

1.1 Define stakeholders

MEL and Program leaders are always stakeholders in the remote sensing process and should be well-represented throughout it. Depending on your context, other stakeholders include:

- **Context analysis or other analytical units who** have produced relevant reports or products about the implementation regions that included RS data and analytics
- **Security teams** who regularly monitor threats in the implementation regions
- Any **Program partners** who can contribute ideas, contextual knowledge, analytical capacities, and/or feedback
- **Accountability and Safeguarding** teams who have knowledge of the context and gather information from program participants about their experiences
- **Subject matter experts** both internal and external to the organisation
- **Local government partners**

Note that for the remote sensing method, it is strongly recommended that at least one team member be identified to serve as a "technical advisor" to the Preparation and Workshopping phases. This person's role is to provide ad hoc technical input and advice during the subsequent steps based on what they know (or can research) about available data and technical methods. This helps to ensure that the team's ambitions stay realistic and achievable.

Technical advisors might come from one of several different backgrounds. They might have previous geospatial analysis education or experience, including with RS data. They might be data scientists or analysts who have not done RS analysis but feel comfortable researching and exploring requirements. They might have supervised previous projects involving RS analysis and have a practical understanding of the skills and workflows needed. They might also have academic or other subject matter expertise relevant to RS analysis even if they are not analysts themselves. Check with your technical teams to see if a person with an appropriate background already exists in your organisation or program, and if needed, check the **list of communities offering support for humanitarian users of RS** or the **template SOW** for an RS consultant to find other options for technical support.

Note that a technical advisor may be asked to participate in later development of RS analytics in the Implementation phase, but it is not required that they do so.

Simple stakeholder analysis/mapping methods can help to identify all other appropriate stakeholders to involve in subsequent steps.

1.1 Output: List of stakeholder groups and named representatives, with at least one designated technical advisor

1.2 Assess feasibility

Humanitarian and international development programs frequently know that RS analysis could be valuable to them, but do not feel equipped to know the range of what is possible or where to start. In some contexts, using RS may simply not be feasible due to the nature of the program, the context, or available resources. The feasibility decision tree provided in the RAAM tools helps team members leading the Preparation phase (including the technical advisor) to systematically think about these questions to determine whether using RS is feasible for a particular program. With this information, the team can make an informed decision about whether RS is feasible enough to complete the Preparation steps and proceed to the Workshopping phase.

When talking to RS experts about whether a particular type of analysis is possible, you'll often hear "it depends". The reasons why it depends typically centre around a few factors that RAAM analysts will need to consider for their own use cases (see this 2022 paper for more discussion of factors and challenges):

- **Phenomenon of interest:** Is the information you want to know observable directly on the earth's surface? Would it potentially have indirect effects on the Earth's surface? A body of water is directly observable, and we could measure if it is growing or shrinking. People movement, however, is typically not directly observable with RS, and would have to be estimated through indirect methods.
- **Data availability:** Is there sufficient data for the time period at the desired frequency? Is it of high enough resolution for the analysis? What is the cost?
- **Site specifics:** Are there unique characteristics about the site? Do the structures have characteristics that would make them harder to analyse from the air? Are there features of the natural environment, such as steep elevation changes or dense forestation, that might make it harder to analyse from the air? Is this an area with a lot of rainfall and cloudy days that would impact some forms of RS data?
- **Availability of ground data:** If your area(s) of interest include many small areas (such as a collection of farms, or a set of reservoirs), you will need to have precise GIS data defining their locations to perform analysis. In addition, many RS use cases benefit from (even if they don't always require) having actual observed data collected in the area(s) of interest to validate the RS-based calculations.
- **Expertise:** Many humanitarian and international development organisations have difficulty hiring and/or retaining dedicated analysts with a geospatial background, especially those with a background in RS. Does your organisation already have staff with sufficient technical skills and availability to perform at least basic RS analysis, and communicate the strengths and weaknesses to decision-makers to prevent misinterpretation? Could staff be trained to do so, or is consulting support needed? Is there budget available to pay for training or consulting support?

The RAAM RS feasibility decision tree helps users to work through these questions. A team member with geospatial background should be involved in this process if possible, however it may still be necessary to consult experts to draw conclusions for a specific context. Some ways to do this may include:

- Developing an SOW for an individual consultant or consulting firm with Earth science expertise to provide technical advice and/or perform a piece of RS analysis (see template for ideas)
- Reaching out directly to academics who work in the field
- Submitting a program design to the NASA Earth Science Review Board

If you already know one or more specific indicators (such as NDVI) or concrete pieces of information (such as urbanisation extent) that are useful and can be generated from RS analysis, you may choose to skip the decision tree and go straight to the next step and begin planning the workshopping phase. However, the decision tree may still be useful for you for purposes of brainstorming potential analysis types.

Using the RS Feasibility Decision Tree

The feasibility decision tree tool contains two main components. The first component prompts users to think critically about what phenomena affecting program activities or outcomes could be observable on the Earth's surface. For example, general trends in crop health could be reasonably expected to influence the outcomes of a program implementing market systems development activities and may be observed directly on the Earth's surface. However, commodity prices cannot be observed on the Earth's surface. Refer to the case studies list to help in brainstorming observable phenomena.

The subsequent component contains the actual decision tree, which has a number of Yes/No questions and arrows directing you to subsequent steps based on the answers. Read Question 1 and answer "Yes" or "No" to the best of your understanding, based on your knowledge of the program context and structure. Proceed to the next question based on the flow arrows. Many forms of RS analysis can be done with free data/products and available staff, but the decision tree helps to indicate categories of analysis that would require budget or specialised expertise (refer to the Budgeting Guidance for cost estimates).

Depending on your answers, the decision tree leads you to concrete descriptions of RS products or analytics that could be feasible for your program, or to other advice/guidance. There can be other reasons why an analysis type might still not work despite being feasible, and which will need to be discussed and addressed during the Workshopping phase.

1.2 Output: Go-No Go decision to proceed to Step 1.3

1.3 Assess risks vs. benefits

Ethical and security considerations for use of RS in a humanitarian/international development context may be distinct from the traditional data concerns (i.e. informed consent, protection of personal data, etc.). Some risks may unpredictable, but by going through a Risks vs Benefits assessment, your team can document known risks and benefits, document any information gaps, and consult with key stakeholders to find out if there are other risks and benefits to consider. You can then decide whether the benefits outweigh the risks and proceed to the workshopping phase.

Since use of RS in the sector is still relatively new, ethical norms and "dos and don'ts" are not yet well established. This short article sums up some key ethical challenges. Identified stakeholders from Security, Accountability, and/or Safeguarding teams should be consulted in this step, as well as any other relevant program stakeholders. Key questions to ask:

- Are there community sensitivities to observation of their land/buildings/resources from outside? Would it potentially cause distrust if the program were known to be using satellite imagery? Could it be perceived as spying/surveillance?
- Is there a potential for use of RS to bias program outcomes? For example, is there reason to believe that important phenomena will not be visible in some areas but will be in others?
- Is there a potential for malicious actors to use RS analytics to harm communities?
- Are there potential legal restrictions on use of RS in the area(s) of operation?
- Can the program inform communities about potential use of RS analysis? What concerns should the program be prepared to answer?

The ethics and risks of a particular type of analysis will all be contingent on the context, as well as the acceptable level of certainty. This is why **it is critical to include a knowledgeable group of stakeholders in the Preparation phase to evaluate risks vs benefits before proceeding to Workshopping.**

The Risk-Benefit Analysis tab of the Preparation Matrix tool can help planners at this step to document the risks and potential benefits of using RS, list plausible mitigation measures, and decide whether it accords with ethical best practices and the commitments that the program has made to the communities and governments it works with.

If, after consulting with stakeholders, you do not feel there are any plausible risks to exploring RS analysis, you may not need to use the Risk-Benefit Analysis tab, and instead decide to move forward to Step 1.4. Similarly, if in discussions it becomes clear that the risks are far too great, you may decide to stop the process and not proceed to Step 1.4. In either case, you are advised to document the consensus of the relevant team members through email or another appropriate method, as the situation could change in the future, and it will be helpful to have a record of how and why the decision was originally made.

1.3 Output: Completed Tab 2 of the Preparation Matrix tool, or documentation of consensus from consulted team members to proceed or not to Step 1.4

1.4 Organize workshop or planning event

RAAM products are best created in an environment where different stakeholders have a chance to meet in real time, share ideas, discuss limitations and challenges candidly, and develop plans together. In most cases, the best way to accomplish this is to hold a **dedicated in-person workshop**. In some cases, a RAAM workshop is included as part of another previously planned gathering, while in others, it is done as an independent effort.

While an in-person workshop is ideal, it may not be feasible depending on the availability and physical location of required stakeholders, budget, and program timelines. If not feasible, it is recommended that RAAM Managers schedule online convenings. The Workshopping phase may be completed asynchronously over email and online chat platforms, but it is not recommended to pursue this unless the stakeholders already have well-established patterns of working together asynchronously.

The RAAM Workshop Facilitators' Guide and Workshop template slides are the key tools for organizers of the Workshopping phase to consult when planning to walk the group through the RS method. Facilitators should conduct a document review to help **integrate any existing program plans and analysis into the RS analysis process and Workshop agenda**. Most programs typically include a Program Plan, Activity MEL Plan, context analysis, or risk register which would cover considerations related to security, context analysis, program and MEL priorities. If these documents are comprehensive and up to date, they will likely be helpful in the Workshopping phase, especially Step 2.1. This not only ensures that the Workshopping phase is tailored to program needs, it also helps prevent creating parallel and repetitive systems. Below is a list of questions you can explore as you review existing documents to ensure that the purpose of conducting a RS exercise aligned with the overall program goals and objectives, and its use, users and stakeholders have been clearly identified.

Table 5: List of potential documents, exploration questions related to RS, and examples

Source of document review	Exploration questions	Example
Theory of Change	Is there a clear link between the program and physically observable phenomena laid out in the theory of change? Would monitoring those phenomena (or related phenomena) help the program stay attuned to changes that may affect program implementation?	Theories of change may have a clear link to observable aspects of the physical environment, either as something the program is seeking to change directly in its activities (e.g. in infrastructure programs) or as indirect impacts of program activities (e.g. changes in river cutting due to new crop planting).
Program logic model (Logframes, Results Frameworks, Results Chains, etc.)	Do the assumptions included in the logic model include any physically observable phenomena that are not already being monitored?	Results frameworks frequently include assumptions that the context will remain relatively stable in some respect (e.g. environmentally), and there may be environmental phenomena which cannot be monitored through traditional MEL data collection.
Activity MEL plans (including learning plans, MEL Tech plan, etc.)	What program level adaptations and decisions would benefit from more knowledge about the physical environment in the implementation regions? What learning questions does the program have about the physical environment? What gaps exist in terms of data availability, timing of data collection events, etc.?	Programs focusing on assistance to displaced populations may want to know about physical changes in the boundaries of IDP camps and land cover use but may only be able to infrequently visit the camps to assess this. RS can be used to analyse changes in the times when teams cannot make in-person visits.
Risk Register	Are there particular risks in the risk register that might hamper the program team's ability to collect data in particular locations? Any specific groups of participants that may be associated with this risk? Are the risks seasonal? Are the drivers of risk known and clear?	The risk register may have identified organized gangs as a risk, who may put the lives of program teams in danger during a data collection process. Knowing this might prompt teams to develop RS analytics as a backup source of information if primary data collection must be stopped.
Context analysis reports	Do the context analysis reports analyse/ask questions about physically observable phenomena - such as road network development, drought impacts, or crop health – which may be of relevance to program outcomes? Do they identify/track any contextual factors observable on the earth's surface which are not previously mentioned in program documents?	Context analysis reports might note that drought is prevalent in a particular region but that they are not able to say how much different communities will be affected. RS analysis could be conducted to analyse indicators of vegetation health in the communities and quantify relative impact.
Project work plan	Are there clear protocols for stakeholder engagement? Is there a plan for regular review and adjustment of the work plan to address emerging issues or improvements?	Using information from the program work plan, the RAAM team may decide to sequence the development of particular RS analytics based on when they may become critical to monitoring of the program.
Project proposal	Is the program context and rationale clearly explained? Are gaps in current knowledge or practice identified, and are sources of background information and data properly cited? Does the proposal reference relevant literature, reports, or case studies?	The program proposal may highlight previous research on the context that could be consulted for further ideas on phenomena affecting the program that is visible on the earth's surface, and may also identify gaps in knowledge that context mapping could help fill.

The table above is not exhaustive, and other documents may be relevant to you. The RS Case Studies list may also be helpful in this step, as it provides examples of phenomena that other programs have sought to assess or monitor with RS. As you review documents, try to take notes of the critical information you extract and consider referring to them during the Workshopping phase, to check for alignment and to ensure that any final analytics will be useful for the program.

1.4 Output: Workshop agenda and slides

Phase 2: Workshopping

2.1 Set RS objectives

Setting clear and actionable objectives for RS analysis is crucial for successful implementation of the method. Doing so ensures that analysis only proceeds if stakeholders participating in the workshopping phase agree that it would fill important information gaps, and if persons with technical expertise agree that the objective is likely achievable. By the end of this step users should have at least one clear objective developed and entered into the first tab of the Remote Sensing Matrix. Findings from any document review conducted by the workshop organizers should be presented during this step to facilitate brainstorming among the group.

How to develop RS objectives

During Workshopping discussions with stakeholders, use Tab 1 of the Matrix tool to list potential objectives ("what would you like to know?") of analysing the Earth's surface in and around program areas. Thinking prompts could include:

- What changes would we expect to see on the land from program activities?
- How might environmental factors (both short-term events and long-term changes) affect our implementation strategies?
- What data are we collecting through local partners, subcontractors, or third-party monitors that could also be confirmed or triangulated with information from satellite imagery?
- What changes in the built environment/infrastructure in program implementation regions and/or surrounding regions would be important to know about?

Note that you should try to list all objectives that stakeholders would feel contribute to better program decisions, regardless of whether you think there is available data or technical expertise/methods! You will prioritize objectives for monitoring and assess available data sources in Step 2.2. Here are a few examples of objectives taken from past examples of RAAM implementation and from other known cases of use of RS to inform humanitarian and development planning in reduced access contexts. You can modify them or use them as inspiration for developing your own:

- Understand weather conditions in planned road rehabilitation zones to influence work planning over the course of the program
- Know where and how many structures have been burned in community X due to conflict
- Estimate current flood vulnerability of different communities in program implementation area X based on elevation and rain forecasts
- Understand where agriculture in program implementation area X has likely been most impacted by ongoing conflict and disruption of supply chains during the cropping months

Please note that the tool prompts you to also clarify which specific objectives, indicators, and/or assumptions from the program implementation plan that the RS objective will contribute to, if any.

Realistic expectations for RS analysis

There can be an expectation that a highly quantitative method like RS analysis will be more reliable and objective than primary data or a qualitative understanding of the context. In reality, there are many reasons why an RS contextual understanding and insight are often vital for correctly interpreting the information from RS. This can be due to multiple factors, such as :

- Satellite imagery is often captured when there is heavy cloud cover above the target area, potentially making the imagery unusable.
- Doing analysis with free but low-resolution imagery can be limiting. For example, if you use free imagery which has a 10-metre resolution to calculate NDVI values for a 20-metre squared small garden plot, you would get only a few pixel values for the plot, which would likely include data from surrounding non-productive land/vegetation. This might lead you to overestimate or underestimate the greenness of the plot because the data is not high-resolution enough. The same 10-metre resolution imagery used to analyse NDVI over a 2.5-hectare farm would yield many more calculated pixels in the farm and likely show more useful trends.
- Validation data collected by a program and used to train an RS model can be inaccurate or incomplete.
- RS models published in academic literature are typically tested and trained in only a small subset of countries. It takes expertise to know whether a model that worked in one context will work in another and to make an informed judgment on the appropriateness and reliability of the results.

Usually, primary program data or direct observations (wherever possible) will be cheaper and easier to use, and even where RS analysis is used, programs should validate results wherever possible and consider **triangulating them** against other information available to the program.

Creating a "longlist" of objectives – i.e. listing out all potential objectives - in this step ensures that stakeholders explicitly lay out their rationale for each potential objective, how it would inform the program, debate it with other stakeholders, and increase their understanding of others' perspectives. However, use of RS is still new to many in the humanitarian and international development field, and in past examples of RAAM implementation, teams have typically focused on only one objective to maximize chances of success. *For this reason, it is recommended that teams exploring use of RS prioritize only one objective for planning in subsequent steps, unless they have very experienced technical experts in the room who will be participating in developing the analytics.*

If the stakeholders have been able to identify more than one potential objective, it is recommended that workshop participants who have geospatial analysis experience narrow down the list based on their initial assessment of which is most technically feasible.

If more than one objective is identified as technically feasible, or if analysts require more time to determine this, it is recommended that the workshop participants decide on one priority objective before proceeding to Step 2.2. The decision should be made based on which objective would have the most impact on program decision-making.

2.1 Output: 1 completed and prioritized objective, with a rationale and any associated program assumptions/ indicators listed in Tab 1 of the RS Workshopping Matrix

2.2 Identify and assess data sources

Performing RS analysis requires having a geospatially defined Area of Interest (AOI) as well as access to either raw RS data (e.g. imagery) or pre-existing RS-derived data products. In this step, workshopping participants identify the AOI of the prioritized RS objective, research available derived data products to see if they can be used to meet the objective, and if necessary, discuss what RS data sources could be used for original analysis.

Area of Interest (AOI)

An AOI defines the spatial boundaries of geographic area that needs to be analysed in a recognizable GIS format (e.g. shapefile, Well-Known Text (WKT), geoJSON strings, etc.). An AOI ideally defines an exact area, i.e. a single polygon of an implementation zone, or a multipolygon dataset detailing features like agricultural fields served by the program. This ensures that the RS analysis is targeted and efficient, focusing only on data in or around the AOI as needed. Defining an AOI is a critical step; it is common for RS analysis to fail or yield inconclusive information due to inaccuracies or imprecision in defining the AOI.

If no GIS data for the AOI has previously been created, it may be sufficient to draw a simple bounding box (i.e. four GPS points defining a box-like polygon) around the area stakeholders identify as the AOI, rather than try to identify a detailed polygon. If only GPS points are available to help define the AOI, stakeholders should discuss with the technical advisor whether additional information will likely be needed. The tipsheet for identifying program-relevant locations may also be helpful in defining an AOI.

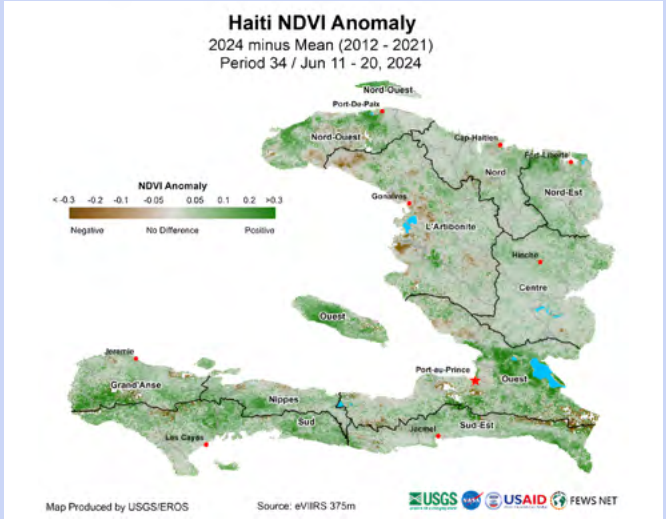
If workshop participants find it difficult to define the AOI, this might be a sign that the RS objective is not well-defined. There must be at least one clear and discrete geospatial area within which to run an RS analysis, and if this is not easy to determine, participants may need to spend more time thinking about where the specific objective should be observable.

RS derived data products

Because RS analysis is relatively new to the humanitarian and international development sector, multiple organisations have made efforts to lower the barriers to entry by providing data products generated from RS data. These products remove the need for program implementers to directly handle and process RS data. They might come in many different formats (such as reports, static maps, or mappable datasets) but fundamentally exist to make it easier for program implementers to access and use information that RS can provide.

FEWSNet is a long-running initiative to create and share derived data products from RS, producing regularly updated global products on rainfall, soil moisture, evapotranspiration, and other indicators useful for drought monitoring. Users can filter on the portal for specific time periods and indicators and download pre-created images or calculated datasets that analysts can further process in desktop software. Using derived data products like these where possible will save time and likely increase the scientific validity of RS analysis, as the products have usually been vetted with scientific experts and have robust documentation available.

Image: Example FEWSNET product showing areas of Haiti where vegetation is unusually high or low during the period of Jun 11-20, 2024 compared to 10-year averages.



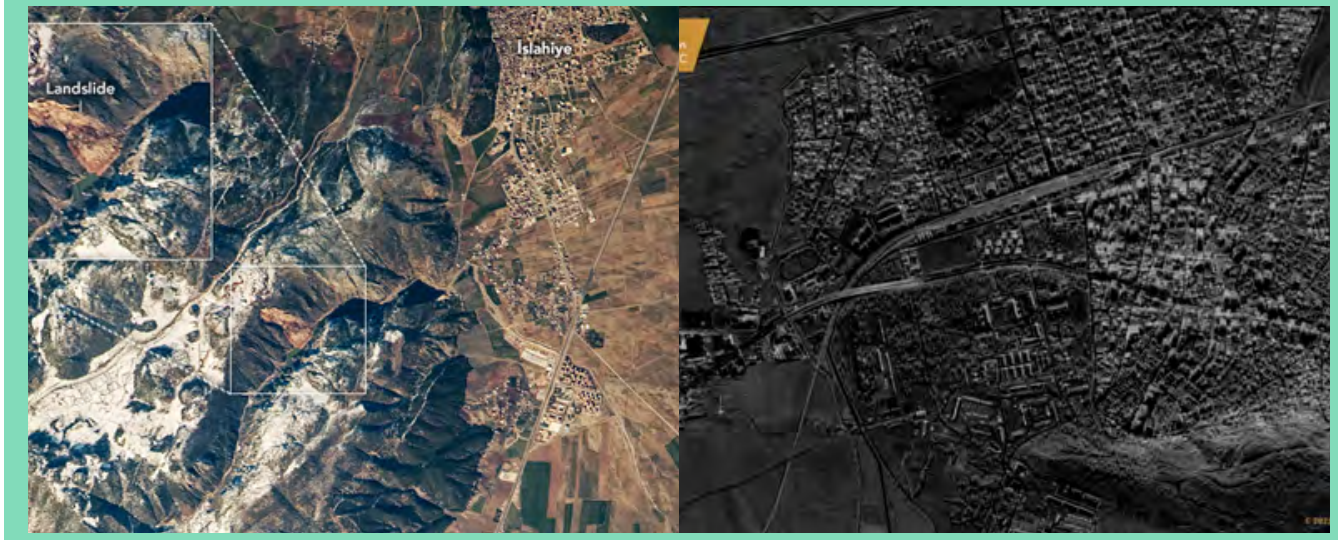
Before trying to do original RS analysis, workshop participants should try to determine if any RS derived data products already exist that can be used more quickly and efficiently. The RS Derived Data Products & Technical Tutorials reference sheet contains an example list of known products, and one or more participants can be tasked during the workshop to spend some time searching online for other potential options.

RS data

If derived data products are not available to fulfil the objective, original analysis of raw RS data can be considered. RS data comes in different resolutions, which you can think of as like the resolution of regular photographs. High-resolution photos have large numbers of pixels and so even minor details on the photo are crisp and clear, while low-resolution photos have fewer pixels and so can be blurry. RS data providers (both private and public) offer datasets with different resolutions, geographic coverages, and time span coverages.

Satellite imagery which shows images in the visible part of the electromagnetic spectrum is usually the form of RS data most familiar to most people, as it is essentially a picture of an area taken from space. In such cases, analysts may be able to manually identify and track features of interest, such as structures, roads, river paths, etc. However, RS data frequently captures wavelengths humans can't see like infrared and ultraviolet, which can allow us to understand nuances on the earth's surface that we couldn't discern from a visible light image alone, like locations of burn scars or the health of vegetation. Synthetic Aperture Radar (SAR) data is another form of RS data that requires more advanced analysis.

Example of optical imagery *(left) showing Landsat-9 image acquired 14 February 2023 following the earthquake that struck Türkiye and Syria. Landslides are visible to the naked eye. Contrast with the* **example of SAR imagery** *(right) acquired by Caribou Space 9 February 2023 following the earthquake that struck Türkiye and Syria. Urban structure pattern is recognisable, but the underlying data does not measure the visible light spectrum, and impacts of the earthquake are not necessarily visible to the naked eye. Both types of imagery can be used to detect structure damage, but require different analysis techniques.*



Public providers such as governments usually offer data for free but at **medium or low-resolution** (roughly 10-30 meters squared) and run their satellites on pre-set orbits. This means that every pixel in the data would represent 10-30 meters on the ground, and new data for a particular area will appear only when the satellite passes over it on its standard orbit (for example, every 2 weeks). This might mean data does not get collected or has too much cloud cover to be usable for a critical day or time period.

By contrast, private providers typically sell **high-resolution** data (which can go as high as 30 centimetres squared), and also can assign or "task" satellites to collect data over a specific geographic region at a specific time for customers. However, their pricing can be expensive, and because private providers are more used to dealing with highly-resourced governments and other entities, they do not often make it easy for smaller and less technically-savvy organizations to access or understand how to obtain their data.

Choice of specific RS data to use for original analysis can be very technical and depends on the type of information sought and selected indicators. Because this is the case, it is only recommended at this stage that workshop participants try to identify if there are data sources that may fit their required resolution, time frame, and likely budget. Key questions to ask at this step include:

- Are you interested in phenomena that are relatively small (say less than 10 meters squared) and would likely need high-resolution imagery to analyse?
- What time frame do you want to analyse? Are the phenomena only observable on a specific day or span of days?
- Could you allocate any budget for imagery if you needed to? Would appropriate program leaders be willing to advocate for the need to purchase imagery, and spend time negotiating with private providers?
- Do workshop participants have access to sources of RS data through organisational or other affiliations?
    - For example, some academic institutions have subscriptions to private RS provider archives that can be used for relevant programs. Local government partners may have contacts with national meteorological agencies or other expert groups that have access to imagery.

The RS matrix contains a Data source list that can help participants and especially technical advisors think about what data might work for the objective.

After listing potential RS raw data sources, but *before concluding this step* (2.2), the workshop stakeholders should consult with participating technical advisors – i.e. persons with geospatial analysis experience or knowledge about RS – to perform a basic feasibility check: **Given what is known about the phenomena, the information objective, the available data/derived data products at this time, and the program's resource and time constraints, does it seem worthwhile to proceed to the next step and plan analytics?** Even if it is hard to know for sure, the discussions in Steps 2.1 and 2.2 may have revealed some critical technical gaps that make it doubtful that RS analytics will be successful. This decision, and its rationale, can be documented in the RS Workshopping Matrix.

2.2 Output: Completed Tab 1 of the RS Workshopping Matrix with details on AOI, any derived data products or RS data sources, and a decision to proceed to Step 2.3

2.3 Develop RS plan

This step completes the Workshopping phase by summarising the outputs of the Preparation and Workshopping phases into an actionable plan for developing one or more RS analytics. A plan entails setting indicators, timelines, technical and managerial responsibilities, and triggers for action. This plan puts the next phase of the RS process – **Implementation** – into motion.

The first step in developing your RS plan should be to set your RS indicators for the RS objective. At least one SMART indicator should be developed, and the indicator(s) *should not* overlap with program objectives and indicators, or duplicate existing monitoring done by any department.

Indicators based on manual analysis, indices, or models

There are three categories (highly simplified!) of RS analysis that may be useful for humanitarian MEL analysts working in reduced access settings. The first is to **manually review an (optical) image using your eyes to identify features of interest**, such as evidence of urban damage, or the presence of a farm, road, or settlement.

The second is to **use or generate indices from the imagery (i.e. the raw RS data)**. Imagery data is typically recorded as "bands", with values assigned to each pixel for each band. For example, an optical image in the visual spectrum will contain bands for green, red, and blue wavelengths (as well as others), with values assigned to each of them for every pixel in the image. Indices may be thought of as relatively straightforward calculations using the band values already contained in the imagery. For example, the Normalized Difference Vegetation Index is an extremely common index measuring the greenness of the analysed area, and is frequently used to track the increase or decrease of vegetation cover. When analysed year over year, NDVI can show changes in the health of vegetated areas.

Many other indices exist that give different information about the environment. Some common ones include the Leaf Area Index (a measure of the extent of the vegetation canopy), the Normalized Difference Water Index (useful for identifying flooding or as a proxy for plant water stress), Soil Organic Carbon Index (useful as a proxy for the presence of organic matter in the soil), and the Normalized Difference Built-up Index (which highlights areas of urban build-up). These are typically well-established in the academic literature, and open-access code and methods are available for calculating them using free imagery. When tracked across time, they can be especially useful.

Reduced access programs may also want to know things like the distribution of crop types in an agricultural area, or the climate hazards near refugee encampments. This information can only be derived by the third category of RS analysis, **building a statistical model using the RS data.**

Rather than simply apply a calculation to the imagery, RS models use statistical techniques to analyse it, and typically need additional sources of data other than just the imagery. Validation data, i.e. actual observed data collected on the ground in the area of interest, is a frequent need for this type of analysis, as it is used to check and calibrate the model. It can be feasible for a program team which has only sporadic or partial access to program areas to collect useful validation data, but it is ideal for a program seeking to do this to work in conjunction with a geospatial expert, who can advise on what exact kind of data is needed.

Refer to the list of RS Derived Data Products and Technical Tutorials for links to helpful resources for all three types. See the below table of examples:

Manual	**Index**	**Model**
Count structures present in a given AOI	Calculate the relative health of a crop by its "greenness" (NDVI)	Classify crop types planted across multiple farms
Visually confirm settlement size change in a series of images	Calculate a proxy for soil fertility (Soil Organic Carbon Index - SOCI)	Classify land cover type for every pixel of an image
Tutorial link	Tutorial link	Tutorial link

Derived data products may already exist for all three categories of indicators. NDVI, for example, has regularly updated products available from multiple sources.

Examples of indicators from past implementations of RAAM include:

- Weekly forecasted temperature in road rehabilitation construction zones from the period of X-Y
- Count of burned structures in program implementation region A, updated every three months over the year 2023
- NDVI in X administrative region updated biweekly during the cropping season, as a % of previous 10-year average NDVI for the same location and time

It is possible that workshop participants won't know of or be able to quickly find specific indicators in the time available as a group. This is normal for RAAM use of RS given the complexity of the method. If this is the case, then the workshop participants can leave the indicator and triggers for action columns blank but should take notes on workshop feedback about what finalised indicators must measure, and proceed to set roles and responsibilities for implementation. This will identify the technical analysts who will be responsible for researching and defining SMART indicators that can be used to operationalise the objective, at which point triggers for action can be set as well.

Validation steps

Validation of RS analytics involves checking the results calculated from the satellite imagery against other sources of information. Depending on the information being sought and complexity of the RS techniques used, validation might be done through:

- **Field contacts present in the AOI**
  - Can they confirm specific values that came from the RS analytics?
  - Can they confirm the general trend or specific findings from the analysis, e.g. have they noticed burned structures? Have they noticed fields afflicted by drought or poor crop development?
- **Subject matter expert**
  - Can one or more technical experts with experience in either RS or a related field review the code or analysis process for potential technical errors? Do the analytical findings appear as expected given the data and techniques used to create them?
- **Other information sources**
  - Do other data sources reporting from the AOI (including newspapers, social media, data gathered by other organisations, etc.) confirm the RS analysis findings in part or in whole?
- **Validation datasets**
  - RS models typically require validation datasets to calibrate model performance, meaning that validation is built into the process. However, high-quality validation datasets can be expensive to collect if they do not already exist.

Note that *validation of the results is distinct from verification of the raw data* used for an analysis, though similar methods can be used for both!

Define triggers for action

Not every analytical result is meaningful or needs to be shared with decision makers. When RS indicators are set (either during or after the workshop), thresholds should also be defined to set clear expectations for what kinds of findings or results would merit action. This involves defining **triggers for action**, such as:

RS indicator	Trigger for action
Weekly forecasted temperature in road rehabilitation construction zones from the period of X-Y	Forecasted maximum daytime temperature exceeds 30°C.
Count of burned structures in program implementation region A, updated monthly over the year 2023	Total count exceeds 10 in the last 3 months, OR exceeds 5 in the last month
NDVI in X administrative region updated biweekly during the cropping season, as a percentage of previous 10-year average NDVI for the same location and time	At least one known cropping zone in administrative region X has calculated NDVI of less than 50% of previous 10-year average for over a month.

Triggers depend on the objective, context, and program needs, and the role of the RAAM team in this step is not to define what action should be taken in response to a trigger but to define how important findings will be brought out of the map and disseminated appropriately.

Define Roles & Responsibilities for the Implementation phase

Even if the workshop participants can't define specific indicators and triggers for action, both technical and managerial responsibilities for RS Implementation need to be defined. Responsibility may be spread over many roles or centralised in a small group. Depending on the data sources, complexity of the intended indicator(s), and frequency of monitoring needed, responsibilities may include:

- **Technical:**
  - *(If needed) Researching potential RS indicators* – If the program was unable to identify indicators during the workshop, one or more technical analysts (staff or consulting) may be assigned to research potential indices, models, or ways imagery could be manually analysed to operationalise the objective. Those responsible would ideally share options and potential triggers for action with available workshop stakeholders for feedback prior to deciding to proceed with one or more options.
  - *Writing or adapting code to calculate the identified indicator, or processing imagery in a desktop software* – Ideally a person with some geospatial analysis background, but at least having technical ability to run data analysis using programming languages like Python or R, and/or use mapping software like QGIS. They will be responsible for working through available technical tutorials, interfacing with or downloading the necessary RS data or data products for the AOI, running the analysis, troubleshooting errors, and doing primary visualisation of results.
  - *Validate results from RS analytics* – Findings from RS should be validated using a method appropriate to the information, for example by checking a sample of calculated values with local contacts, consulting a subject matter expert, or employing statistical validation techniques with field-collected datasets.
- **Managerial:**
  - *Advocating for data access or new data collection* – If GIS data on the AOI does not already exist or the RAAM team does not have access, someone may need to advocate to program leadership or another decision-maker to collect it or grant access. If there is a need to purchase RS data from private providers, or access a source available to an academic or government stakeholders, a person in a managerial role may also need to be assigned to advocate to responsible budget-holders, etc.
  - *Regular monitoring and reporting* – Depending on how often the RS analytics will be updated, a focal point should be assigned to review them, identify trends of interest, and take action if triggers have been met.
  - *Collecting feedback and impressions for technical action* – A person engaged in the interpretation and decision-making process should collect direct or indirect feedback about information use, so that the technical team can make changes if needed.

Tab 2 of the RS Matrix contains suggested Roles and Responsibilities. These may be modified based on the RAAM team's needs. Teams may also choose to assign different people for different indicators if needed.

2.3 Output: Tab 2 of the RS Matrix completed with at least one indicator for the identified objective and assigned roles and responsibilities.

Phase 3: Implementation

3.1 Create RS analytics

This step involves the technical creation of processes to analyse or calculate the indicator(s) identified in the RS plan. Analysts identified in the RS plan will typically need to evaluate options for using derived data products or original analysis from raw RS data, some of which may already have been identified in the workshop. However, it is normal for analysts to do additional background research and test options before deciding on one process. If the Workshop participants were not able to define one or more indicators for the objective, then that must also happen in this stage.

Because of the variety of potential analysis techniques and the continually evolving science of RS, RAAM does not recommend any particular technique or analysis process. Instead, it is recommended that identified technical analysts consult academic research and open-source tutorials and resources shared by the RS community, which are continually being updated. The RAAM tutorial for calculating the Soil Organic Carbon Index (SOCI) is one example of an open resource, and can be used as a starter for analysts to introduce them to an index-based analysis process.

Since the analysts play such an important role in defining exactly how an indicator will be calculated, in some RAAM implementations teams have opted to recruit a GIS consultant or other expert support to help them create RS analytics. The template SOW and budgeting guidance can help teams seeking to recruit support.

Note on Technology Platforms

Technology platform cost for RS analysis is not generally a barrier to accomplishing analytics, as there are several free and open-source platforms that are common in the industry and which tend to be used frequently in tutorials and open resources. Desktop GIS platforms such as **QGIS** can process RS data, and if the RS analytics rely on derived data products, then GIS software may not be necessary. **Google Earth Engine**, which is free for non-commercial users, has become increasingly common for advanced RS analysis because it hosts vast amounts of RS data and processes queries on the cloud, meaning analysts don't need to download images or run heavy computations from their laptop. Some teams may still wish to use paid platforms, but in most cases, *expertise* will cost more than *technology* does.

Once analysts have refined an analysis process and generated a first set of results for the indicator(s), they will need to be **validated** with the sources identified in the RS plan. Validation may disconfirm a calculated result, in which case the RS analytics will need to be corrected. However, validation may only identify potential uncertainty in the results, in which case analysts should work with an appropriate manager to decide whether the program is comfortable proceeding with interpretation so long as the uncertainty is clearly documented.

RS analysis visualisations shared with managers and decision-makers most often take the form of simple static maps or charts, and common platforms like QGIS and Google Earth Engine can usually generate these. Depending on the informational needs of the program, a narrative report, interactive live map, or data table are also common ways to represent results. It is recommended that analysts focus on creating the most straightforward visualisastions to start (static maps or charts), as more complicated output products can be developed depending on identified need.

3.1 Output: Validated results for the identified RS indicator(s), visualized and shared with persons assigned to the reporting role(s).

3.2 Report and interpret findings

This step involves monitoring the RS analysis products for findings of interest, or trends which meet the triggers for action defined in the RS plan. The analysts responsible for step 3.1 may also be responsible for reporting and interpretation as well, but often times a manager or expanded group of stakeholders will lead on interpretation.

Findings should be shared with pre-identified decision-makers using appropriate channels to support adaptive program management. The Information Dissemination Guidance is helpful for defining when and how findings should be elevated. There are several things users might look for when interpreting the RS products:

- Observed (or expected) **direct impacts** from the findings, above and beyond any specific triggers for action
- Are the direct impacts mapped close to any of your program locations? If yes,
  - *What specific activities may be impacted (if any)?*
  - *Does the direct impact affect access to your program-relevant locations? How would that affect existing program activities?*
  - *Does the direct impact prevent program activities from being implemented?*
- Do you know why the trend or finding is occurring? Would different explanations influence the program's decision-making?

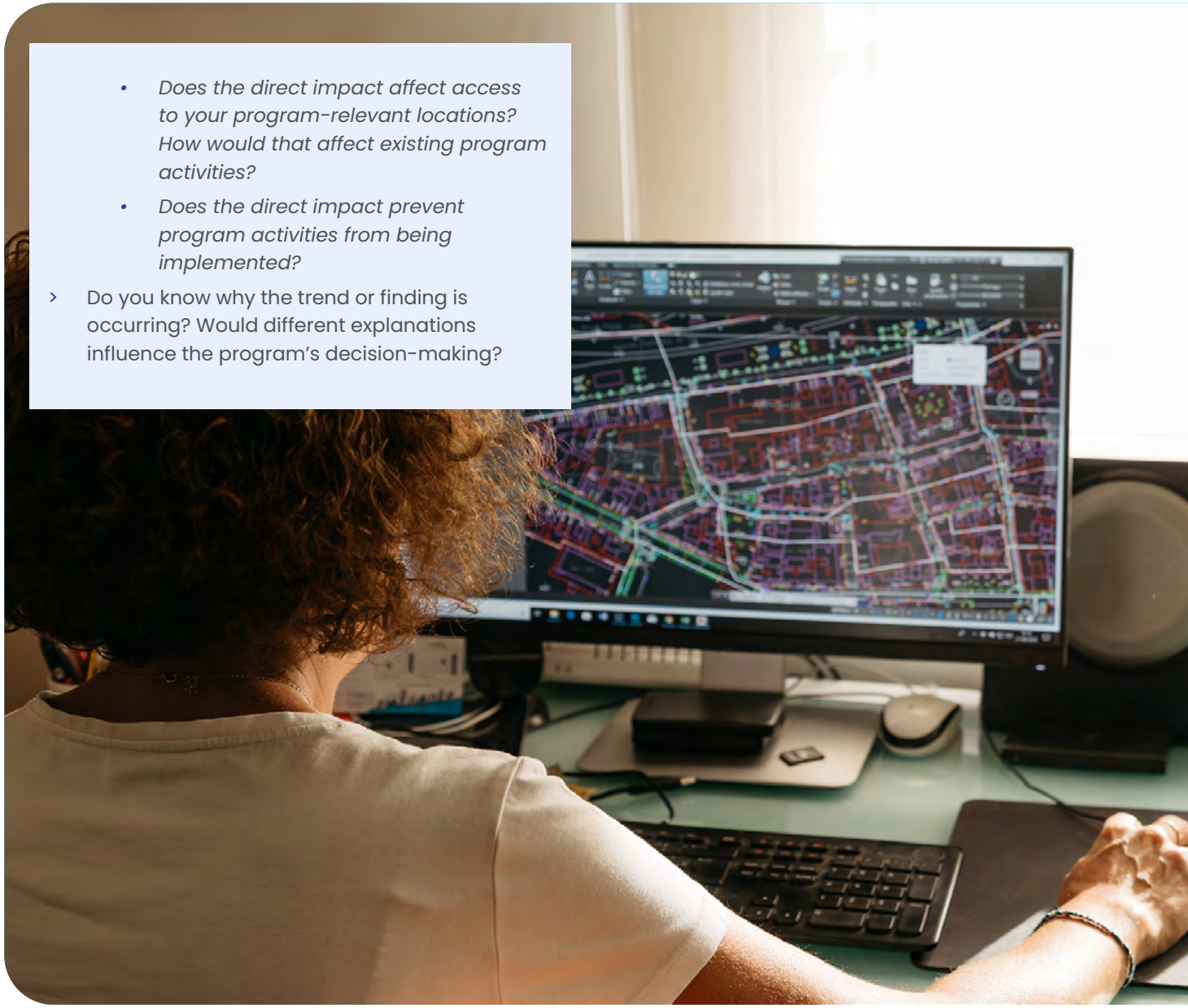


Table 6: Examples of interpretation of RS findings

Finding/trend	Direct impact and explanation	Impact on program
Temperatures have been consistently high in the road rehabilitation zones	Workers cannot conduct rehabilitation activities safely due to risk of heat stress	Program-sponsored rehabilitation activities may fall behind schedule
NDVI has been consistently above average for 2 months during the cropping season	Better than usual climatic conditions this year likely explain the trend since non-program regions in the AOI show the same trend, and a subject matter expert confirmed that conditions are unusually favourable.	Commodity availability may likely be higher this year and program indicators for participant income generation boosted by the good season

Triggers for action should be one of the principal considerations in the interpretation. In most circumstances the first action would be to inform your line manager and/or head of program of the specific finding or trend that met the trigger. The specific action to be taken may already be included in a risk response strategy and/or contingency plan. In some cases, the information defined by the trigger may be straightforward and time-sensitive, and the information should be communicated to decision-makers without doing any in-depth interpretation as detailed above. In other cases there may need to be in-depth interpretation to understand if the trigger has truly occurred. More interpretation may also be requested by your decision makers to understand the impact of the event(s) further.

Depending on your capacity and access to the program location you may decide to conduct a rapid needs assessment, an access assessment, a market assessment or something else to gather more information. If you are using your local contacts to understand the impact of specific findings, you may choose to develop a structured or semi-structured interview guide to gather additional information. Depending on your access constraints and number of local contacts you may only have one or two opportunities to get the information you need. Interpreting the RS analytics as part of regular program review, stakeholder meetings, or other venues can add additional value.

3.2 Output: Regular interpretation of RS products, either ad hoc or in scheduled times and/or meetings.

3.3 (If relevant) Iterate on the RS analytics

RS products for RAAM are supplemental to regular monitoring, and exist to inform program implementation. This means that if there is still an expected need for the products, the analysts/technical leads responsible for maintaining it should incorporate feedback collected both from users and decision-makers. Responsibility for collecting feedback should have been assigned in the RS plan step (2.3) of the Workshopping phase, but RAAM teams should take advantage of regular program review meetings and other venues where data is shared to assess what is useful and what needs improvement in the context map. Elements of RS products frequently iterated on in practice include:

- **Changes to reporting format** – If it has been noted that specific maps, indicator values, or other elements are confusing or misleading for users, then analysts might change format or adjust formatting elements such as map symbology (e.g. choice of icons, colours, markers) and elements like legends and text boxes.
- **Additional processing or validation of data** – If the initial analytical products do not represent the data in the most interpretable way (e.g. in % terms rather than # terms) then additional processing/ calculation may need to be done in the map software or imagery processing platform. Additional validation of data may also need to be done if users and/or decision-makers are sceptical of the reliability of the existing source(s).
- **Updated triggers for action** – As users build experience with the RS analytics and make decisions with the information, the original triggers for action and thresholds for meeting that trigger may prove to be too conservative or too liberal. These should be updated as the program progresses.

Once iteration is done, the Implementation phase repeats. **This constitutes the functional use of Remote Sensing for RAAM.**

3.3 Output: Revisions to the RS Plan in Tab 2 of the Matrix

Final notes on RS

During the RS process, RAAM teams may identify that more effort is needed to formally triangulate the findings coming from the analysis, if ad hoc validation methods don't suffice to convince analysts and stakeholders that the RS analytics are reliable. Therefore the teams may decide to use the RAAM Data Triangulation method to systematically check findings against other sources. Guidance and tools for Triangulation and other RAAM methods can be accessed through the RAAM Toolkit Homepage.

Remote Sensing Tools

Phase 1: Preparation

Define stakeholders

RAAM Workshop facilitators' guide

RAAM case studies

Assess feasibility

Tab 1 of RS Preparation Matrix tool

Budgeting guidance

Assess risks vs. benefits

Tab 2 of RS Preparation Matrix tool

Organise workshop/ planning event

RAAM Workshop facilitators' guide

Phase 2: Workshopping

Set RS objectives

Tab 1 of RS Workshopping Matrix tool

Identify and assess data sources

RS Derived Data Products & Technical Tutorials

Develop RS plan

Tab 2 of RS Workshopping Matrix tool

RAAM Roles and Responsibilities tool

Phase 3: Implementation

Create RS analytics

Tutorial – Calculating SOCI with QGIS

RS Derived Data Products & Technical Tutorials

Report and interpret findings

Information Dissemination Guidance

Data Triangulation

This guidance describes how to structure efforts to **triangulate data** gathered from field sources in a reduced access setup. It addresses utilization of both primary and secondary data, complementing other RAAM toolkit methodologies (i.e. remote sensing analysis, transaction analysis, and context mapping). By mapping out internal data sources and leveraging available context-specific data, triangulation encourages cross-analysis and direct improvements to project activities.

What is data triangulation?

In a context of reduced access, humanitarian organizations increasingly rely on data provided by partners, local contacts, third-party monitors, or remote surveys to make operational decisions. Using only a single source of data collected outside the decision-making organization's supervision leaves them with very little insight into the quality and veracity of the data they use.

Triangulation is the process of using different methods and data sources to test the consistency of the results obtained from an original source. Triangulation is a way of overcoming data quality problems, where the strength of the evidence doesn't derive from the rigor and quality of a single source but rather comes from the number of occurrences of that information across multiple sources (including those whose quality can't be verified). It helps to identify potential problems or opportunities that might have been overlooked if only one source of information had been used. There are four types of triangulation:

- **Data triangulation** is the use of a variety of data sources including time, location, and people in a study.
- **Methods triangulation** is the use of multiple methods to assess a situation, context, or phenomenon. For instance, mixed-method research uses qualitative and quantitative data collection methods to study the same phenomenon. The difference with data triangulation relies on the use of data collected by different methods as opposed to data collected for different programs, locations, populations, etc.
- **Investigator triangulation** is the use of more than one investigator, interviewer, observer, researcher or data analyst in a study.
- **Theory triangulation** is the use of multiple theories or hypotheses when analyzing a situation or phenomenon.

This guidance focuses predominantly on data triangulation. For example, in evaluating the impact of a community activity we've organized, you may employ surveys to gather feedback data. Subsequently, we analyze the survey findings in conjunction with feedback obtained through separate accountability feedback channels to ensure there is alignment between different data sources. In this sense, the process of triangulation improves the quality of available data by:

- Increasing the validity and reliability of the findings. When multiple data sources confirm the same information, it's easier to justify and explain a given situation. This is particularly important when working remotely with the support of another organization and without the opportunity to make direct observations. Triangulating information can allow you to confirm what you have been told by an external source.
- Providing new insights into a particular situation and identifies inconsistencies in the data. For example, the results of a post-distribution monitoring (PDM) survey conducted by a partner suggest that households are satisfied with the distance between their homes and the distribution site. Examining the data from the feedback and complaints channel may provide additional information (perhaps a location was dissatisfied but wasn't selected in the third party's random sample). The more limited the access of humanitarian organizations, the greater the need for organizations to ensure the coherence of the information they receive from hard-to-reach areas.

Why data triangulation?

Monitoring activities remotely frequently means organizations must rely on limited data sources and cannot exercise full supervision during data collection, which can lead to inaccuracies, inconsistencies, missing and biased data, delays, reduced reliability, and ethical concerns. For instance, consider a situation where a program report – generated using third-party monitoring data – states that 95% of participants are satisfied with WASH services, while the community feedback channels have collected over 200 complaints about the services in the same month. This discrepancy is likely contradictory, and highlights the need for a more systematic and supervised approach to triangulating data received from the field.

Many reduced access programs triangulate data, but do so on an ad-hoc basis, i.e. they do not plan it in advance but instead rely on team members noticing and cross-checking discrepancies as they arise. This effectively makes data quality a matter of personal initiative rather than planning, and all but ensures that some discrepancies will go unnoticed due to relevant data not being shared or the right persons not being in place. *Planning* triangulation deliberately as a cross-departmental action is therefore critical.

Who are the intended users of this guidance

- RAAM leaders who work to convene stakeholders and organize the Workshop phase (see Triangulation Workflow).
- Team members and managers from MEL, the program implementation team, context analysis teams, and any other relevant departments who are engaged in producing evidence, data, and make data-informed decision in the implementation.

To access the relevant RAAM tools for the Data Triangulation module, please visit the Tools page. →

The Data Triangulation Workflow

The Data Triangulation process starts with **Preparation**, i.e. defining stakeholders, timelines, and mechanisms for stakeholders to work together. Then stakeholders collaborate in the **Workshopping** phase to define triangulation objectives, list out available data sources, develop an analysis plan, and define roles and responsibilities for **Implementation**, where responsible team members triangulate information, interpret the findings and report them to decision-makers, revisiting and refining the analysis plan as needed.

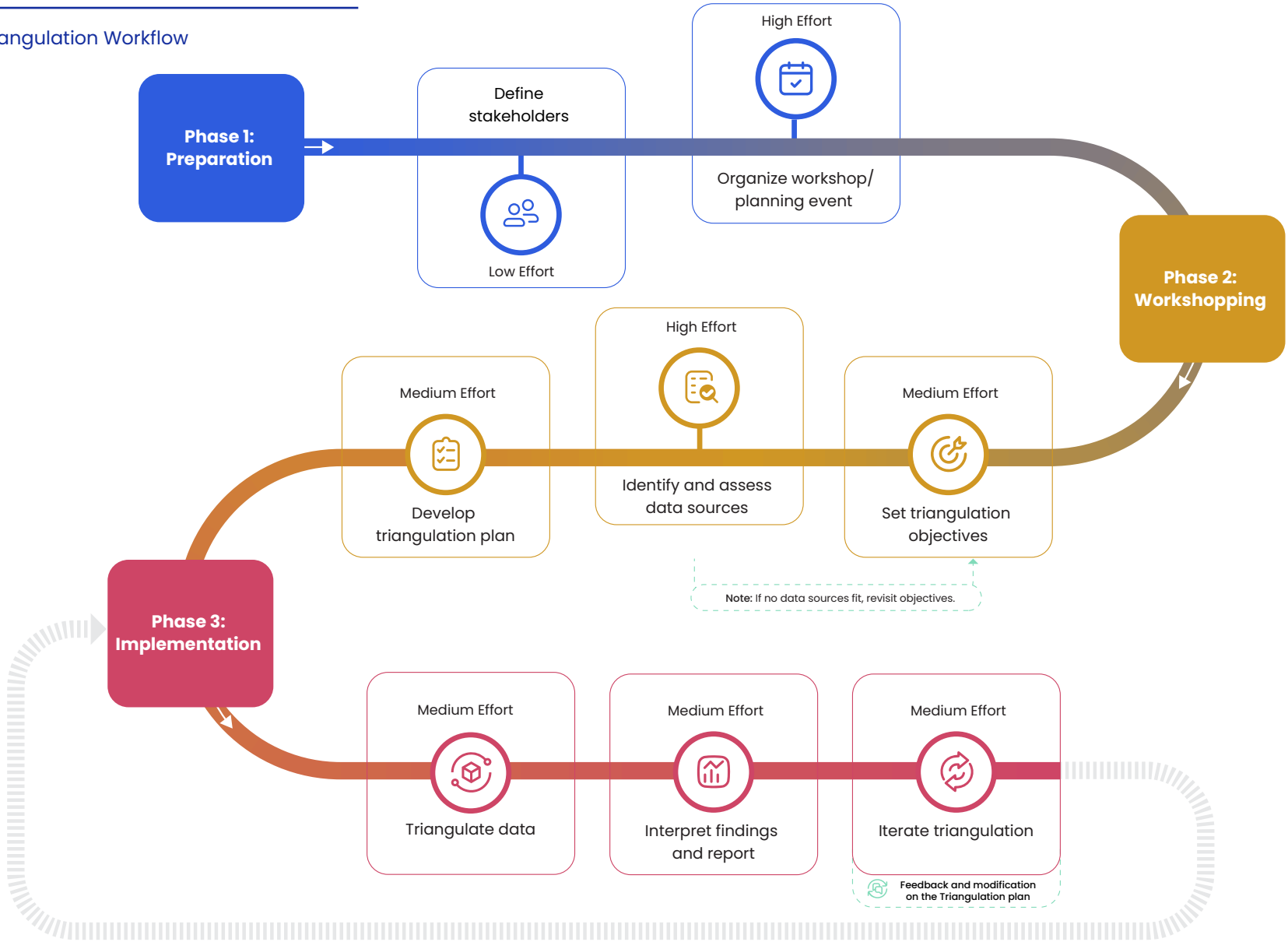
Compared to other RAAM methods which focus more on generation of novel information, Data Triangulation encourages utilization and comparison of existing data sources. In many contexts, programs can conduct triangulation without any new data collection efforts

As with all RAAM methods, it is recommended that the **Workshopping** phase be done in-person, where different departments in the program (e.g. MEL, Security, relevant Context Analysis teams) come together to share information and data sources and agree on a plan. Cross-departmental collaboration is an essential part of RAAM. The Workshopping phase should include program stakeholders who have formal or informal information sources. It is likely that not all stakeholders will be deeply involved in triangulation after the workshop, but their input in the planning is vital.

The table below walks through the steps associated with the **Preparation**, **Workshopping**, and **Implementation** phases of the remote sensing method, and the tools that support each step. The guidance below gives detailed instructions on each step.

The figure below and subsequent pages describe the workflow in detail. To fully leverage the benefits of triangulation, it should be planned during the Setup phase of the program itself.

Figure 4: Data Triangulation Workflow



The table below shows the steps associated with the **Preparation**, **Workshopping**, and **Implementation** phases of the data triangulation method, and the tools that support each step.

Table 7: Data Triangulation Workflow and associated tools

Phase	Step	Description	What does this achieve?	Relevant RAAM tools	Time Spent
Preparation	**Define stakeholders**	Identify departments or partners related to the program activities, expertise, or access to data sources, and target users of the results of data triangulation.	Generates a list of people to include/invite to the workshopping phase and subsequent communications.	• RAAM Workshop facilitators' guide • RAAM case studies	short period of time
	Organize workshop/ planning event	Determine how stakeholders will collaborate on planning, organize logistics of collaboration, and create supporting materials (e.g. slides).	Sets a concrete time and date for stakeholders to convene and prepares the framework to structure discussions.		spread out over a longer period
Workshopping	**Set triangulation objectives**	Brainstorm a list of information and/or data sources coming from the reduced access implementation region that the program would like to verify/test for consistency.	Creates a list of potential objectives for triangulation, which informs subsequent steps.	• Tab 1 of Data Triangulation Matrix	short period of time
	Identify data sources	Map out primary and secondary data sources available to use for triangulation, evaluate quality, reliability, and gaps. Determine if additional data collection is needed.	Selects relevant data sources while acknowledging their quality and reliability.		short period of time
	Develop Data Triangulation plan	Describe the information that must be collected, assign roles and responsibilities, define timetables, and describe data protection considerations and protocols.	Formalizes the Workshop phase into an actionable plan/next step for the Implementation phase.	• Tab 2 of Data Triangulation Matrix	short period of time
Implementation	**Triangulate data**	Convert identified data sources into results that can be compared for consistency and trend, record preliminary findings and disseminate.	Generates a structured comparison of different data sources to facilitate in-depth interpretation.	• Data Triangulation Database template • Roles and Responsibilities tool	intermittent and recurring
	Interpret findings	Interpret identified trends and inconsistencies, draw conclusions or set follow-up actions with appropriate stakeholders and experts, and report to decision-makers.	Converts the triangulation findings into context-informed conclusion and ensures decision-makers receive targeted recommendations.	• Information dissemination guidance	intermittent and recurring
	Iterate triangulation	Revisit the Triangulation plan as new data or outliers are discovered and feedback collected in earlier steps, and update Triangulation process.	Ensures RAAM implementers make deliberate plans to improve the triangulation or reporting processes.		intermittent and recurring

Phase 1: Preparation

1.1 Define stakeholders

MEL and Program departments are always stakeholders in Data Triangulation and should be well-represented throughout it. Depending on your context, other stakeholders could include:

- An **Accountability team** that has knowledge of the context and manages community and participant feedback channels.
- **Security teams** who regularly monitor target reduced access implementation areas.
- Any **Program partners, sub-contractors,** or **third-party monitors** who can contribute ideas, contextual knowledge, data sources, analytical capacities, and/or feedback.
- **Context analysis or other analytical units** that have access to or knowledge of different secondary sources of data about the implementation area.
- **Subject matter experts** both internal and external to the organization
- **Local government partners**
- **Donor representatives, as applicable**

Simple stakeholder analysis/mapping methods and quick assessment of the program information demands can help teams to identify appropriate persons to be involved in the RAAM data triangulation workshopping phase. When selecting stakeholders, you should focus on identifying groups, departments, or organizations that either:

a. *Directly engage* with the program's monitoring data, i.e. they collect, verify, clean, analyze/visualize, manage, or otherwise interact with the datasets;

b. *Are or would be affected* by poor data quality, i.e. they use reports or other products generated from monitoring information for program decision-making and other functions; or,

c. *Can likely contribute specific expertise or data sources* that would help assess the quality of program monitoring data.

For each identified stakeholder group, at least one named representative should be identified to serve as a participant in subsequent steps.

Implementing partners and third-party monitors as stakeholders

Programs implementing in reduced access contexts frequently have one or more partners, sub-contractors, or third-party monitors who are able to access the implementation areas to some extent and are responsible for collecting monitoring data. This data is often a priority subject of triangulation, which could help to confirm its accuracy and reliability.

Programs must approach triangulation of partner/contractor data with sensitivity – an identified need for triangulation does not necessarily mean that the data collector is or should be under suspicion! Data collectors are normally critical stakeholders in triangulation; they can contribute important knowledge, and triangulation can help them identify issues in their processes to correct. Where good working relationships exist, RAAM organizers should seek to involve them throughout the triangulation process. However, there may be times where a program has reason to believe that one or more data collectors are behaving unethically and would like to use triangulation to help prove or disprove this, and in these cases, RAAM organizers should likely exclude them from participating in a triangulation process.

1.1 Output: List of stakeholder groups and named representatives

1.2 Organize workshop or planning event

The RAAM Workshop Facilitators' Guide and Workshop template slides are the key tools for organizers to consult when planning to walk the group through the data triangulation method. Facilitators should conduct a document review to learn and understand **what information is critical to the program but relies on single or unreliable sources, and needs to be challenged and verified.** This ensures that the Workshopping phase is targeted toward critical monitoring needs. Below is a list of questions you can explore as you review existing documents and data sources, to ensure that the purpose of conducting a data triangulation exercise is aligned with the overall program goals and objectives, and its use, users and stakeholders have been clearly identified.

Table 8: List of potential documents, exploration questions related to context mapping, and examples

Source of document review	Exploration questions	Example
Program logic model (Logframes, Results Frameworks, Results Chains and others)	Are there indicators where need for data verification has already been identified? Are there assumptions not currently being monitored due to lack of ground presence?	Results frameworks in reduced access programs frequently include indicators calculated using a single primary data source collected by a partner or third-party. Triangulating this data can help ensure accurate reporting.
Activity MEL plans (including learning plans, MEL Tech plan and others)	What program adaptations and decisions would benefit from greater certainty in data accuracy? What data will the MEL team collect, and are there expected gaps in data collection frequency or verification ability?	Reviewing the MEL Plan might reveal that post-distribution monitoring is expected to be limited due to access issues, and triangulating the PDM data received would help increase confidence in decision-making.
Data Quality Assessment (DQA) reports	What identified quality issues have been identified? Are there particular sources or types of data across time or across indicators with more identified issues?	A regular internal DQA process might identify quality issues across time with a particular source of data, and which triangulation might help to critically assess and improve.
Accountability Plan and/ or Reports/records from feedback channels	What are the challenges participants face in sharing their feedback? Are there common types of information that might be used to support triangulation, or complaints frequently encountered in feedback channels that reflect potential gaps in program information and decisions?	The Accountability Plan may show that feedback channels will be set up in reduced access implementation areas to gather complaints relating to service delivery, which might potentially be useful for triangulation with other monitoring data sources.
Context analysis reports	Are there specific risks that might hinder data collection in certain locations? Are there particular participant groups in those locations? Are the risks seasonal? Are the risk drivers known and clear?	The context analysis reports may suggest that mobile digital data collection will be difficult in some regions, which may lead to data quality and inconsistency challenges that triangulation could help address.
Program work plan	What project activities, timelines, and targets might be impacted by triangulation? What decisions would critically benefit from more confidence in data accuracy?	Information from the project work plan might prompt the RAAM team to focus on higher-priority triangulation objectives in the Workshopping phase.
Program proposal	Are gaps in current knowledge identified, and are sources of background information and data cited? Does the proposal reference relevant literature, reports, or case studies that could be consulted for additional review? Does it identify how information will be generated and used in the program, and who will be responsible?	The program proposal may help to isolate what information is considered most critical to the program, such as participant registration data, and therefore what might be prioritized for triangulation.

The table above is not exhaustive, and other documents may be relevant to you. As the table demonstrates, data triangulation can address more than just indicators or log frame elements; it can also address any information relevant to program/project activities.

As you review documents, try to take notes of the critical information you extract and consider referring to them during the Workshopping phase for additional discussion and brainstorming from stakeholders.

1.2 Output: Workshop agenda and slides

Phase 2: Workshopping

2.1 Set Triangulation objectives

First, define what you want to know to support effective program implementation. You need to identify the information that will support you in terms of activity verification, data validation, and decision-making. Due to the lack of physical access to activities' locations, think about what problems you're likely to encounter during implementation. What are the critical regions that you won't have direct access to? How will you ensure that your program will achieve its expected outcomes?

Examples:

- How can I verify the locations of the WASH infrastructure submitted by my sub-contractor?
- Are there sources I can use to verify the number of attendees at community health sessions?
- Do the information sources put out about shelter needs, number of shelters, and locations for new arrivals (in Program location) align with each other?
- Does our calculated indicator result (95% of the program participants are satisfied with the activities for 3 months in a row) align with other information about participant satisfaction?

Write down **what you want to triangulate** in the first tab of the tool. A participatory approach is highly required to ensure comprehensive project management. Ensure active participation from relevant departments.

2.1 Output: List of brainstormed objectives in Tab 1 of the Triangulation Matrix Tool

2.2 Identify data sources

Once triangulation needs and objectives have been defined, workshop participants can identify what data sources will address them. The workshop offers an important opportunity to have candid conversations with stakeholders about what data exists, the sensitivities around the data, potential quality or access limitations, and more. Here are some steps to follow:

1. **Know your operating context!** Even if you're not physically present in the area where you're intervening, the more you tailor triangulation to the local context, the more effective it will be. To do this, you might leverage existing assessments and data on demographics, socio-economic factors, cultural norms, environmental conditions, other humanitarian actors' availability, etc. The document review may have already surfaced some options. For example, reviewing a **Market assessment** can be useful if your program will directly or indirectly change participants' interactions with markets. Logistics departments or other teams might already be regularly conducting market assessments for the organization's standard goods and services, even if not directly linked to specific program activities, and leveraging this existing data can help with triangulation. Similarly **Stakeholder mapping** can help to identify secondary data sources. The better you know your environment; the better you can identify information sources. You can also identify the credibility of your informants in relation to their interest in your program. The UN High Commission for Human Rights guide provides a list of questions to ask yourself about the influence and interests of different stakeholders, and this can help you gain understanding without going through a time-consuming formalized mapping process. See UN High Commission for Human Rights, "Chapter 07 Gathering Contextual Information" (UNDAC Field Handbook, 2011)
2. **Examine whether data for triangulation is internally generated by other departments, available from secondary data, or if new data collection is necessary** i.e. primary data collection. Triangulation may involve a combination of different types of sources. Involving other departments outside MEL in the Workshop is highly beneficial here as it helps to understand what data exists.

- **Avoid collecting information if it's already available by other means**. Conduct a desk review of secondary data and information before or during this step, and list internal data sources you may have access to such as PDM, feedback channel reports, and security monthly update reports. Consider using data from other stakeholders such as humanitarian organizations or government agencies and national institutions. Clusters and line ministries are helpful sources of information to know what exists. Common secondary sources of data for triangulation in reduced access contexts include:

Sources	Information they could provide	What are the main inhibiting factors
Joint Market Monitoring Initiative (REACH)	– Price monitoring – Goods available and prices – Preferences of the consumers	– Not all crisis is covered
Data from governmental agencies, from other humanitarian actors	Depending on each organization	Depending on each organization
Specialized websites: Humanitarian Data Exchange for emergencies UNHCR operational data portal for refugee crisis	– georeferenced data – coordination (5 W matrices, assessment data…)	– Often very macro, little information at detailed levels of analysis

For more options, consult the RAAM list of secondary data sources.

3. **Consider the use of RAAM approaches specific to a reduced access context** – The RAAM toolkit includes several categories of method-specific tools designed to help teams generate new information using alternative analytical methods not typically used by MEL. Teams may choose to incorporate these kinds of information into triangulation. The methods covered in the RAAM toolkit were selected based on their applicability to common reduced access information gaps, but other analytical methods may be relevant depending on the context.

Important note: At least two sources of information are needed for triangulation in addition to the original source.
Identifying more sources is ideal in case access is further reduced during implementation.

When data sources aren't available that address triangulation objectives directly, try to identify proxies. For example, if you want to see if assisted populations have reduced their food vulnerability, it may be interesting to look at data from local hospitals, especially the data regarding admissions for malnutrition. In another example, a program seeking to verify that participants had access to the market and encountered no mobility issues could look at absence of new checkpoints on all roads leading to the market as a proxy indicator. You shouldn't solely rely on proxies as evidence; they still need to be cross-referenced and evaluated. This is particularly crucial because we can't automatically assume that, for instance, fewer checkpoints equate to increased market access.

Assess data evaluability, reliability, and sensitivity

Once data sources have been identified, the next step is to define how the sources are related to objectives. Ideally, each source can provide data or information that directly addresses (or proxies for) questions close to your triangulation needs. Clearly define the information that each data source could give you relevant to the objective. This must be done both for existing primary and secondary sources as well as proposed new data collection. For example, if you want to use third-party monitoring, what information do you need the service provider to collect? Identify the type of analysis that will be used to make sense of the data available.

- **Data Evaluability**: *Make sure that your data sources will provide the information you need to meet the objective* by carrying out an evaluability assessment in Tab 1 of the Matrix. First, determine the earliest date when the information will be available, considering the time needed to implement the various activities leading up to data collection. Can the data be collected within an appropriate timeframe for the project? Then, assess the capacity of your organization to use and analyze the data source, considering factors like team skills to process the data and local acceptance of the data source. Finally, critically assess whether the data source is meaningfully comparable to other triangulation sources, or can be made comparable through analysis or proxies. How would you convert this data source into information that is relevant to the objective?
- **Data Reliability**: Ensure the sources you rely on are trustworthy, as the reliability of external data greatly influences the quality of your analysis and conclusions, helping you avoid potential biases. However, there may be instances where dependable data sources are either unavailable or difficult to access, such as during emergencies, tight timeframes, resource constraints, or restricted entry to project implementation areas. When waiting for reliable data is a luxury you cannot afford, you may have to utilize less-than-perfect information. It's imperative, however, to acknowledge the limitations associated with such data, understand the constraints and potential errors it may introduce. This awareness should be reflected in every stage of your project, from data collection and analysis to the final reporting.
- **Data Sensitivity**: Subjectively assess whether the data source is or will be sensitive, i.e. will it likely contain personally identifying information (PII) or other information that should not be generally accessible to team members, stakeholders, etc. Access to sensitive data must be restricted to only necessary team members, and stakeholders should discuss necessary protocols to guarantee its security during triangulation.

This approach ensures that documentation is kept of the challenges faced in planning triangulation, and decision-makers can be informed about the reasons behind any compromises made in terms of data reliability.

Before completing this step and proceeding to planning Triangulation, workshop stakeholders must review the brainstormed objectives from Step 2.1 together with the data sources identified in Step 2.2 and decide which objectives can be achieved given the data available. This decision will determine how planning proceeds in Step 2.3.

2.2 Output: Defined and assessed data sources list in Tab 1 of the Triangulation Matrix, decision on which objectives can be triangulated

2.3 Set Triangulation Plan

A Data Triangulation Plan details the data/information that will need to be regularly collected from primary sources or organized from secondary ones (including details like unit of measure, disaggregation, etc.), assigns roles and responsibilities, and provides a timetable (at least a start date and an expected end date). Some details that should be included (seen in Tab 2 of the Triangulation Matrix) may seem obvious, but the act of writing a plan clarifies expectations with all stakeholders and makes it much more likely that objectives will be met.

The Triangulation Plan template in the Matrix tool asks users to list out the objectives that were agreed upon in previous steps and details about the data sources to be used for each objective (which may not include all of the sources listed in Tab 1). Users should also plan for when triangulation will start for a given objective, depending on when data will be available and when the information is needed. Then, users must assign Roles and Responsibilities, including who will collect or share the identified data sources, what storage and protection protocols will be observed and who will oversee them, who will analyze the datasets and structure the results, who will be involved in the interpretation step, and what reporting channels will be used to elevate interpreted conclusions to decision-makers.

Note that the exact data cleaning and analysis processes do not need to be defined at this stage - identified analysts will likely need to explore and establish the methods they will use to structure the identified data sources in the most comparable way. However, the workshop participants should record details about what information they intended the data sources to produce, e.g. is it a direct comparison, a proxy indicator, etc.

2.3 Output: Triangulation plan completed in Tab 2 of the Triangulation Matrix, including roles & responsibilities, timeframes, and an information dissemination plan.

Phase 3: Implementation

3.1 Triangulate data

To put the Triangulation plan into action, the person(s) named in the plan as responsible for collection, organization, and analysis of data sources acquire the raw data, perform any needed cleaning , and structure findings in an interpretable format. The RAAM Triangulation Database Template provides an example of how to record findings in a structure that facilitates comparison of different data sources as well as trend analysis to uncover valuable insights and patterns. This kind of structure supports interpretation by a broader group of team members and/or stakeholders who can help give context to the findings in Step 3.2.

The Data Triangulation database template exists to help analysts structure the original data source in a way that can be compared easily with the results of the triangulation data sources. By structuring the information in this or a similar way, analysts and other interpreters will be able to study the findings and trends over time at a glance, which can help them to decide whether they need to take action.

Analysts will need to identify an appropriate method to calculate or convert raw data into results that can be compared with the original data source, and this must be tailored to the specific data type (examples are given in the Triangulation Plan tab of the Matrix Tool). Different types of data, such as quantitative, qualitative, or mixed, require distinct analytical approaches to ensure accurate and meaningful comparisons. **Quantitative** data triangulation can involve calculating the same indicator from multiple data sources and comparing how much the figures vary. However, triangulation often involves comparing different indicators which are thematically related but are not the same (e.g. if proxies are used), requiring different cleaning and analytical methods to arrive at comparable results. The Database Template gives an example of how different quantitative indicators might be triangulated.

For **qualitative** data, a coding matrix can be a useful tool for triangulation. Creating a coding matrix involves coding transcripts of interviews or similar qualitative data sources into a comparative table (example below) to filter the answers by code/question and have access at a glance to all the answers given. This makes it possible to compare the information very quickly and to triangulate the information. For example, you can filter your focus group data to see if any information is repeated and compare it with the KII data and see if the same information emerges. Are these the same types of stakeholders, do they have the same relationship to the project?

Table 9: Example of a coding matrix with raw qualitative data

Organisation	Country	Position	Type of data collection method	Code	Question	Response
A	Libya	Head of mission	KII	3.1	Do beneficiaries from the project had access to their fields during the implementation period?	Yes, i think they had access. I met with the local government ad they assured me that the security conditions were stable during that period
B	Tunisia	Head of programme	KII	3.1	Do beneficiaries from the project had access to their fields during the implementation period?	If i remember the MDP results, most of the respondents had access to their fields. You should look at this data.
C	Libya	Beneficiaries	FDG	3.1	Do you have access to your field during the implementation period?	Yes, we did, the security situation was good at that time and the roads were accessible.
A	Libya	Cluster representative	KII	3.1	Do beneficiaries from the project had access to their fields during the implementation period?	During our cluster meetings, none of our members mentioned any situation where people did not have access to their fields.
A	Tunisia	Head of governmental agency	KII	3.1	Do beneficiaries from the projet had access to their fields during the implementation period?	Yes, of course, that is their only livelihood.

Mixed methods data, which combines both quantitative and qualitative elements, might benefit from a triangulation approach to cross-validate findings from multiple sources. Selecting a suitable analytical method enhances the reliability and validity of the results, enabling a comprehensive understanding of the data.

It is important to note that the analyst is not the final interpreter or decision-maker. Analysts should focus on structuring the information in a way that a larger group of identified interpreters can most easily review, and while they may note preliminary findings and observations about trends or inconsistencies (see example columns in the Database template), it is essential to elevate all results to the interpreter group regardless of preliminary findings. Transparent and comprehensive reporting ensures that all triangulated data points are reviewed and considered appropriately before relevant findings are shared with decision-makers, enhancing the reliability and credibility of the triangulation process. *By acknowledging and documenting findings of varying significance, interpreters can identify patterns over the long term, and assess risks more effectively.*

Table 10: Example of a coding matrix with raw qualitative data

Conclusion	Consistency High, Medium, Low	Requires Action Yes No	Action Tye (if needed)
Draw up a general comment based on the comparison of each finding. Don't be afraid to go into detail - it should be understandable to everyone.	Assess the consistency of the different results (high = all the results point in the same direction)	On the basis of the conclusion and consistency, do you need to take any action?	Describe the necessary actions
Data from original source is slightly better than information collected by the implementing partner. Satisfaction increased between Jan and March but no information on the reasons...	Medium	Yes	Organise a field monitoring visit Organise focus group discussion to better understand why their satisfaction increased

3.1 Output: Structured comparison of data sources (using the Triangulation Database Template or similar)

3.2 Interpret findings

Triangulation is not complete until findings have been interpreted and conclusions have been drawn relating to the original Triangulation objective(s) identified in the workshop. There are two main reasons why the triangulation process improves the quality of the data/analysis:

- It allows you to track contradictions and inconsistencies in data received from the field
- It increases certainty on your program results and findings

Once data is arranged in matrices, it becomes easy to compare and uncover patterns, trends or interrelationships between different concepts or data. The idea is to look beyond one piece of analysis or information, and instead try to understand how all the data and analysis elements create a more holistic picture of the operating environment. Program confidence in the validity of results increases when different sources and analysis agree or align.

Interpretation should ideally be done as a collaborative process involving multiple persons who have deep knowledge of the program and context, such as the Program Manager, Context Analyst, and MEL Manager. A single team member may serve as data interpreter, depending on their expertise and level of authority in the program.

Findings from triangulation that need to be interpreted can include:

- **Information is inconsistent across different data sources**, in which case interpreters must understand why the results are contradictory. Finding and following up on inconsistencies identified in the triangulation process is critical – this is where interpreters ask and pursue answers to important questions that may help a program redefine activities or reinterpret past events.
- **Information is consistent across data sources and indicates a particular trend over time**, in which case interpreters must think about what impacts the trend may have on the program activities or results, and potentially make recommendations to decision-makers.
- **Information is consistent and disconfirms a program logframe assumption**, in which case interpreters should think about whether the program activities need to be redesigned, whether certain modalities of implementation should be revisited, etc.

Remember that each source has its own constraints and limitations that you should be aware of, and interpreters should reference the original Data Source Assessment in Tab 1 of the Matrix as needed.

Example 1 of triangulation interpretation

A program is seeking to triangulate information on market access originally provided by logistics teams. A focus group discussion organized by a partner informs us that people in a certain locality have access to the market 3 hours' walk from their home. When you contact the person in charge of the market, they inform you that markets are organized every Wednesday. Knowing the area, you know that part of the population practices a certain religious service on that day (Wednesday). The distance (3 hours) to the market and the fact that part of the population has difficulty accessing it because it is unavailable on the day it is held give you precise information on how to adapt your response. While this information does not determine the adaptation to be made, taken together it allows you to better tailor your response. You will probably have to consider strengthening the market (see if it can be held on another day and moved closer to the location).

Example 2 of triangulation interpretation

A program is seeking to triangulate level of access of program participants to their cropping fields. Two data sources (the market manager of the locality you're assisting, and interviews with suppliers who travel by truck on the roads near the cultivated fields) confirm that they have seen people cultivating their land during the period. You have good reason to believe that access is satisfactory and that your project is on track to achieve its objectives.

The market manager assures you that all the surrounding localities had the same level of access to the fields. However, the suppliers mention that locality X could not access them because a truck destroyed the bridge leading to the cultivation area. The triangulation shows that there is not enough information on this point, so it is necessary to investigate this topic further. For example, you can investigate the characteristics of the person who says that the access isn't in this place. The truckers know each other, so it is possible that they are aware that a fellow trucker has destroyed the bridge. You can also ask another person's opinion (from another locality for example), ask your partner to send a vehicle on the route and send you photos of the bridge. You can ask your logistics cluster to see if other actors have reported such information.

Information dissemination is crucial for adaptive management as it promotes stakeholder engagement, facilitates knowledge exchange, establishes feedback loops, and fosters learning and adaptation. Information dissemination is, therefore, an essential aspect of presenting and sharing RAAM data and findings with various stakeholders including program leaders, program teams, donors, crisis analysis teams, accountability leaders, and other essential individuals and teams as relevant. For more information and guidance see **Roles and Responsibilities** and the **RAAM Information Dissemination guidance**.

The Triangulation process is complete when interpreters have completed a record of their conclusions and action decisions, and elevated appropriate conclusions and recommendations to decision-makers – see the Triangulation Database for an example. The reporting channels and audiences identified in the original Triangulation Plan should be followed, or revisited, if needed.

Don't be afraid to go into detail in records! Detail on why a certain conclusion was made or action taken will help improve triangulation over time.

3.2 Output: Documented conclusions and action decisions

3.3 Iterate triangulation

Iteration and improvement to analysis is more likely to occur if it is planned! Throughout the triangulation process, the RAAM Manager (see Roles and Responsibilities tool) has a responsibility to ensure that there is frequent communication and collaboration between departments, which will establish foundations for continual data integration and iterative RAAM. The Triangulation Plan can be used if needed to identify persons who will be responsible for collecting formal and informal feedback on triangulation effectiveness, including from the decision-makers. Regular events such as quarterly program review meetings, and program Pause and Reflect events, can be good places to review and improve the triangulation process as well as share out results and findings from the Triangulation process.

It is important to note that the Implementation steps will not always be followed linearly, and can be repeated depending on needs and frequency of data availability. The analysis process is an iterative one and the discovery of new outliers, inconsistencies, new data reliability issues, or unexpected trends can often lead to new analyses – or even new triangulation needs. Annex 5 gives an example of this iteration. Once iteration is done, the Implementation phase repeats. **This constitutes the functional use of Data Triangulation for RAAM.**

3.3 Output: Revisions to the Triangulation Plan in Tab 2 of the Matrix.

Data Triangulation Tools

Phase 1: Preparation

Define stakeholders

RAAM Workshop facilitators' guide

RAAM case studies

Organise workshop/ planning event

RAAM Workshop facilitators' guide

RAAM case studies

Phase 2: Workshopping

Set triangulation objectives

Tab 1 of Data Triangulation Matrix

Identify and assess data sources

Tab 1 of Data Triangulation Matrix

Develop Data Triangulation plan

Tab 2 of Data Triangulation Matrix

Phase 3: Implementation

Triangulate data

Data Triangulation Database template

Roles and Responsibilities tool

Interpret findings

Information dissemination guidance

Transaction Analysis

What is transaction analysis?

Transaction analysis (TA) is a monitoring method that uses transaction data to examine trends in prices, volumes, sellers, and other outputs or outcomes. Transaction data includes records about the distribution of cash, vouchers or benefits-in-kind by a third party or by your organization, typically including the time of the transaction, the place where it occurred, the price points of the items bought, the payment type employed, discounts (if any), and other quantities and quality features linked with the transaction. In TA, this data is closely studied, and conclusions drawn to inform the program. TA is useful beyond access-constrained environments but is particularly relevant in reduced access situations, as it can shed light on trends that would not otherwise be observable due to lack of ground presence.

Transaction analysis is usually only feasible for programs that utilize cash or voucher assistance (CVA) because it relies on the data about transactions generated during the distribution of assistance and its utilization by participants. This kind of data may be available for other programming sectors (for example market systems development) in which case TA may still be used, but the RAAM method tools and suggestions all focus on CVA use cases. This helps users to understand what TA can provide, when it is best used, how to identify your approach, and how to use the collected data to help make more informed decisions.

Transaction data typically tracks either the transfers of the assistance (cash, vouchers, benefits-in-kind, or mixed) from an organization to the program participant, the expenditures made using the assistance, or both. Data on the transfer of assistance can usually be gathered regardless of whether the assistance delivery is direct (i.e. given directly by the program to participants) or indirect (i.e. delivered through Financial Service Providers (FSPs)). However, the difficulty of collecting data on participant expenditures tends to vary depending on the modality and on the technology used (e.g. voucher platform vs paper barcodes). Note that programs delivering in-kind assistance will not be able to gather data on expenditures.

Unlike other RAAM methods which can leverage many different primary and secondary data sources, transaction analysis typically relies on only one source (the FSP), and therefore has a limited number of potential analytical objectives. The RAAM TA tools are oriented around helping programs achieve at least one of the following objectives:

1. Understand the distance participants must travel to access their assistance
2. Monitor relative market share/power among participating vendors
3. Monitor participant access to markets and vendors
4. Monitor price fluctuations or trends
5. Understand availability of basic commodities
6. Generate insight on how assistance is spent/utilized

These objectives, if realized, can help programs know if the program vendors have the necessary capabilities and coverage, know what needs are currently being met by the program's assistance and what gaps might remain, and even ensure the ongoing relevance of the CVA program given changing conditions.

Regardless of CVA modality, TA almost always relies on the following:

- **An FSP with capacity to produce and record reliable digital data**. The program's intention to conduct TA should be discussed with the FSP, so that it is known what data is available to be shared, and clear roles and responsibilities for data sharing are assigned. Ideally this should be referenced in the contract for the FSP and in SOPs for the program.
- **POS devices with online/offline functionality**. Some FSPs provide POS devices for vendors. Their data management portals are usually cloud-based and require the POS to be regularly connected to the internet to upload and synchronize transaction data. If there is no connection at the distribution point, the POS devices must be able to store data locally and synchronize when traders access connected areas (e.g. go to the nearby market).
- **Trained staff**. FSP agents often can train program staff and vendors on how to use POS systems and synchronize data. These trainings are also opportunities to conduct Do No Harm and Code of Conduct orientations to ensure data protection and that participant privacy is respected.

Transaction Analysis Workflow

Because ability to conduct TA is contingent on modality of assistance and delivery mechanism, it is strongly recommended that teams begin the TA workflow at the Program Setup phase. While it is possible to begin the workflow mid-program, doing so reduces the chance that TA will be feasible.

Transaction analysis generally follows the generic RAAM workflow, with the addition of a TA feasibility assessment step (Preparation phase), and the lack of a step for identifying and assessing data sources (which is done for other methods in the Workshopping phase). These differences are important, as they arise from TA being a method with essentially one potential data source: the FSP. Therefore, what is feasible will depend critically on what modality and delivery mechanism the program will use, and the kinds of data the delivery mechanism can produce will in turn shape Workshopping discussions about objectives and indicators.

As with all RAAM methods, it is recommended that the Workshopping phase include an actual in-person workshop, in which different stakeholder departments in the program (e.g. MEL, Security, technical teams, FSPs, etc.) come together to share information, discuss, and agree on the plan. Workshopping should include all stakeholders who have formal or informal information sources or knowledge of the context, as well as those who have relevant data skills, for example skills in setting up and managing CVA platforms. It is likely that not all stakeholders will be deeply involved in RAAM after the workshop, but their input in planning is vital.

To access the relevant RAAM tools for the Transaction Analysis module, please visit the Tools page. →

Figure 5: Transaction Analysis Workflow

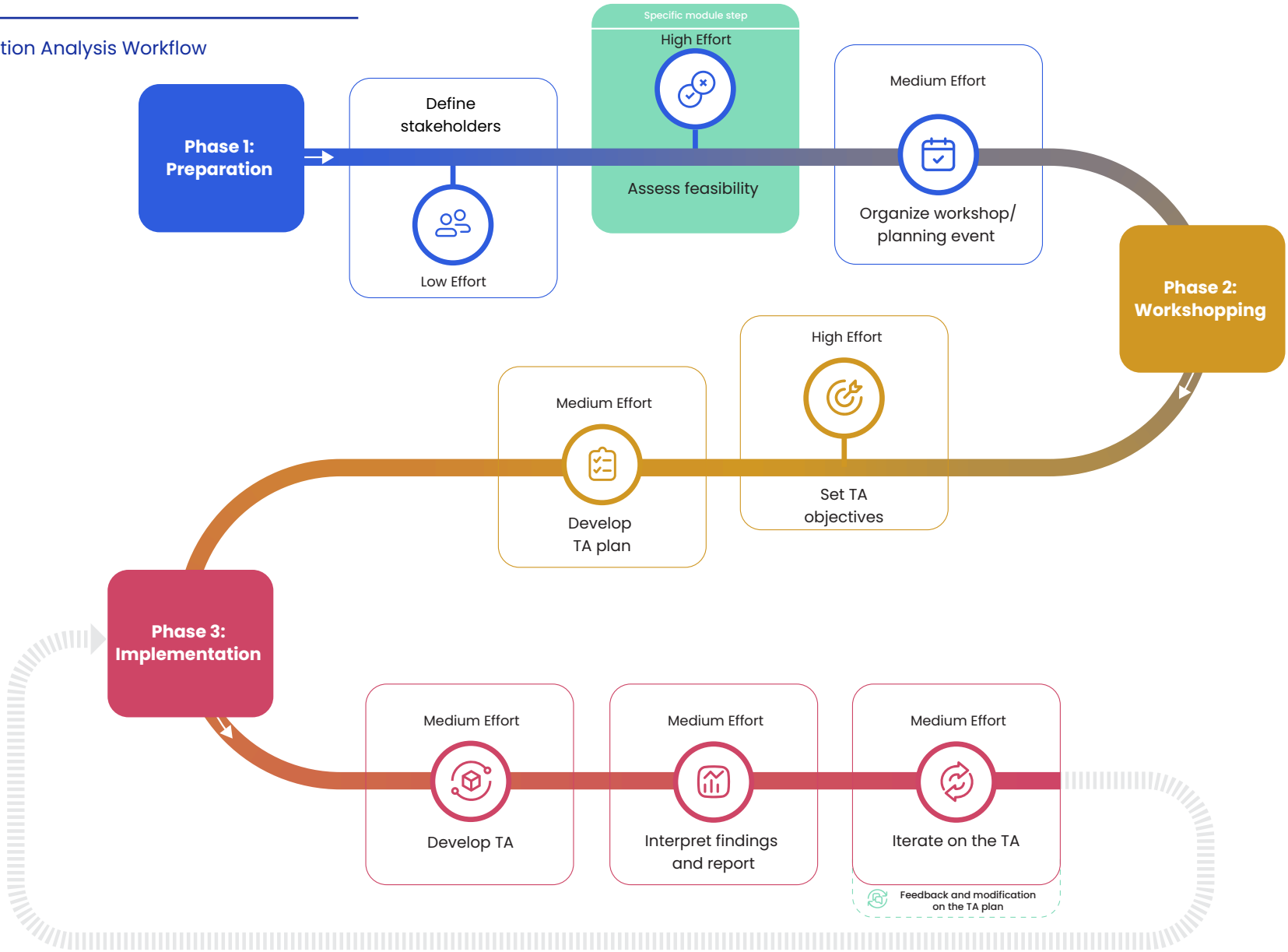


Table 11: Transaction Analysis Workflow and associated tools

Phase	Step	Description	What does this achieve?	Relevant RAAM tools	Time Spent
Preparation	**Define stakeholders**	Identify departments or partners who have relevant context knowledge, CVA expertise, or access to data sources, and target users.	Generates a list of people to include in the workshopping phase and subsequent communications	• RAAM case studies	short period of time
	Assess feasibility	Work through a framework to identify what TA objectives are feasible based on the program modality and delivery mechanism.	Ensures that the team only proceeds if there is good reason to believe TA is feasible.	• Tab 1 of the TA matrix	spread out over a longer period
	Organize workshop/ planning event	Determine how stakeholders will collaborate on planning, organize logistics of collaboration, and create supporting materials (e.g. slides)	Sets a concrete time and date for stakeholders to convene, and prepares the framework for discussions.	• RAAM Workshop facilitators' guide	short period of time
Workshopping	**Set TA objectives**	Review the list of feasible TA objectives from the Preparation stage, discuss how the FSP can provide needed data, and agree on priority objectives.	Determines which feasible objectives will move forward to planning given program priorities and any context constraints.	• Tab 2 of the TA matrix	short period of time
	Develop TA plan	Develop a plan to action agreed-upon objectives, and assign roles and responsibilities for data collection, analysis, verification, interpretation, and reporting.	Formalizes the Workshop phase into an actionable plan/next steps for the Implementation phase.		short period of time
Implementation	**Develop TA**	Using the TA plan, data is collected during assistance delivery and (if applicable) expenditures, and defined analysis types are conducted. Verification is conducted as needed to ensure findings are reliable.	Generates findings relevant to the TA objectives which can be interpreted for decision-making.	• Tutorials/demos • TA Setup Guide • Data Verification Tipsheet	intermittent and recurring
	Interpret findings and report	Regularly review TA findings for patterns or points of interest relevant to program activities, and report to identified decision-makers.	Connects findings from the TA with decision-makers according to relevance and urgency.	• Information Dissemination Guidance	intermittent and recurring
	(If relevant) Iterate on the TA	Update the TA plan and outputs with feedback and observations from stakeholder use. This could include adding verification steps, updating a trigger for action, etc.	Pushes the RAAM implementers to improve the TA or improve reporting processes.		intermittent and recurring

Phase 1: Preparation

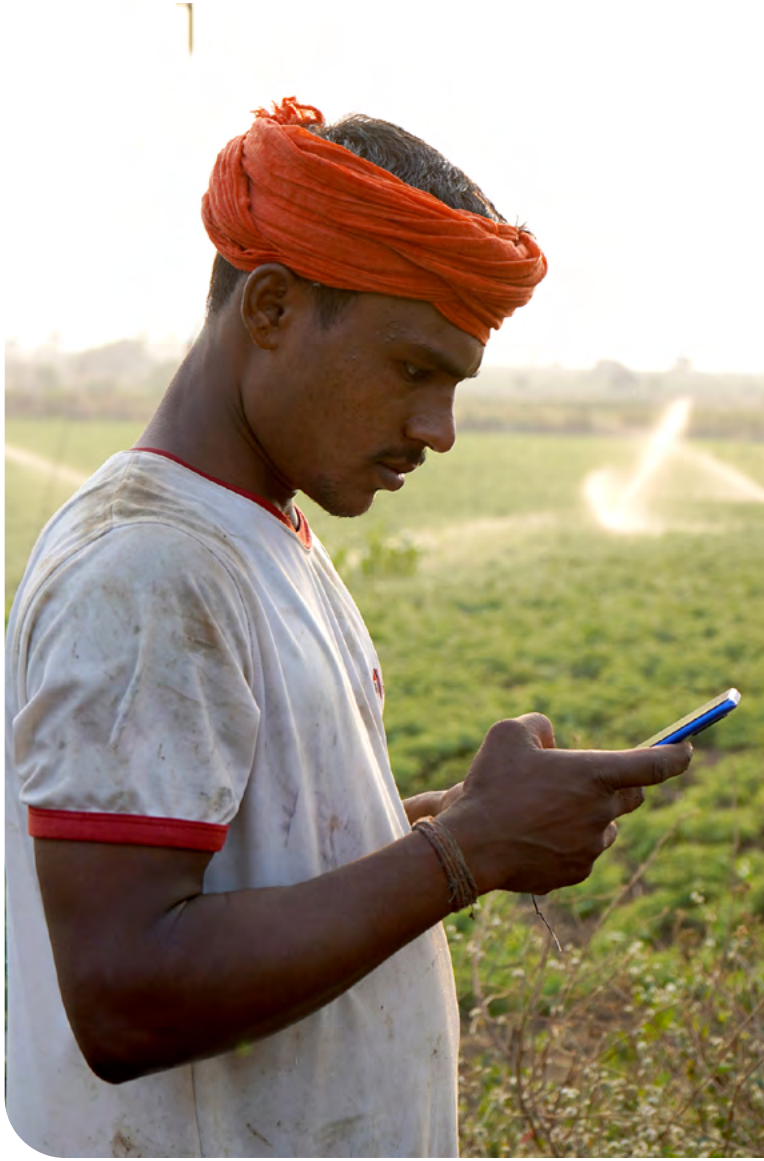
1.1 Define stakeholders

Defining your stakeholders sets the stage for the rest of the transaction analysis (TA) process. Stakeholder departments and organizations provide critical context knowledge, ideas, criticism, and data access. Including them throughout the process helps to increase the chances that any resulting analytics will be relevant, useful, and appropriate to the context. MEL and Program leaders are always stakeholders in the TA process and should be well-represented throughout it. Depending on your context, other stakeholders could include:

- **Program partners** who support assistance distribution activities, vendor selection, post-distribution monitoring, etc.
- **Financial Service Providers** (if applicable) who will handle some aspect of CVA distribution, redemption, and tracking
- **Procurement teams** who support FSP platform and vendor contracting, and can ensure that terms and conditions facilitate TA
- **IT teams** who may support FSP platform setup, management, and use by program teams
- **Security teams** who are involved in distribution planning and regularly monitor threats in the implementation regions
- **Accountability and Safeguarding** teams who gather information from program participants about their experiences and can give input on potential privacy concerns or other risks to participants
- **Team members who act as liaisons with local authorities** (if relevant) who can give information about regulations around assistance modality and delivery mechanism, and support any necessary interactions with local authorities

Simple stakeholder analysis/mapping methods can help to identify all other appropriate stakeholders to involve in subsequent steps.

1.1 Output: List of stakeholder groups and named representatives, with at least one designated technical advisor



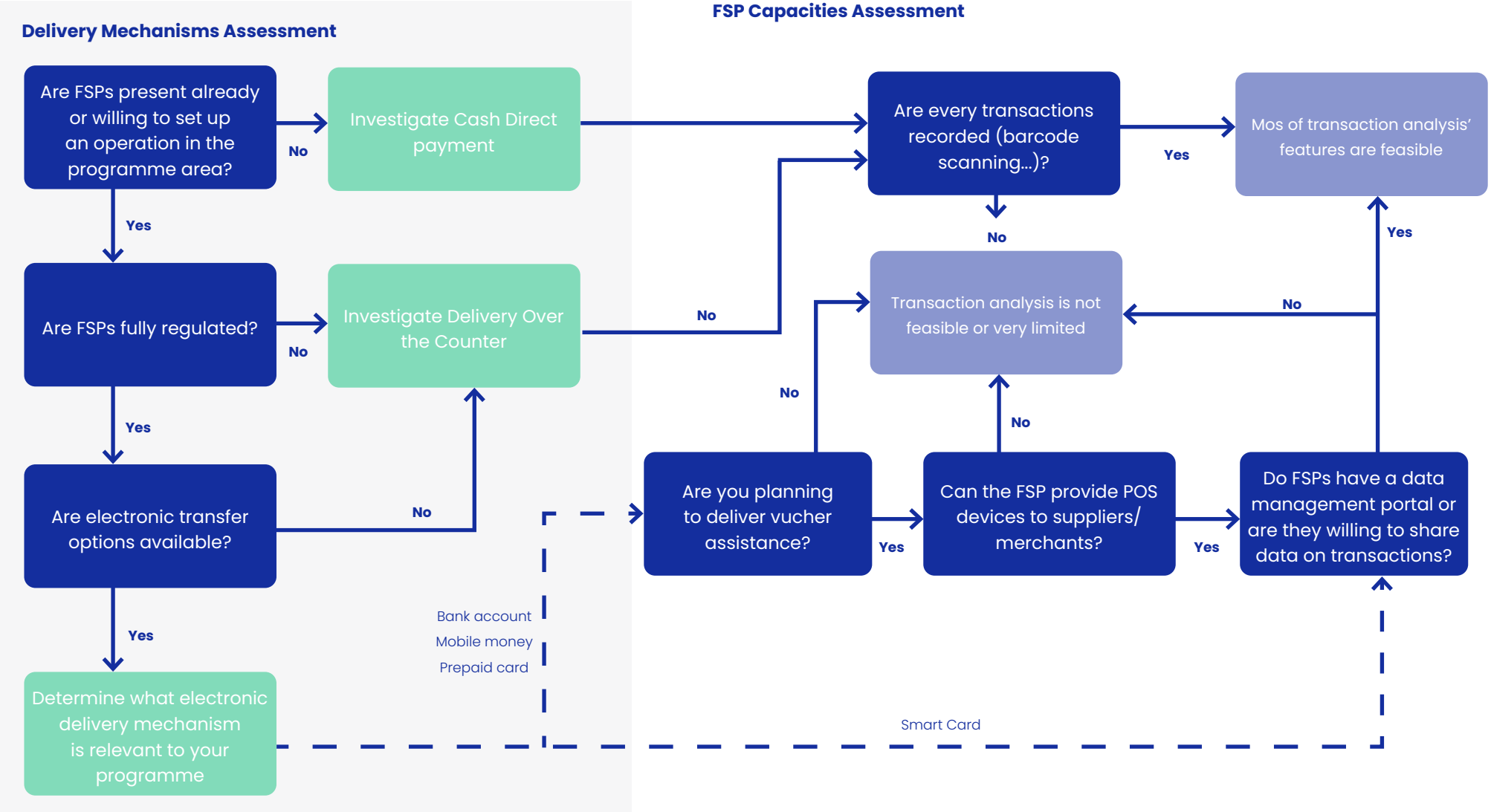
1.2 Assess feasibility

Even within CVA programming, use of TA is highly contingent on the modality and delivery mechanism(s) the program identifies as the safest, most accessible, and most effective. For example, if the program is using prepaid cash cards and recipients withdraw their assistance from an ATM, it will be impossible to gather POS data and know what they have bought with that aid. If a program is using an FSP or collecting POS data from vendors, the program will need to discuss with those stakeholders what data can be provided and how, as individual FSP and vendor data systems vary. The "Delivery mechanism and data management" page of the CALP Programme Quality Toolbox is an excellent source of information on how to select an appropriate mechanism.

Not every context is suitable for electronic delivery mechanisms, and in cases where only paper-based barcode or QR code vouchers can be used, TA can still be applied. In these cases, additional steps may be required, and additional triangulation of distribution and redemption data may be required. The tools in Step 3.1 explain how to conduct TA using data from non-electronic delivery mechanisms.

The following figure summarizes how the selection of the delivery mechanism influences the digital TA's feasibility. Some specialized FSPs provide comprehensive services for TA, while others don't.

Figure 6: Flowchart of TA feasibility based on the delivery mechanisms



The following table summarizes how modality (i.e. cash vs voucher assistance) interacts with delivery mechanism to make certain TA objectives feasible. For a definition of each of these delivery mechanisms, please refer to Annex 6.

Delivery mechanism	Cash grants (unrestricted)	Voucher assistance (restricted)
Direct voucher/cash payment	No feasible analysis	**If programs digitally record POS transactions:** • Monitoring participant access to vendors • Monitoring market share/power among participating vendors
Delivery through an agent/ Over the counter (OTC)	No feasible analysis	
Bank account	No feasible analysis	• Monitoring participant access to vendors • Monitoring market share/power among participating vendors **If the FSP provides devices to record POS data:** • Participants access to markets • Price variation • Availability of basic commodities • Household consumption patterns
Mobile money	**If the beneficiary doesn't make a sole cash withdrawal:** • Monitoring participant access to vendors • Monitoring market share/power among participating vendors	
Prepaid card		
Smart card	• Monitoring participant access to vendors • Monitoring market share/power among participating vendors • Participant access to markets • Price variation • Availability of basic commodities • Household consumption patterns	• Monitoring participant access to vendors • Monitoring market share/power among participating vendors • Participant access to markets • Price variation • Availability of basic commodities • Household consumption patterns

Note that while Post-Distribution Monitoring (PDM) surveys often collect information from participants on amounts received and expenditures, this data is usually not reliable or complete enough to use for TA. This is because PDM surveys rely on participant recall (which can be inaccurate) and often do not collect needed detail on vendors used, exact amounts and quantities per transaction, etc. PDM data can be a good source for verification of findings (see Step 3.1).

Feasibility can only be assessed after program modality and delivery mechanism are determined, but knowing what is required to conduct TA can help programs adapt their design. In one past implementation of RAAM in a context with significant context challenges for CVA programming, it took the program more than two months to finalize the modality and distribution mechanisms. While this was uncertain, the program could not proceed to workshopping transaction analysis, because they could not know what data they would have access to.

Eventually, in response to context challenges around unstable internet, government regulations, and difficulties in collaborating with vendors, the program team decided to use paper vouchers with QR codes. After this decision they were able to successfully set up the TA plan.

Tab 1 of the TA Matrix tool provides you with a place to record the modality and delivery mechanism your program will use. Based on your inputs, it will tell you which of the above TA objectives are feasible, and give additional guidance on confirming availability of necessary data with the FSP(s). Note that you do not need to make a final decision in this step about which objectives will be actioned, set indicators, or plan analysis. The goal is simply to decide – based on TA feasibility and potential utility – whether to proceed to Step 1.3 and plan a gathering of stakeholders to develop a more detailed TA plan.

1.2 Output: Go-No Go decision to proceed to Step 1.3

1.3 Organize workshop or planning event

RAAM products are best created in an environment where different stakeholders have a chance to meet in real time, share ideas, discuss limitations and challenges candidly, and develop plans together. In most cases, the best way to accomplish this is to hold a **dedicated in-person workshop**.

The RAAM Workshop Facilitators' Guide and Workshop template slides are the key tools for organizers of the Workshopping phase to consult when planning to walk the group through planning TA. Facilitators should conduct a document review to help **integrate any existing program plans and analysis into the Workshop agenda**.

Below is a list of questions you can explore as you review existing documents to ensure that any TA planning is aligned with the overall program goals and objectives, and that its use, users and stakeholders have been clearly identified.

Table 12: List of potential documents, exploration questions related to TA, and examples

Source of document review	Exploration questions	Example
Program logic model (Logframes, Results Frameworks, Results Chains, etc.)	Are there program indicators or logframe assumptions that address aspects of market access, commodities, pricing, inflation, vendor services, etc.?	CVA programs can have assumptions relating to FSP activities and access which cannot be monitored through traditional MEL data collection, and which TA could help to validate/monitor.
Activity MEL plans (including learning plans, MEL Tech plan, etc.)	What program-level adaptations and decisions would benefit from enhanced knowledge about the CVA implementation? What kind of information is needed to enhance redemption monitoring?	Review of the MEL Plan may find that there will be anticipated gaps in information on voucher redemption and participants' preferences, which are essential for evaluating program effectiveness and which TA could help to inform.
Risk Register	Are there particular risks in the risk register that might hamper the program team's ability to collect data in particular locations? Any specific groups of participants that may be associated with this risk?	The risk register may have identified organized gangs as a risk, who may put the lives of program teams in danger during a data collection process. Knowing this might prompt teams to plan backup ways to collect transaction data.
Context analysis reports	Does the context analysis identify field circumstances and challenges that would affect CVA implementation?	Context analysis reports can provide insights into internet stability and accessibility, for example, which are crucial factors in selecting the most appropriate modality.
Program work plan	What information does the workplan give on the assistance modality and delivery mechanism, FSP, vendors involved, etc.?	If the program work plan specifies planned FSPs and vendors, this can determine workshop planning around potential analysis approaches and verification options.

The table above is not exhaustive, and other documents may be relevant to you. As you review documents, try to take notes of the critical information you extract and consider referring to them during the Workshopping phase, to check for alignment and to ensure that any final analytics will be useful for the program.

1.3 Output: Workshop agenda and slides

Phase 2: Workshopping

2.1 Set TA objectives

Setting objectives for TA serves as a "brainstorming" phase for the TA process. Remember that TA has a limited number of potential analytical objectives, which are:

- Understand the distance participants must travel to access their assistance
- Monitor relative market share/power among participating vendors
- Monitor participant access to markets and vendors
- Monitor price fluctuations or trends
- Understand availability of basic commodities
- Generate insight on how assistance is spent/utilized

Step 1.2 in the Preparation phase (Assess feasibility) already identified which of these are feasible given program modality and delivery mechanism. Workshop participants should review the feasible objectives identified in Tab 1 of the Matrix, and discuss how different feasible objectives would be of use to the program, if there are other context-specific restrictions (e.g. government regulations, security concerns, etc.) that might further affect feasibility of objectives, and if there are limitations of program operation, timing, etc. that might make certain objectives unfeasible or unhelpful.

As discussions proceed, It is natural to write down different ideas and iterate on Tab 1, and workshop organizers should incorporate document review findings here to prompt or spur conversation. As workshop participants continue to narrow down what specific information (within a particular objective type) the program would benefit from, the group should attempt to formalize these as ideas for SMART indicators associated with the feasible objectives. *Not all brainstormed indicators may ultimately be chosen for the next step*, but it is important for all indicator ideas to be discussed, challenged, and recorded in this step. Examples of indicators used in past implementations of RAAM include:

- Number of participants that walk more than 5 km to spend their assistance *(under the objective: Understand the distance participants must travel to access their assistance)*
- Percentage of participants redeeming their vouchers per vendor *(under the objective: Monitor relative market share/power among participating vendors)*
- Total participants that redeemed their vouchers, disaggregated by time/date of redemption, distribution date, and vendor *(under the objective: Monitor participant access to markets and vendors)*

The TA Matrix tool gives examples of indicators that could be used to action particular objectives. Annex 7 of this guidance also describes the potential utility of the different objectives in more detail, including suggestions for indicators.

Before moving on to Step 2.2, workshop participants should decide which feasible objectives will be prioritized, based on the discussions around relative utility to the program, context, and indicators, and document this in the Matrix.

2.1 Output: Completed Tab 1 of the TA Matrix tool detailing prioritized objectives, and brainstormed list of indicators

2.2 Create transaction analysis plan

This step completes the Workshopping phase by summarizing the outputs of previous steps into an actionable plan for developing TA. A plan entails finalizing the SMART indicators that will action the prioritized objectives, and determining timelines, technical and managerial responsibilities, reporting channels, and persons who should interpret and action findings. This plan then is used to put the next phase of the process – **Implementation** – into motion.

Tab 2 of the TA Matrix provides a structure for teams to plan the necessary details. Each prioritized objective from Tab 1 should be entered into the plan alongside one or more indicators, with roles and responsibilities assigned for each. A TA Plan should be filled out in the Workshopping phase, with appropriate roles and responsibilities assigned to participants and with plans for dissemination of analysis findings listed.

2.2 Output: Tab 2 of the Matrix Tool completed.

Phase 3: Implementation

3.1 Develop TA

This step puts the TA plan into action, as team members designated with the responsibilities for data collection and analysis (1) *set up the flows by which needed FSP data will be shared and stored*, (2) *analyze received data to produce indicator results, and* (3) *verify indicator results*.

Data flow setup and analysis

TA data flow setup will need to be done in conjunction with the FSP and will involve a few critical actions:

- **Determine requirements**: Review how the FSP will collect the required data depending on modality and delivery mechanism, including any required system setup tasks, and needed training of program staff or vendors. For detailed descriptions of typical system setups, please consult the RAAM TA Setup Guide. This guide addresses requirements for e-voucher platforms as well as for QR codes and barcodes.
- **(If relevant) Define how the FSP will send the data**: Including format and expected timing. Most FSPs can share data at least weekly with programs in Excel format, but can also transfer information in other formats such as text files or JSON if needed. Some platforms will allow programs to access data in real-time or near real-time (for example via API), but this must be explored with the FSP either in the workshop or during the data flow setup.
- **Structure and store received data**: Transaction data once received should be structured and analyzed in a manner that facilitates analysis and ensures any personally identifiable information is protected. The TA Database Design Tipsheet is a helpful resource for structuring your data, and the RAAM TA Tutorials include demonstration datasets which can help analysts to see how different data structures facilitate analysis.

Technologies for analysis and visualization

Once the data flows are defined, analysts can define how the data will be analyzed. The TA Tutorials walk through examples of analysis for each objective, showing how findings can be calculated and visualized in Excel, likely to most common tool used for handling transaction data. For more advanced analysis, cleaned Excel data can be imported into dashboarding tools like Power BI so that interpreters can more flexibly interact with and examine the data. Some objectives include a geospatial element, for which **maps** (examples below) are appropriate visualizations, and tools like QGIS can be used. Other objectives are best visualized through **scatterplots** or **barplots.**

Figure 5: Heatmap of the distribution points used. Source: IFRC (2019) Training Cash Data Management

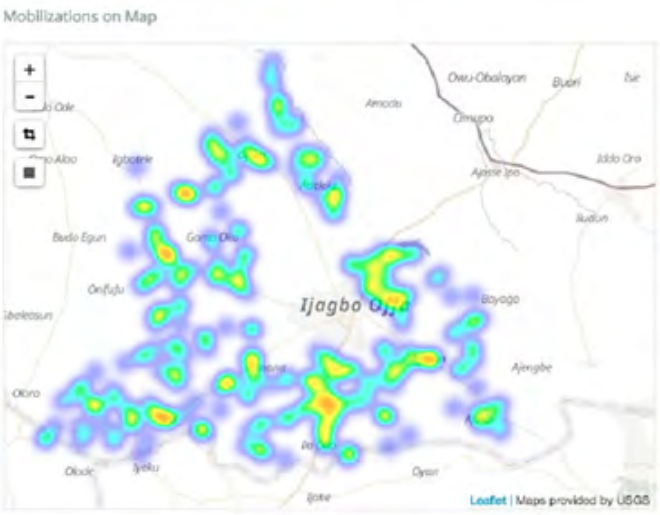
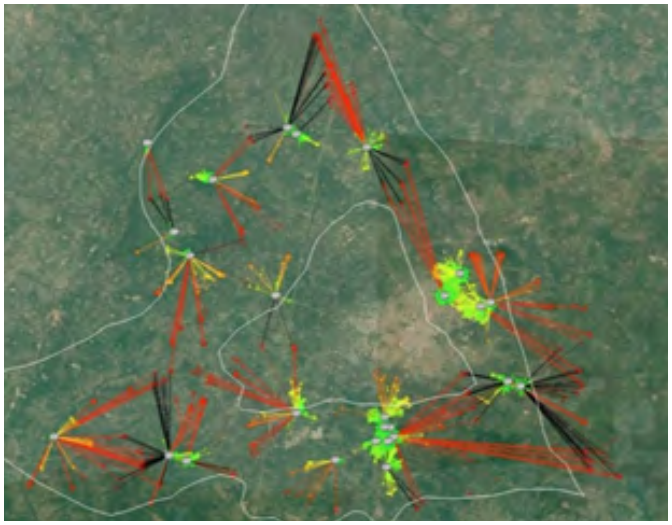


Figure 6: Map of distances between the location of the transactions and the location of the beneficiaries Source: IFRC (2019)



RAAM tutorials for each objective contain demo data and provide practical illustrations of various analysis techniques and visualization types, to help analysts understand how to apply similar techniques to their own data.

Verifying Data

It's important to make sure that transaction data received from FSPs is accurate, especially when the redemption process is ongoing. One effective way to do this is by conducting a short phone call with vendors or participants after the redemption process, or by utilizing Post-Distribution Monitoring (PDM) data. Points to consider in data verification include:

- What data elements need verification in your context? What elements of the data are you most uncertain about in terms of accuracy?
- Will phone interviews suffice to confirm particular data points? Or would it be possible for program partners or third-party monitors to make an in-person visit to vendors or participants to confirm particular records?
  - If only phone calls are possible, how long can the survey plausibly be?
  - What questions can we focus on to keep the interview concise and ensure full responses?
  - Who is holding contact information for participants and vendors, and how can it be responsible used?
- What PDM activities will the program be conducting? Can we insert relevant verification questions into the PDM survey and give input into the sampling?
- What would constitute a valid sample for TA verification?
  - If verifying redemption of assistance, a sample of participants could be created based on factors like monthly redemption activity, clustering, location (same country and region), vulnerability levels, top redeemers, and gender. Ideally, the sample size should be 30% of the total participants or vendors, derived from an exported, cleaned dataset.

For more tips and discussion of verifying transaction data consult the TA Data Verification Tipsheet.

3.1 Output: Structured transaction data with documented findings, shared with interpreters according to the TA Plan.

3.2 Interpret findings and report

This step involves monitoring the TA indicator results for findings of interest and reporting any that should be reviewed and actioned to decision-makers. Those responsible for running the analysis may also be responsible for this step, but oftentimes a manager or expanded group of stakeholders will participate in interpretation.

Review of findings might be done through regular meetings between analysts and managers, in which spreadsheets, dashboards, and/or maps are reviewed. There are several things interpreters might look for:

- Do you notice any outliers in the transaction patterns, especially when disaggregated by location or some other factor?
  - Are there particular vendors reporting very large or very small voucher redemption volumes?
  - Are prices particularly high for any commodities, in any locations, etc.?
  - Are there common commodities missing from the transaction lists? Why might this be the case?
  - Are there unexpected patterns in overall frequency or volume of transactions? Could this indicate potential market dysfunctionality?
- What are the highest distances traveled to reach assistance, and how do they compare to the averages? Might this indicate any gaps in the vendor network?
- Do the dates and times of voucher redemption align with other program information about when markets are open?

Exact interpretation of results will always depend on the context, program, and particular indicators chosen for TA. Annex 7 contains examples of analysis, interpretation, and potential decisions relating to each objective, which can help analysts and interpreters to think through their own results based on examples and experiences from other contexts. Once interpretation has been done, **information dissemination** is crucial for adaptive management as it not only supports decision-making, but establishes feedback loops which can be used to iterate and improve the TA.

Presenting and sharing TA results and interpreted findings should be done with program leaders, program teams, donors, accountability leaders, and other essential individuals and teams as relevant. For more information and details check the The RAAM Information Dissemination guidance.

TA is complete when interpreters have completed a record of their conclusions and action decisions, and reported appropriate conclusions and recommendations to decision-makers. The reporting channels and audiences identified in the original TA Plan should be followed, or revisited if needed.

3.2 Output: Documented conclusions reported to responsible decision-makers

3.3 (If relevant) Iterate on the TA analytics

Iteration and improvement to analysis is more likely to occur if it is planned! The TA Planning process should have identified people who will be responsible for ensuring that there is frequent communication and collaboration between departments, and for collecting formal and informal feedback on TA effectiveness, including from the decision-makers. Regular events such as quarterly program review meetings, and program Pause and Reflect sessions, can also be good venues to review and improve the TA process.

It's important to note that the Implementation steps will not always be followed linearly, and can be repeated depending on needs and frequency of data availability. Once feedback is incorporated into the TA Plan, the Implementation phase repeats. **This constitutes the functional use of TA for RAAM.**

3.3 Output: Revisions to the TA Plan in Tab 2 of the Matrix

Transaction Analysis Tools

Phase 1: Preparation

Define stakeholders

RAAM case studies

Assess feasibility

Tab 1 of the TA matrix

Organise workshop/ planning event

RAAM Workshop facilitators' guide

Phase 2: Workshopping

Set TA objectives

Tab 2 of the TA matrix

Develop TA plan

Tab 2 of the TA matrix

RAAM Roles and Responsibilities tool

Phase 3: Implementation

Develop TA

Tutorials/demos

TA Setup Guide

Data Verification Tipsheet

TA Database Design Tipsheet

Interpret findings and report

Information Dissemination Guidance

Rumor Tracking

What is Rumor Tracking?

The purpose of a rumor tracking system is to identify possible misinformation/disinformation related to a specific topic, verify what is true where possible, and address rumors that impact programming (whether true or false). A rumor is defined as unverified information that is transmitted from one person to another (See Rumor Has It: A practice guide to working with rumors – CDAC 2017). Because rumors can be true, false, or a mix of both, it is important for program implementation to understand what true information is behind a rumor. A rumor tracking system can be used to identify rumors, track their spread, and verify them with accurate information, which helps to prevent the spread of misinformation, protect people from harm, and inform adaptive management of programming.

Rumor tracking purposes and design can be quite flexible depending on reduced access program needs.

For example, programs might use rumor tracking to monitor rumors about relief efforts undertaken by subcontractors in a context where the program staff are unable to travel to the field and check the subcontractor's work quality. Other programs might want to track rumors relating to aid distributions or program vendor practices. When rumor tracking is well-designed, it can often both inform the program about the effects of its interventions and serve as an early indicator of context changes, including violence, rising distrust, regulatory shifts, and other threats to humanitarian access that might prompt action.

Rumor tracking systems must meet humanitarian ethical norms. For example, it is important to ensure that the system does not violate individuals' privacy or freedom of speech, or function as surveillance of a vulnerable population. **Do No Harm** remains the primary restraint governing use of this RAAM method. Tracking rumors doesn't necessarily involve setting up a new system or data collection channel, it can be embedded into existing communication systems like feedback mechanisms or community social media pages. No matter the system or channels, it must be implemented with an inclusive stakeholder-based approach.

To access the relevant RAAM tools for the Rumor Tracking module, please visit the Tools page. →

Who are the intended users of this guidance?

- Program RAAM leads who conduct Preparation activities, organize and run the Workshopping phase, and manage Implementation.
- Team members and managers from MEL, the program implementation team, context analysis teams, and any other relevant departments who are engaged in producing evidence and data and make data-informed decision in the implementation.
- Security, Logistics, and Accountability team members who play an important role in understanding the physical environment, supply chains, social and political movements, and community sentiments in the implementation context, and often manage qualitative data collection channels coming directly from communities served by the program.
- Team members from departments involved in guiding program data systems, such as IT.

Note that this guidance is intended only for implementers of humanitarian and development programs (in sectors such as Health, WASH, Emergency Response, etc.), as it focuses on overcoming managerial and process design challenges that tend to arise within such programs. Organizations seeking to track rumors in a more journalistic way or on a large analysis scale (such as national election rumor tracking) may find some parts of the guidance useful, but will likely need to seek out other resources from organizations like Internews to find technical advice and resources more appropriate for their project type.

The Rumor Tracking Workflow

Rumor tracking follows the generic RAAM workflow but includes two unique steps: a Context Check step (Preparation phase), and a Rumor Interpretation and Referral Plan step (Workshopping phase). These additions reflect the importance of designing an inclusive and ethical process which is sensitive to local opinions and constraints. Like remote sensing, humanitarian use of rumor tracking can potentially be perceived negatively (e.g. as surveillance) by program communities or stakeholders. In addition, the nature of rumor data (which may contain many different forms of sensitive information) makes it important to establish more systematic interpretation processes than other methods.

What is a rumor?

At this step it is useful to start becoming familiar with rumor concepts. A rumor is defined as **unverified information that is transmitted from one person to another**. The word "**rumor**" often has negative connotations and can be dismissed as being idle talk or gossip. However, rumors are neither inherently good nor bad, and they can be true, false, or a mixture of both. Rumors are a natural response to uncertain or threatening times. The CDAC Rumor Has It toolkit (page 9) categorizes rumors into three types:

Wish Rumors	Fear Rumors	Hostility Rumors
These reflect the hopes of the community. E.g., 'I've heard that the Canadian government will allow the earthquake victims to work in Canada. What should I do to go to Canada?	These reflect the anxieties of the community. E.g., 'If someone wants to return to Turkey from Germany, they send him to Assad in Damascus.	These reflect threats to the community or prejudices and often target outside groups. E.g., 'The Iraqi refugees get less support than the Syrians.

There are two sub-groups of rumors that can be of interest to programs, which are defined by the intent of the people spreading them:

- **Misinformation** is incorrect information spread by people without the intent to deceive, for example through a misunderstanding.
- **Disinformation** is incorrect information spread by people with the intent to deceive or manipulate others. An example of this is 'fake news', which is disinformation disguised as news, often spread for political or economic gain.

Rumors discovered to be true are neither misinformation nor disinformation. It is often important to understand the motivations behind misinformation/disinformation, as this will help to identify the right way to handle it and limit its effect. Different people will have different motivations for spreading rumors, such as explaining an event that is troubling to them, sharing information that they think is entertaining, defining oneself as "in the know", or developing relationships using information as a means of connection.

It can also be important to distinguish between a complaint and a rumor. A complaint is a formal statement about a specific issue or concern which the person making the complaint has knowledge of, usually shared with an organization responsible. The complaint may be false, but it is not a rumor unless it is transmitted from one person to another with other unverified information. For example, a participant saying "My hygiene kit was missing items" would most likely count as a complaint. "Hygiene kits are missing items because the organization is diverting aid to community X" is most likely a rumor.

Before the group starts to brainstorm potential rumor tracking objectives, they should ask questions about these rumor concepts if they have them, and potentially integrate IFRC skill-building sessions around the definition of a rumor.

As with all RAAM methods, it is recommended that the **Workshopping** phase include an actual in-person workshop, in which different stakeholder departments in the program (e.g. MEL, Security, Accountability, technical teams, etc.) come together to share information, discuss, and agree on the plan. It is likely that not all stakeholders will be deeply involved in RAAM after the workshop, but their input in planning is vital.

The Rumor Tracking workflow was significantly informed by several guides developed for rumors in humanitarian settings, which are excellent resources for gaining a deeper understanding of rumor concepts, terminology definitions, and rumor analysis:

- **Rumor Has It: A practical guide to working with rumors** - CDAC 2017
- **Managing misinformation in a humanitarian context: How to guide** - Internews 2019
- **Skills sessions: Rumor Tracking** – IFRC 2019
- **DISARM Framework** – DISARM Foundation 2019

These guides are referred to throughout the Rumor Tracking chapter to avoid duplicating the deep technical guidance they already provide. The RAAM Rumor Tracking workflow focuses on giving programs practical steps and tools to establish a system that is sensitive to the unique challenges of individual reduced access contexts.

Figure 7: Rumor Tracking RAAM Workflow Diagram

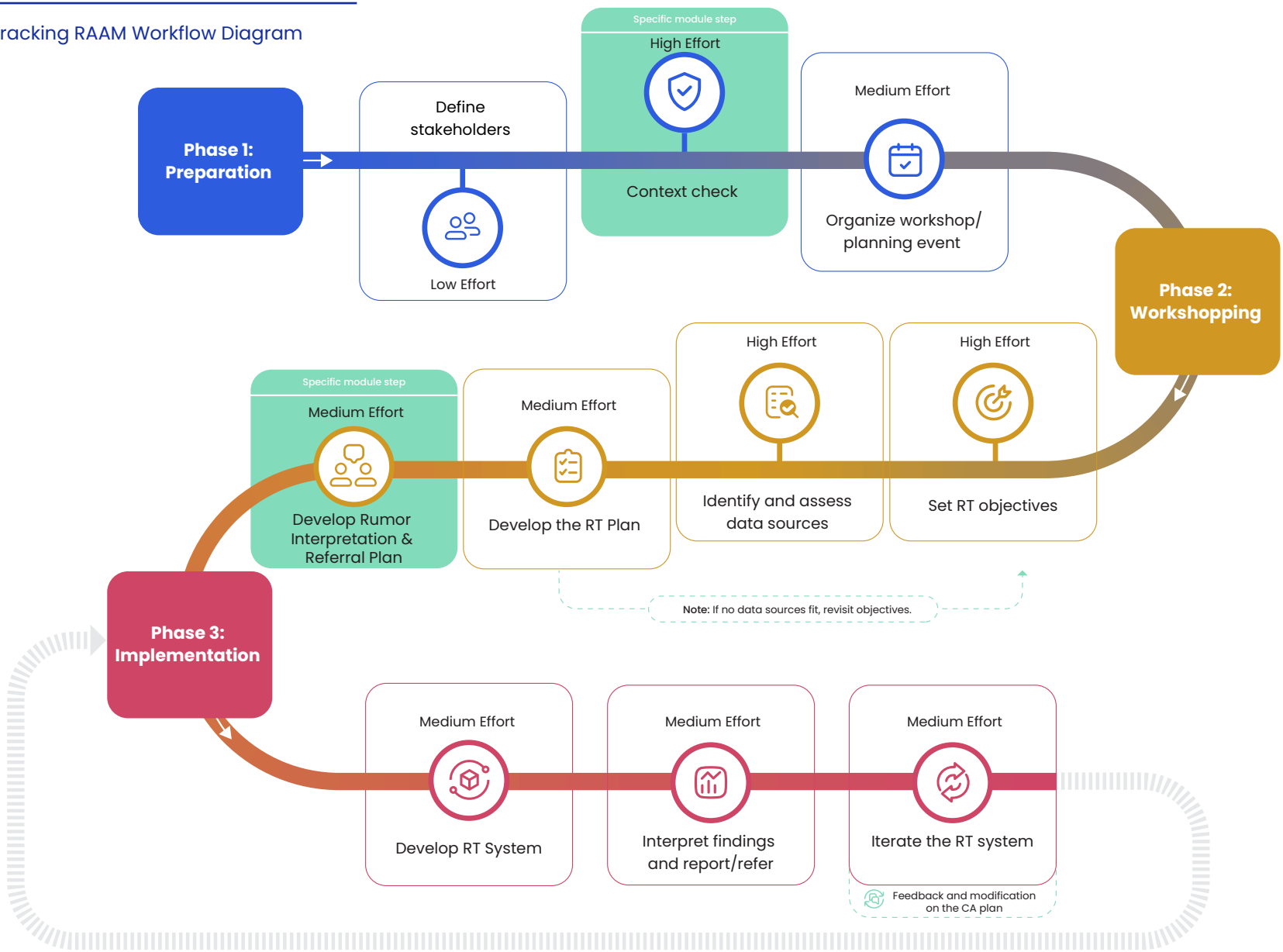


Table 12: Rumor Tracking Workflow and associated tools

Phase	Step	Description	What does this achieve?	Relevant RAAM tools	Time Spent
Preparation	**Define stakeholders**	Identify relevant departments and individuals with relevant knowledge, data sources, and expertise. Identify stakeholders who need to participate in rumor interpretation, referral, and action.	Generates a list of people to involve in the workshopping phase and subsequent communications.	• RAAM Workshop Facilitators' Guide • RAAM template workshop slides • RAAM template workshop agenda • RAAM case studies	short period of time
	Conduct a context check	Review the environment in which rumor tracking would operate to identify potential concerns relating to the information ecosystem, political context, and local laws & regulations.	Ensures a thorough understanding of community and stakeholder sensitivities that will need to be accounted for in Workshopping.		spread out over a longer period
	Organize workshop/ planning event	Determine how stakeholders will collaborate on Workshopping, organize logistics, and create supporting materials (e.g. slides)	Sets a concrete time and date for stakeholders to convene, and prepares the framework to structure discussions		short period of time
Workshopping	**Set rumor tracking objectives**	Brainstorm what the program would like to know about the program or context, including topics and groups of interest, and how knowing it would concretely serve program needs.	Creates a list of potential objectives for Rumor Tracking, which focuses subsequent Workshopping steps.	• Tab 1 of Rumor Tracking Matrix	short period of time
	Identify and assess data sources	Identify data sources already coming from the program regions, and assess whether they are reliable, timely, and relevant to the objectives. Complete a Safety Check to ensure use of data will not pose protection risks before prioritizing and finalizing objectives.	Produces a realistic picture of which objectives can be met with already-accessible data, and whether missing data could be acquired, while ensuring that concerns about data protection, ethics and safety are addressed.	• Tab 2 of Rumor Tracking Matrix	short period of time
	Develop Rumor Tracking Plan	Develop a plan and assign roles and responsibilities for developing a Rumor Tracking system, including system setup, rumor analysis, and interpretation and reporting (via committee).	Formalizes the Workshop phase into an actionable plan/next steps for the Implementation phase.	• Tab 3 of Rumor Tracking Matrix • RAAM Roles and Responsibilities tool	spread out over a longer period
	Develop Rumor Interpretation & Referral Plan	Establish the categories, criteria and referral workflows to effectively handle rumors based on urgency, impact, and other factors relevant to the objectives.	Provides an objective-driven framework for analysts to use in categorizing and referring rumors to the correct audience.	• Tab 4 of Rumor Tracking Matrix	spread out over a longer period
Implementation	**Develop rumor tracking system**	Establish data flows and analytical methodologies appropriate to the data sources to identify, categorize, and refer rumors.	Identifies findings relevant to the Rumor tracking objectives for interpretation by the Rumor Committee.	• Qualitative Analysis for Rumor Tracking Tutorials	intermittent and recurring
	Interpret findings and report/refer	Interpret referred rumors through the Rumor Committee, plan responses, and share summary information with decision-makers for action.	Ensures identified rumors and potential responses are discussed from multiple perspectives to mitigate potential misinterpretation or bias.	• Information Dissemination Guidance	intermittent and recurring
	Iterate the rumor tracking system	Update the rumor tracking plan and outputs with feedback and observations from users. This could include adding verification steps, changing categorization criteria, etc.	Pushes the RAAM implementers to improve the TA or improve reporting processes.		intermittent and recurring

Phase 1: Preparation

1.1 Define stakeholders

MEL and Program departments are always stakeholders in the rumor tracking process and should be well-represented throughout it. For this RAAM method, **Accountability** and **Safeguarding** team members are also critical stakeholders, since the method often makes use of feedback channel data and may focus on sensitive questions about participant communities. Depending on your context, other stakeholders could include:

- **Security** teams who monitor threats in the implementation regions and produce regular field updates.
- Any **Program partners** who can contribute ideas, contextual knowledge, analytical capacities, and/or feedback.
- **Local government partners**
- **Context analysis** teams or other analytical units who are producing or have produced relevant reports about the implementation regions, especially when they produce analysis relevant to power dynamics at the field level.
- **Subject matter experts** both internal and external to the organization.

Simple stakeholder analysis/mapping methods can help teams to identify other stakeholders to involve in the RAAM rumor tracking workshopping phase.

1.1 Output: List of stakeholder groups and named representatives

1.2 Conduct a context check

Rumor tracking systems must be ethical and context-adaptive. What counts as a rumor, what data sources are feasible to use, and what to do about rumors, will vary context to context, and tackling these questions can be extremely sensitive. *In general, rumor tracking is the riskiest RAAM method to develop, because if poorly designed, it can increase rather than decrease levels of misinformation, reduce trust between programs and communities, and/or result in program decisions based on a biased view of the context*. At the same time, reduced access programs are often in need of information about what communities served by the program feel and think, and rumor tracking provides an opportunity to generate that information.

A context check documents your understanding of community dynamics in the program regions, including preferred methods of communication, role of different media, channels of social influence, local regulations, and especially, sensitivities and expectations of communities when it comes to the activities of humanitarian and development organizations. Programs should not rely on assumptions about these factors when trying to design rumor tracking, regardless of the team's level of experience in analogous contexts or even within the same country. *While a context check may be beneficial for other RAAM methods, it is a required step in the Rumor Tracking workflow due to the critical need to tailor approaches to be both effective and respectful of unique community characteristics and needs.*

A context check includes:

- Knowing how information already flows in a program's areas of interest, including who influences information flows, how, and in what ways.
- Learning about how language, location, and other factors impact preferred communication channels for participants and communities
- Learning about which kinds of information tend to be missing in the reduced access context
- Understanding what regulations, laws, or sensitivities might exist at a national or local level that could affect the feasibility of rumor tracking

For example, imagine you are working on rumor tracking in a rural community where access to the internet and social media is limited. However, the community has a local community radio station and a network of community leaders who often have first-hand information about events and narratives being discussed informally in the communities. The program will only be able to reach the community and deliver services through subcontractors and third-party monitors. Previous FGDs conducted in the community have indicated that at least some believe that humanitarian program staff only register their relatives and friends for cash-for-work. The context check should detail the channels that exist (e.g. the radio station, networks), the known sensitivities and concerns around bias in program registration, and if possible, perform further assessment to learn how well different channels represent community sentiments, how widely the concerns are shared, etc.

There are several assessments that your team can do (see page 10 of Managing Misinformation in a Humanitarian Context (Part III) for templates) to inform the context check, including:

- **An information ecosystem assessment (IEA):** This assessment helps you discover how information is generated and how it flows within a community.
- **An information needs assessment (INA):** This is a shorter survey which assesses what people do or do not need to know in a humanitarian context.

It is possible to include questions from these assessments in routine monitoring tools to ensure that if the communication flows within a community change, the RAAM team is informed of these changes. Other data sources that may help you complete the context check include any available external **context analysis reports**, any **stakeholder mapping exercises** that may have been done for the program, **baseline assessments, KAP (Knowledge Attitude and Practices) surveys**, and past **participant feedback reports**.

The results of your context check should be summarized as 2-4 drafted slides summarizing the most important findings related to aspects like communication and information channels, community sensitivities, media ecosystems, power dynamics, local regulations, etc. These slides should convey critical bullet points to audiences and be used in the Workshopping phase to ensure all stakeholders are on the same page. Alternatively, a short report could be drafted in another format to be shared with Workshop participants.

1.2 Output: Powerpoint slides (or alternative report product) summarizing context check findings for use in the Workshopping phase.

1.3 Organize Workshop/ Planning Event

RAAM products are best created in an environment where different stakeholders have a chance to meet in real time, share ideas, discuss limitations and challenges candidly, and develop plans together. In most cases, the best way to accomplish this is to hold a dedicated in-person workshop. The RAAM Workshop Facilitator's Guide and Workshop template slides are the key tools for organizers of the Workshopping phase to consult when planning to walk the group through the rumor tracking method, and they discuss alternatives to an in-person workshop which can be pursued. The International Federation of the Red Cross has also designed workshop tools relating to rumor tracking (including skills sessions and trainings) that will likely be useful to you.

Facilitators are instructed in the Facilitator's guide to conduct a review of program-relevant documents such as a Program Plan, Activity MEL Plan, Accountability plan, context analysis, or risk register. Below is a list of questions you can explore as you review existing documents and data sources, to ensure that the purpose of conducting a rumor tracking exercise is aligned with the overall program goals and objectives, and that its use, users, and stakeholders have been identified. Note that this is distinct from the context check in its focus on program structures and stakeholders.

Table 13: List of potential documents, exploration questions related to rumor tracking, and examples

Source of document review	Exploration questions	Example
Program logic model (Logframes, Results Frameworks, Results Chains, etc.)	Are there context monitoring indicators or indicators that would benefit from data about community sentiments? Are there assumptions about the context or community preferences?	Results frameworks in reduced access programs often rely on indicators from a single primary data source centered on participant feedback, which may not always reflect the broader community's feedback.
Accountability Plan and/ or reports from feedback channels	What are the challenges participants face in sharing their feedback? Are there data sources that might be used to identify rumors?	Feedback channels will usually be established in reduced access implementation areas to gather complaints related to service delivery. Depending on the context, these could be used as a data source or at least to give information on people's preferences in communication and topics.
Context analysis reports	Do the reports discuss any local regulations or concerns that might affect rumor tracking? Do they note any differences across geographic locations relating to acceptance of data collection activities, engagement with humanitarian implementers, etc.? Is there information shared on the target community's characteristics and power dynamics?	Context analysis will help understand the country's data regulations, identify community influencers, and recognize sensitive topics. This understanding is crucial for effective ways of data collection, how and where.
Program work plan	What project activities, timelines, and targets might be impacted by program activities? Who are the program stakeholders at the field level?	Information from the project work plan might help the RAAM team to focus on rumor objectives/ topics in the Workshopping phase that would have a greater impact on activities.
Program proposal	To what extent does the proposal expect that community opinion will impact the program's participant selection criteria or activities?	The program proposal can help identify how the program was, at least theoretically, intended to be affected by community sentiments, or whether the designers relied on certain assumptions that should be monitored.

The table above is not exhaustive, and other documents may be relevant to you. As you review documents, try to take notes of the critical information you extract and consider referring to them during the Workshopping phase or incorporating them into the workshop sessions, slides, and/or agenda.

1.3 Output: Workshop agenda and slides

Phase 2: Workshopping

2.1 Identify rumor tracking objectives

In the context of analysis, an objective is a statement that outlines the results expected from an exercise; it identifies, clearly, what needs to be understood. (ICRC Acquiring and Analyzing in Support of Evidence-Based Decisions - A Guide for Humanitarian Work) Setting clear and actionable objectives for rumor tracking is crucial for successful implementation, as they focus all subsequent steps and analysis planning on the most critical challenges the program is likely to encounter due to lack of direct conversations with program participants during implementation. By the end of this step stakeholders participating in the workshop should have at least one clear objective developed and entered into the first tab of the Rumor Tracking Matrix. Findings from any document review conducted by the workshop organizers should be presented during this step to facilitate brainstorming among the group.

Setting rumor tracking objectives

An actionable rumor tracking objective includes the following (and should be recorded in the Rumor Tracking Matrix):

- The **topic** you want to track for rumors. Topics are defined generally rather than specifically, because typically you will not know whether any specific rumor exists or will exist. Consider the rumor topic as a "scope" within which analysts will look for rumors. Make sure the identified topic is related and linked to the project/program indicators and assumptions.
- Examples of rumor topics include:
  - Military or armed group movements
  - Perceptions of fairness or unfairness in aid delivery
  - Behavior of program vendors and partners
- The **groups of interest** for analysis, i.e. the discrete groups of people within which the spreading of rumors about the topic will be relevant. This will almost always include communities served by the program but can include other communities, organizations, or individuals. Definition of the groups can include general characteristics like age, sex, gender, etc., which may help in choosing communication channels or data sources. For example, if your target group is 60+ years old and illiterate, attempting to use social media as a data source is not the right approach. Or, for example, if women in a community are a group of interest but lack access mobile applications, then a WhatsApp group is not a relevant channel/data source.

The Workshop is an important opportunity to gather input from many stakeholders to define a useful objective. Questions that can help spur discussion:

- What kinds of rumors have emerged in the past (in either this context or others that participants are familiar with) that you didn't expect? What impact did they have?
- What types of misinformation or disinformation do you already anticipate encountering in this context? Have you and your teams ever discussed how issues of community perception would impact you?
- What sources or communication channels have been known to spread rumors in our context? Did those rumors turn out to be true?
- How do power dynamics shape the spread of information in our context? Which groups tend to generate information and connect communities through the sharing of it?

A rumor tracking objective expresses the topic and group(s) of interest together. **Examples of rumor tracking objectives include:**

- Understand perceptions about youth development programming in community X, especially among community elders and parents
- Monitor for indications that aid is not reaching the most vulnerable in communities X, Y, and Z
- Monitor rumors of IDPs intending to move (due to security, prices, or other factors)

Brainstorming in this step should be done without consideration of whether the data sources exist that would allow you to action the objective. Data source identification and assessment will be done in the next step, and while it may turn out that data does not exist to action a particular objective, it is useful to record all objectives that could be useful in the Rumor Tracking Matrix, as circumstances may change in future that may make new data sources available. Your brainstorming may benefit from reviewing case study examples of how organizations have used rumor tracking for their teams and programming, such as:

- ESSN - Rumor Tracking and Management System
- Rumor Tracker Program: A community-based approach to address information gaps and misinformation on COVID-19
- Rumor Tracking - Information Saves Lives | Internews

2.1 Output: Completed Tab 1 of the Rumor Tracking Matrix, with at least one objective detailed

2.2 Identify and assess data sources

This step will prompt the room to list and critically assess the data sources that are already collected from groups of interest identified in Step 2.1, and what tools will be required (if any) to collect or structure them in a manner suitable for analysis. The choice of data sources will vary depending on the context, the nature of the community, the information the program seeks to track, and what already exists. As with other RAAM methods, it is critical to use the workshop to identify internal existing data sources before creating any new data collection channels.

In many programs, participant **feedback mechanisms** will be one of if not the most important and plausible methods. Accountability to participant communities is a core value of humanitarian organizations, and programs should already have or be planning to establish mechanisms to gather unsolicited and solicited feedback from anyone affected by the program. *If used appropriately*, this data can often be a critical source of rumor tracking information (see below section on prioritizing objectives based on risk). The most common feedback channels in reduced access programs are WhatsApp messages, in-person interactions where field staff are available, and physical feedback boxes. Feedback channels can often be adapted to help inform a rumor tracking process, for example by adding questions to a post-distribution monitoring (PDM) tool.

As mentioned in Step 1.1, due to the importance of these data sources, *a representative from the Accountability and/or Safeguarding teams should be included in the RAAM workshop*. By participating in the workshop they can have frank conversations about the feasibility of sharing feedback data, about the potential for adapting the tools already used to collect feedback, and about how ensure data security and safety of participants are considered throughout the process.

In addition to feedback mechanisms, **other data sources** that might help gather information on rumors include:

- Already-planned program data collection activities that interface with program participants, such as PDMs, KIIs, or FGDs.
- Local community media, for example a radio station that is broadcasting news and information relevant to the community.
- Community leaders and elders who have direct contact with community members and may hear about rumors first-hand.
- Community-based networks or groups which may have been organized around particular community needs and may have interest in helping the program to interpret community opinion.
- Local staff/partner staff who may be able to record their own primary observations when in the field.
- Local newspapers or news channels (if available) which may contain reports or letters to the editor that are related to rumors.
- Social media channels to which the groups of interest have access.
- Regional government offices that may have official information or reports on events relevant to the community.
- Local health clinics or schools which may have records or anecdotal information about health-related rumors.

If information is not already being collected from these sources, a new data collection channel/tool may need to be created. Each source will have unique practical and ethical considerations and should be discussed thoroughly with workshop participants. For example, many useful data sources for rumor tracking will be **unstructured** (i.e. not organized in a defined structure like a table with rows and columns) and requires qualitative analysis skills. Free text data such as interview transcripts are examples of unstructured data. Data sources that are either already available or could be available to the program should be detailed comprehensively in Tab 2 of the Rumor Tracking Matrix. It is most important to note what information the sources could potentially offer.

The Internews and CDAC guides linked above contain deep discussion of different data sources for rumor tracking, including questions to ask about them, and possible actions RAAM teams may want to take to interact with them effectively. Specialized guides also exist for social media data that can support users in contexts where social media is a viable source:

- The Weaponization of Social Media - This resource reviews coordinated disinformation, digital hate speech, and conflict analysis through social media. A good resource on pg. 4 is the response framework of how to respond to digital drivers of conflict.
- Interaction Disinformation Toolkit 2.0 - This toolkit addresses how social media can allow disinformation and misinformation to thrive as it grows throughout the world (See Part 1, Page 11). A good example of disinformation through social media is in Part 2, Page 13. Part 2, Page 16 reviews monitoring and engagement tools that can be used to track rumors via social media.
- UNHCR Using Social Media in Community Based Protection: A Guide - In Chapter 6 (starting page 128), this guide reviews how to use social media to identify, debunk, and stop rumors and information that can affect people in displacement settings.

Review and prioritize objectives based on available data and risk

Once data sources are listed in the Matrix, workshop participants must review how well they match up with the identified objectives. **In order to move forward with any objective from Step 2.1, there should be at least two identified data sources that would offer information directly relevant to the objective.** It is recommended to have at least two sources because it allows for cross-checking and verification, which is critical in reduced access contexts. For more advanced analysis, teams could also structure rumor analysis within a data triangulation approach as well. (See RAAM FAQs for a definition of verification vs triangulation).

Ensuring that a data source offers the required information involves checking not only the kind of data it collects, but also the *reliability* of the source, the *timeliness* of the data, and the *ethics* of accessing it. For example:

- If local staff can plausibly collect data on rumored intra-communal conflict, but they will only be able to visit the community once every 6 months, this may not be frequent enough to serve rumor tracking needs.
- If local media would provide the required data for an objective but it is known to be biased and no other sources are available to compare it to, then the source may not be reliable enough to serve rumor tracking needs.
- If social media monitoring could provide information relevant to an objective but the relevant account/group settings are restricted or private, it is likely not ethical to gather the data.

Questions to ask related to reliability and timeliness of data sources include:

- *For feedback channels or other internal program sources:*
- *How often can the data be shared? What steps would need to happen to ensure proper protection and how would that impact timelines?*
- *Are there organizational policies or standards (e.g. a Data Protection policy or Safeguarding standards) which would govern how we use this data?*
- *Have there been problems verifying information from feedback channels in the past?*
- *Have program team members recently completed Protection training and understand Codes of Conduct?*
- *For other sources:*
- *Do any of our peers use the source?*
- *How often does the source publish, broadcast, or post?*
- *Do we know of any bias, or can this be identified from past output from this source?*
  - *What kind of relationships does the source have with other local actors, and how would this plausibly manifest in bias?*

Before finalizing priority objectives and proceeding to the next step, workshop participants should perform a final safety check. The workshop sessions and discussions in this step and previous steps should have helped to surface any ethical concerns, security and protection concerns, or reputational concerns that might arise from use of a particular data source or analysis of a particular objective. Any concerns raised should be reviewed by the whole workshop group and a final consensus reached on whether any objectives or data sources should be removed from consideration due to risk level. Policies and standards to check if needed include:

- **Organizational policies relating to Safeguarding, Ethics and Integrity, Accountability, Security, Data Protection, etc.**
- **Office SOPs relating to security, participant engagement, data management, etc.**
- **Any organizational training materials on safeguarding and accountability practices**

Do no harm is the overriding principle of all humanitarian action. If any new data collection is pursued as part of RAAM, it must be clear to any persons involved that their role is to collect only the data needed, not to act as a journalist or investigator. If a fraud/corruption/safeguarding concern related to the program arises, or if any potential or actual harm to participant communities arises, data collection should be stopped and reported back to program management immediately for appropriate action. Follow your organizational policies, office protocols, and SOPs when it comes to community preferences for informed consent, reporting ethical concerns, and other data collection practices.

Rumors that pose the highest risk for the community and humanitarian organizations working in the area should be given priority. For instance, rumors that could lead to the community mistrusting or abandoning essential services, or even inciting violence or chaos should be high-priority objectives, if the data sources are available and deemed safe.

Workshop participants must agree on priority objectives, and document the group consensus on safety in the Rumor Tracking Matrix. **It is up to the group and/or RAAM Facilitator to determine what constitutes sufficient agreement/consensus to proceed with an objective**, e.g. a majority of participants or unanimous agreement. The Rumor Tracking Matrix contains a column to record the group consensus about prioritization and safety, and include any notes relevant for future review and iteration of the rumor tracking system.

2.2 Output: Completed Tab 2 of the Rumor Tracking Matrix

2.3 Develop Rumor Tracking Plan

This step structures the outputs of Steps 2.1 and 2.2 as an action plan for the Implementation phase. Unlike other RAAM methods, Rumor Tracking plans do not define specific indicators for each objective. This is because rumor tracking – uniquely among the RAAM methods – cannot know in advance exactly how its objective might manifest. As a result, the Rumor Tracking Plan focuses on defining the unique roles and responsibilities needed for developing a rumor tracking system, and creating the structure within which rumors will be interpreted and responded to.

Rumors can spread rapidly, so it's essential to structure your plan to monitor as close to real-time as possible. The Matrix tool includes columns to specify the data sources to be used for each objective, the sensitivity of the data, what protocols will be in place to guarantee data security (if sensitivity is high), where data will be stored, and what verification steps will be taken. This is important to avoid potential duplication of personal data and ensure that data protection protocols are clear. If relevant, you can also specify and data analysis technologies that will be used. The Matrix tool also includes space to identify channels that can be used to respond to rumors relating to each objective, and make notes about what kinds of rumors could/would require response.

Rumors that are not responded to can build up frustration and anger in communities over time! For example, programs can be a target of rumors about stolen or misdirected aid or about unfairly aiding one ethnic group over another, which if not responded to can lead to violent attacks on program team members attempting to travel into the community. It is therefore important to not only plan how you will track rumors, but how you will respond if needed. For example, if you are planning to use program feedback channels as a data source, you should discuss with the feedback channel manager about what mechanisms they use to disseminate information back to the participants. If you are doing data collection through direct interaction with individuals (e.g. through KIIs, social media groups, or surveys) it is crucial to discuss how enumerators/interviewers should respond to the rumor if it arises during the interaction. Giving them clear guidance about how to respond can help mitigate the potential for participants to become frustrated or angry, or feel ignored or dismissed by the lack of response to the rumor.

Finally, the Rumor Tracking Plan tab contains suggested roles and responsibilities for creating and operating a rumor tracking system. These can be customized to your specific setup, but at least the following should be assigned:

- One or more **Rumor Analysts** tasked with processing and analyzing rumor data on the planned timelines and for the planned indicators. This person will conduct qualitative analysis and categorization of rumor data, will refer rumors according to the Interpretation and Referral Plan (next step), and may also be responsible for data verification. This person will often be a member of the MEL team who does data analysis tasks already and can take on rumor analysis responsibilities for the program as well, but may also be an analyst or officer from another department depending on skills and availability. If a large volume of rumor data is expected, multiple Analysts should be assigned to share the workload.
- A **Rumor Committee**, which will be responsible for interpreting identified rumors sent to them by the Rumor Analyst (see Interpretation and Referral Plan in the next step), discussing and formulating responses, and sending recommendations to a Decision-Maker. A Rumor Committee should include at least three members, at least one of which should be from the program implementation team, and one from MEL, which will meet and discuss according to the urgency of the rumor (as categorized by the Analyst). Members of the Rumor Committee **should not** also be Rumor Analysts.
- The purpose of the Rumor Committee is to ensure that rumors and recommended responses are thoroughly discussed from multiple perspectives, and that recommended responses are consensus-based. This reduces the possibility of misinterpretation, miscommunication, or over/under-reaction to the rumor. The Rumor Committee should consult different teams as relevant to help validate or inform their interpretation, and is responsible for documenting their work and conducting follow-up on their recommendations to confirm whether they were actioned.
- The Rumor Committee **does not** function as a substitute for safeguarding or ethics/integrity departments, and does not conduct formal investigations. If possible, a representative of an appropriate ethics or safeguarding team should be included in the Committee.
- This committee-based approach to RAAM interpretation is strongly recommended for rumor tracking because rumors are so difficult to assess in an unbiased way. The Rumor Committee structure and membership can vary, and programs implementing RAAM should adapt it according to what fits their objectives and context.
- In contexts where Committee members may become unavailable on short notice due to travel, internet outages, communications blackouts or other reduced access restrictions, it is advisable to ensure there are enough Committee members assigned (or alternates designated) to have at least three members available to handle urgent rumors.
- A **Decision-Maker** who will receive recommendations from the Rumor Committee and decide on appropriate action. This will frequently be a person in a leadership position such as Director of Programs.

Depending on the data sources chosen, roles and responsibilities may also need to be assigned for **field data collection** (i.e. setting up new data collection tools and channels and managing collection activities), for **translation** of rumor data, or for **anonymization** of rumor data (e.g. feedback channel data that cannot be shared with personal information included). Before closing the Workshop, team members with roles assigned to them should discuss and agree on a timeline for immediate next steps.

2.3 Output: Completed Tab 3 of the Rumor Tracking Matrix

2.4 Develop Rumor Interpretation and Referral Plan

This step completes the Workshopping phase by establishing the framework within which identified rumors (generated according to the Plan in Step 2.3) will be referred and interpreted appropriately. Rumor analysis is notoriously subjective, and it has a much higher potential (compared with other RAAM methods) to identify information which could indicate a concern relating to safeguarding, fraud, or corruption, which fall outside the scope of RAAM and must be handled by responsible teams. Therefore, a framework is necessary to help Rumor Analysts know who to refer rumors to and why.

Tab 4 of the Rumor Tracking Matrix provides a template for an Interpretation and Referral Plan. The core components are:

- A **risk category structure** for the rumors (e.g. high, medium, or low risk, with criteria assigned for each)
- A **rumor referral workflow** detailing how and to whom rumors will be referred depending on category

A single rumor, shared by one person at the right time and with the right audience, has the potential to significantly impact the community or humanitarian responders in a negative way.

Risk category structure

Not all rumors will require referral or a response, as their potential consequences vary. The key factor in deciding whether and how to respond to a rumor should be the kind of risk it poses. The CDAC and Internews guides shared in Step 1.2 contain helpful guidance on assessing the relative risk level of different rumors, and are essential resources for teams developing a Rumor Interpretation and Referral Plan.
Risk categorization can be done in many ways, which are not mutually exclusive. One simple framework for categorizing risk is to have the Rumor Analyst classify each rumor as High, Medium, or Low risk, depending on criteria like projected impact, likelihood of impact, and urgency. For example:

- **High:** Rumor Analyst believes the rumor has a high likelihood of resulting in a negative impact, or Rumor Analyst notices that the rumor refers to an event that will take place within the coming week.
- **Medium:** Rumor Analyst believes the rumor has a high likelihood to result in impact on communities but the projected impact is not negative, or projected impact is negative but likelihood is low.
- **Low:** All other rumors

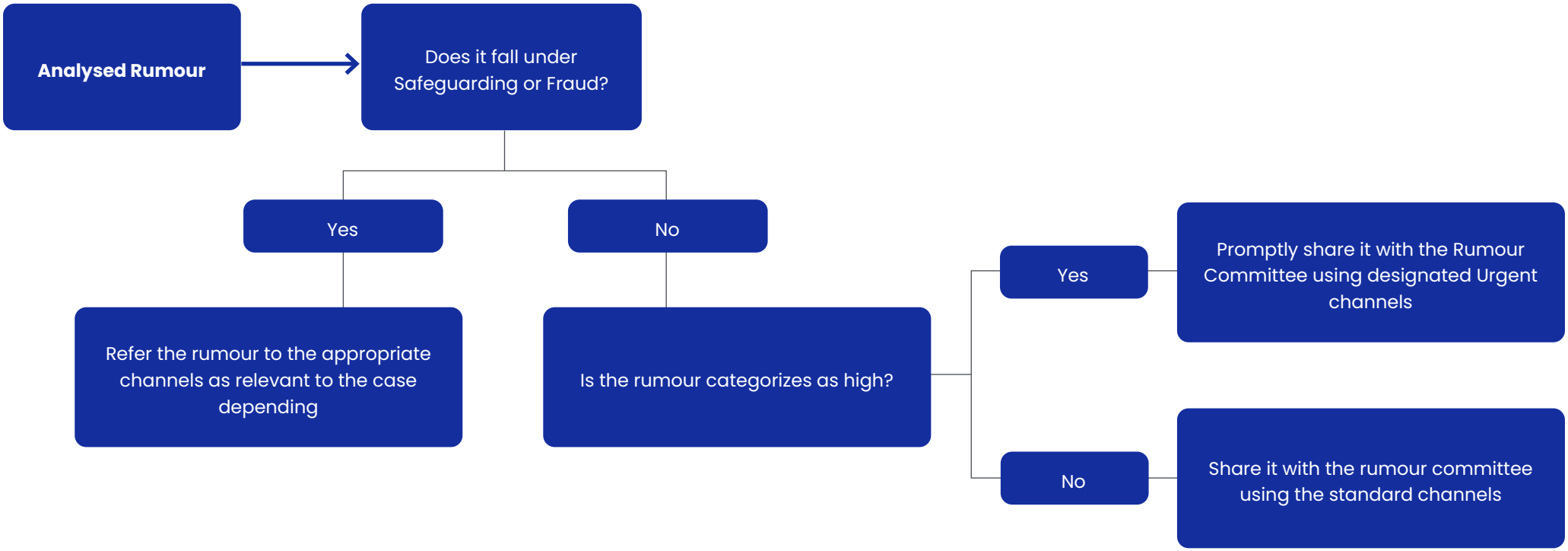
Projected impact, likelihood, and urgency are all common but subjective criteria for risk categorization, and may be further defined by the workshop participants in the Interpretation and Referral Plan. Risk categorization structures could incorporate several other factors, such as:

- **Topic:** Some rumor topics may inherently be sensitive and require a certain kind of referral and response. For example, a program might place a high priority on understanding rumors relating to community perception of aid distribution in the program target areas, and choose to classify rumors on that topic as High risk to ensure they are quickly assessed and responded to.
- **Sentiment:** Analysis of sentiment typically categorizes rumors as positive, negative, or neutral, and may be assessed and referred based on this. For example, rumors with negative sentiment might be a criterion for being classified as High risk.
- **Type of misinformation:** Categories such as “false claim”, “conspiracy theory”, or “hoax” can be helpful depending on the rumor tracking objectives and can help to structure referral activities where different groups can look deeper into different types of misinformation.
- **Source:** Rumors can be categorized by the source from which they originated, such as news websites or feedback channels, and in some cases can be useful for identifying the spreaders of misinformation and referring/responding appropriately. For example, rumors originating from feedback channels might be judged to be higher risk, as they would indicate that the rumor has already reached the groups of interest to the program, where that is not certain with news media.
- **Target audience:** The target audience of a rumor is not necessarily the subject of a rumor, rather it is who the rumor is intended for, the audience within which it circulates and is being passed along. This might be specific political groups, religious groups, or ethnic groups. Categorizing rumors this way can be useful for developing targeted strategies to counter misinformation campaigns, and should be analyzed in conjunction with the groups of interest identified in the rumor tracking objectives, as there may be cases where a rumor’s content is impactful, but the target audience is far removed from the groups of interest with which the program is concerned. This might in turn impact risk level.

Rumor referral workflow

Once the framework for risk categorization is established, the group will need to decide how they will be referred by the Rumor Analyst(s). An example workflow for referring rumors is found in Figure 8.

Figure 8: Example Rumor referral workflow



The initial step in referring the rumor is always to confirm if it pertains to safeguarding violations, corruption, or fraud on the part of program staff. If it does, then it should be directed to the appropriate channel based on your organization's policies and protocols. Rumor Analysts must not investigate such rumors, or refer them to the Rumor Committee. Instead, the Analyst must share all known information with the responsible teams who handle investigations into these cases (e.g. Ethics, Safeguarding).

All other rumors in the workflow can be referred to the Rumor Committee depending on risk categorization. For example, high risk rumors can directed to be shared with the Committee in a designated emergency channel on the same day as the rumor is analyzed, while medium risk rumors are shared for discussion in standard communication channels, and low risk rumors are discussed in monthly meetings. Rumors could also be referred to different technical groups in addition to the Rumor Committee, for example health-related rumors could be forwarded to the public health team and security-related rumors to the Security team as well as the Rumor Committee.

Referral channels should be designated in the workflow. Typically, phone calls or text/chat groups set up for emergency communications are best for urgent rumors that need immediate attention, emails are suitable for non-urgent rumors that require detailed explanations or documentation, and meetings are suitable for discussing complex rumors that need collaborative problem-solving or input from multiple departments.

The Interpretation and Referral Plan should specify a Committee meeting schedule and expectations, especially if Committee members regularly travel to the field or are in remote/limited bandwidth environments. For example, a monthly check-in meeting may be established to ensure the committee regularly reviews the system's functioning and checks for any trends in rumors.

Finally, expected timelines for a response and (if possible) subsequent follow-up steps should be clearly defined for each risk category. Proper documentation in a tracking database will support ongoing monitoring and accountability. If desired, the referral workflow can also specify the rumor details that should be included in the referral, such as:

- *Who shared the rumor: The reputation and influence of the individual or group sharing the rumor can impact its reach and credibility.*
- *Rumor timing: The timing of the rumor can influence its potential impact, especially if it coincides with sensitive events or situations.*
- *Where the rumor was shared: The platform or location where the rumor spreads can affect its visibility and the audience it reaches.*
- *How the rumor was shared: The method or way the rumor is disseminated can influence its credibility and the speed at which it spreads.*

2.4 Output: Completed Tab 4 of the Rumor Tracking Matrix documenting risk categorization structure and referral workflow

Phase 3: Implementation

3.1 Develop Rumor tracking system

This step puts the Rumor Tracking Plan into action, as designated Rumor Analyst team members (1) *set up data flows*, (2) *analyze and verify the data sources, and* (3) *categorize and refer rumors appropriately*.

Data flow set up

Depending on the data sources your Rumor Tracking Plan specifies, you may need to set up **new data collection tools/questions**, or simply establish the **protocols for existing data** to be safely shared.

› For **new data collection tools/questions**, consult internal technical teams for support on developing forms if needed, as different organizations and offices may have different supported data collection technologies and standard practices which should be followed. If you are seeking to insert specific questions into an existing tool, coordinate with the department managing the tool (e.g. a program team running a focus group). Some tips on establishing new data collection tools or questions:

- Questions which address the rumor topic generally and are designed to elicit unstructured/informal responses yield the most fruitful results. For example, if you can insert a question into a PDM survey to collect rumor information, it is important to ensure that questions are not directly asking participants if they have heard a specific rumor, as this can cause confusion, bias responses, and even help spark a new rumor. Inquiring about the rumor tracking topic more generally prompts participants to simply share what they know or have heard. This can then also allow you to ask follow-up questions about where they heard certain information and how it affects them and their community.
  - Avoid leading questions! Do not ask questions that suggest a particular answer.
- Data collectors (e.g. enumerators) may need to be trained on proper wording of a question to retain its meaning, especially when they may be potentially working through interpreters or in non-native languages.
- It's important to remember that, for someone enduring a crisis, simply having someone to converse with and express their concerns to can be profoundly

therapeutic or traumatic. People may be reluctant to share information about rumors, especially if they are sensitive or controversial. You might initiate the conversation with a query about 'challenges,' and as individuals grow more comfortable, they may share much more of their experiences.

- For **existing data sources**, such as accountability/feedback data, security team data, or safeguarding data, teams must ensure the data us being used only with appropriate approvals and data security measures in place. Sometimes rumors are already being identified by the responsible teams through these channels, and if so, these rumors can be categorized, verified, and analyzed for monitoring purposes. The Rumor Tracking Plan should have established who manages each source and at least some information about how it can be accessed.
  - If the source is a program feedback channel, then the Rumor Analyst will likely need to work with the channel manager to establish how they can safely access the data. For example: Will the data need to be anonymized before being shared? Can the Rumor Analyst access the original database or will a cleaned/anonymized copy of the data need to be deposited in a special storage area set up for RAAM? If the channel manager is already tracking rumors, can they share analyzed rumors and in what format?
  - If the source is a secondary external dataset, the Rumor Analyst must establish how the updated data will be downloaded. For example, does the source publish online without any access conditions, or do you need to create an account and/or establish contact with a dataset manager to access it? What are the terms and conditions set for use of the dataset, if any?

Analyze and verify data sources

Once the data flows are established, the Rumor Analyst(s) can **analyze the raw data** to identify rumors. It's important to note that analyzing raw qualitative information to identify rumors is distinct from categorizing rumors. Categorization can only be done after rumors are identified. Many rumor datasets will be relatively small, and manual analysis (e.g. reading each piece of text to find rumors) will be sufficient to identify rumors. For larger datasets there are several qualitative analysis methodologies that can be used, including:

- Thematic analysis, which focuses on identifying and interpreting patterns within data, providing a framework for understanding individual experiences and stories.
- Narrative analysis, which focuses on understanding individual experiences and stories, and is helpful for understanding different arguments and themes surrounding a topic.
- Actor maps, which aim to reveal the interconnections between individuals involved in conversations pertaining to a specific topic, helping to illustrate the relative influence among different actors, their relationships, and impacts.
- Trend analysis, which focuses on analysis of large volumes of conversational data to identify common themes and popular topics, usually including explanation of when and why the trend started, the key influencers, and its accuracy.
- Sentiment analysis, which uses natural language processing (NLP) techniques to determine whether a given piece of text expresses a positive, negative, or neutral sentiment.
- Keyword analysis, which identifies the most common words and phrases related to specific topics of interest.

Choice of methodologies will depend on the dataset and rumor tracking objective. For a discussion of different methodologies and a list of tutorials that can help you get started (including discussion of qualitative analysis technologies) please see the Rumor Analysis Tutorials list. *Note that you may not need to perform analysis if there is already a process in place to flag the rumors, for example, if the data is coming from field staff submitting rumors they have heard to a form.*

What are examples of rumors identified in reduced access contexts?

- A report was received through program feedback channels in which the individual says that they had missed the participant registration session and asks when another session will be held. However, the rumor analyst knows that the program conducts registration door-to-door by a local partner. This could be a simple misunderstanding (for example, confusion with another organization and program), but the report might lead the analyst to look for other reports in the data sources that would indicate there is misinformation about registration in program communities. Depending on the criteria established in the Interpretation and Referral Plan, the rumor analyst may decide to consider this a rumor and refer it to the Committee for further interpretation.
- Reports collected from program officers in the field during registration indicate that a significant number of participants are refusing to register because they believe their information is shared with third parties. Due to restricted access, the program officers had to leave the communities before they could ask more about the participant concerns or suspected third parties. The rumor analyst could consult another data source such as the feedback channels to see if there are any complaints about data privacy, requests to withdraw consent for data collection, or other reports that would give more detail about who is sharing the rumor, where and how they heard it, etc. before categorizing and referring the rumor to the Committee.
- Regular scanning of a social media platform used by young people in the communities of interest picks up several posts about specific program team members with allegations about the salaries they are paid, which accuse the organization of stealing funds allocated for their communities. Depending on the organization's policies relating to Fraud and Corruption, the rumor analyst would likely first check the other data sources for any information that might relate to these posts, before referring the rumor to the responsible Ethics (or equivalent) team.

Verification involves using sources identified in the Rumor Tracking Plan to confirm (where possible) details included in the raw data source, especially which are included in any identified rumors. Verification sources typically include secondary data sources and/or key stakeholders and contacts in the field.

- For example, if you are using a program feedback channel as your primary data source for identifying rumors related to a fairness in aid distribution, and the feedback includes several mentions of disturbances at a program distribution site, you could call program staff to confirm whether any distribution or disturbances took place, or call a trusted contact who lives in the distribution location but is not a member of the program team.
- It is sometimes possible to use verification sources to assess the rumor's impact or to help you assess whether it is true or false. For example, you could ask your local contact if communities are talking about the reasons behind the disturbances, how they have been affecting program participants, or use another source (e.g. PDM surveys) to try to identify if anything has changed with the satisfaction of service delivery. However, using verification to determine rumor impact or veracity is not always possible.

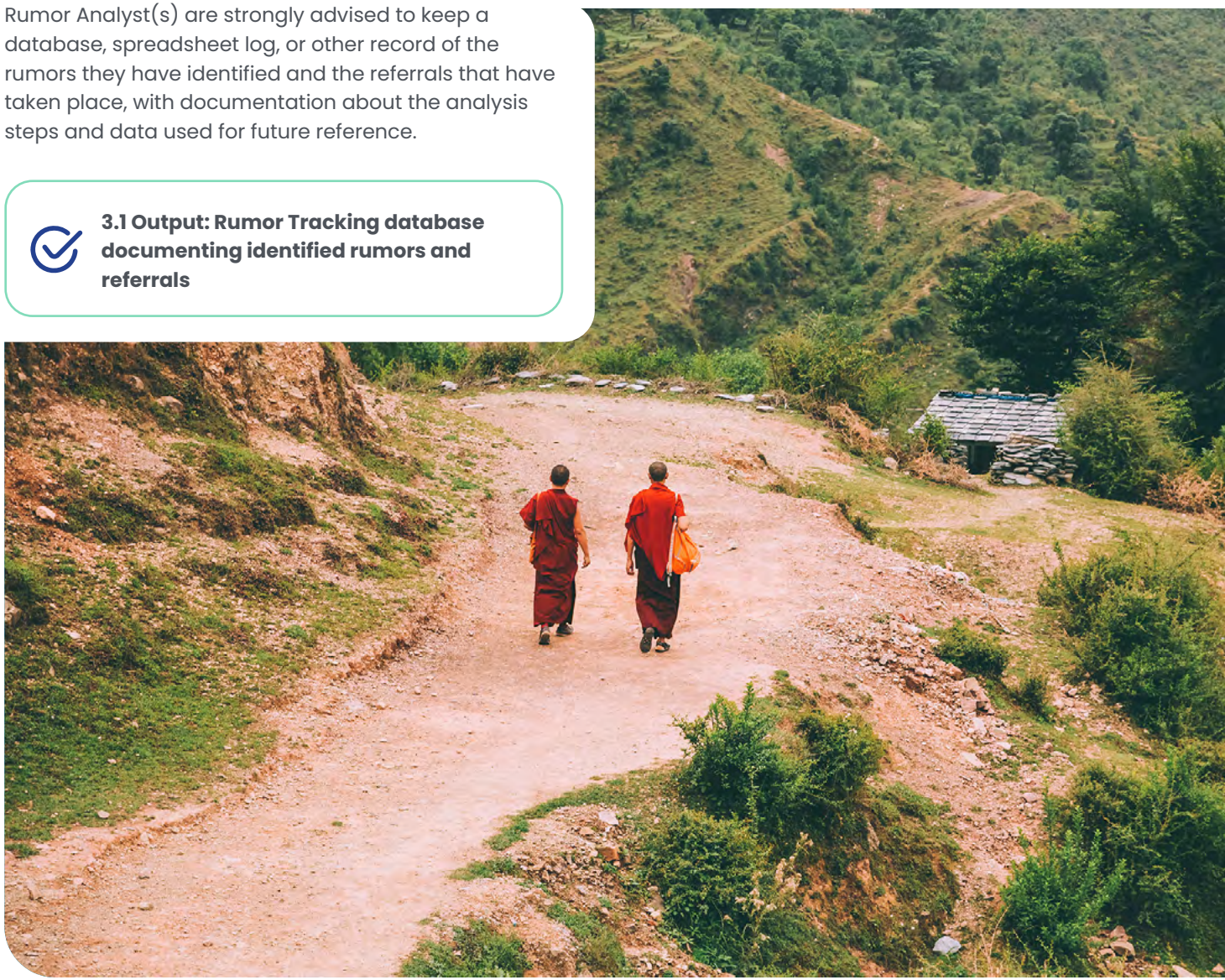
Rumor categorization and referral

Once the data sources are analyzed and verified, any identified rumors can be categorized and referred according to the criteria and workflow laid out in step 2.4. It is important to note that the Rumor Analyst(s) may still have many unanswered questions about the truth of the rumor, actors driving its spread, potential impact, and more, but crucially, **you do not need to have complete information on the rumor in order to refer it**. The Referral Plan may have described information you should include in the referral (if available), but it is better to refer a rumor with incomplete details in a timely manner than delay for so long while trying to confirm details that the window for action passes.

Reminder that any rumor which suggests a potential safeguarding, fraud, or corruption concern relating to program activities should be referred immediately to responsible departments in your organization – check your organization's policies for definitions and appropriate actions!

Rumor Analyst(s) are strongly advised to keep a database, spreadsheet log, or other record of the rumors they have identified and the referrals that have taken place, with documentation about the analysis steps and data used for future reference.

3.1 Output: Rumor Tracking database documenting identified rumors and referrals



3.2 Interpret findings and report

The Rumor Committee designated in the Rumor Tracking Plan is responsible for receiving appropriate referrals from the Rumor Analyst(s) and then interpreting, discussing, and (if necessary) formulating recommended responses in a timely manner. It is essential to follow the agreed-upon plan for rumor interpretation and referral (see Step 2.4). This ensures a consistent and coordinated response to rumors and ability to track trends in rumors over time.

The Rumor Committee's purpose is to ensure a rumor is discussed from different perspectives, additional information is sought out, different responses are considered, and decision-makers receive an actionable description of the problem and a recommended response. To ensure this function is performed well in a reduced access context, consider the following:

- Establish a regular Committee meeting but ensure that the Committee members understand they may need to meet on an emergency basis to discuss and respond to identified high-risk rumors. Ensure that a mechanism to convene emergency meetings is set up.
- Ensure the Committee reviews and comments on the verification steps taken in the original analysis, and if necessary, performs additional validation work to be confident in the information. Given difficulties with information accuracy in a reduced access context, the Committee plays a crucial role in debating the reliability of the information used, how big the impact could be, and how to respond.
- Ensure a communications channel is set up with relevant departments and stakeholders (especially those who participated in the workshop) who have detailed field knowledge, and can be consulted for input on a rumor's anticipated impact, reasons the rumor is spreading, etc.
- Provide the Committee with an updated list of potential channels that could be used for responding to a rumor, and ensure that they understand the trade-offs with each one.

Once the Committee has completed discussions, a description of the Committee's findings and recommended response(s) can be shared with the decision-maker(s) identified in the Rumor Tracking Plan. If there is disagreement among the committee members – as may happen in a context where it is not always possible to fully verify a rumor – this should be summarized in the report made to decision-makers. If no response is recommended, this should also be documented in the report.

Structuring interpretation of rumors within a data triangulation framework can help to check information produced through rumor tracking against information gathered from other RAAM methods and techniques, enabling a more thorough assessment of the veracity and impact of the rumor.

Depending on the context and the volume of rumors, reporting to decision-makers can be done via regular emails or written documents, or more systematically through a dashboard that shows overall trends and key metrics in the rumor tracking effort. See the RAAM Information Dissemination Guidance for more on conducting effective information dissemination in a reduced access context.

3.2 Output: Regular interpretation of Rumor Tracking findings, with documented referrals and action decisions as relevant.

3.3 (If relevant) Iterate the Rumor Tracking system

Iteration and improvement to analysis is more likely to occur if it is planned! After addressing a rumor, monitor the response and evaluate the impact of your communication. Assess whether the rumor has been effectively verified and whether further action is needed to address any lingering misinformation. Work to modify, adapt, and improve your approach if relevant based on findings. The Rumor Tracking Plan should have identified people who will be responsible for gathering observations on the system's effectiveness and areas for improvement. Iterations should be designed to make the rumor tracking more strategic, timely, and capable of minimizing the negative impact of the rumor on the community and humanitarian efforts.

It's important to note that the Implementation steps will not always be followed in a linear manner, and can be repeated depending on needs and frequency of data availability. Once feedback is incorporated into the Rumor Tracking Plan, the Implementation phase repeats. **This constitutes the functional use of Rumor Tracking for RAAM.**

3.3 Output: Revisions to the RT Plan in Tab 3 of the Matrix

Rumor Tracking Tools

Phase 1: Preparation

Define stakeholders

RAAM Workshop Facilitators' Guide

RAAM case studies

Conduct a context check

RAAM Workshop Facilitators' Guide

RAAM case studies

Organise workshop/ planning event

RAAM Workshop Facilitators' Guide

RAAM template workshop slides

RAAM template workshop agenda

Phase 2: Workshopping

Set rumor tracking objectives

Tab 1 of Rumor Tracking Matrix

Identify and assess data sources

Tab 2 of Rumor Tracking Matrix

Develop Rumor Tracking Plan

Tab 3 of Rumor Tracking Matrix

RAAM Roles and Responsibilities tool

Develop Rumor Interpretation & Referral Plan

Tab 4 of Rumor Tracking Matrix

RAAM Roles and Responsibilities tool

Phase 3: Implementation

Develop rumor tracking system

Qualitative Analysis for Rumor Tracking Tutorials

Interpret findings and report

Information Dissemination Guidance

Annexes

Annex 1: Example list of contextual factors

Political	
Example of contextual factor	*Examples of observed event*
Elections or anticipated changes in government structures	- Violence around the election day - Restricted movements on election day - Internet and social media being shut down around the election day
Political tensions, unrest, or instability	- Violence between political parties, tribes, and/or population groups
Restrictions or limitations on freedoms (of press, citizens, migrants, or minorities)	- Restrictions on use of internet, social media - Restrictions of information shared in local media channels
Capacity and willingness of relevant authorities to meet the basic needs of the population – including migrants from neighboring countries - without discrimination	- Restricted access to essential services (water collections points, health clinics etc.) for specific population groups
Authorities' attitudes about, or openness to, civil society and UN and NGO support or presence	- Violence against aid workers - Authorities blocking programs from being implemented - Authorities spreading rumors about NGO programs.
Economic	
Examples of factors to consider	**Examples of observed effect**
Cost of living and inflation or supply chain issues related to food and basic needs	- Surge in price of essential goods
Restrictive government legislation such as export and import bans	- Surge in price of essential goods

Social	
Examples of factors to consider	*Examples of observed effect*
Migration patterns	- Large influx of refugees or internal displaced populations (IDPs) - Large migration of people out of program area
Tensions between host communities, IDPs, and/or refugee populations	- Violence between population groups - Population groups denied access to essential services.
Gender Based Violence	- Violence against women in specific locations restricting their movements.
Unemployment	- Areas with high unemployment rates
Vulnerable population groups	- Areas with large IDP or refugees (e.g., IDP or refugee camps) - Low-income housing areas (e.g., slum)
Harmful cultural practices	- Restricted movement of girls/women during menstruation. - Early child marriage preventing girls from attending school. - Favorizing of male to receive sufficient food supplies.
Legal	
Examples of factors to consider	*Examples of observed effect*
How the courts influence employment laws, health and safety regulations, and discrimination laws	- Enforcements of laws of legislations preventing specific population groups from accessing essential services - Laws preventing marginalized population groups from moving freely
Civil society and NGO regulation and any key relevant bureaucratic or administrative impediments to access	- Regulations preventing NGOs from operating and serving marginalized population groups

Armed Conflict	
Examples of factors to consider	*Examples of observed effect*
Presence of non-state armed groups	- Armed conflict between non-state armed groups and the government military - Kidnapping and forced employment - Violent checkpoints
On going armed conflict	- Armed attacks on civil population - Cross fire - Mines and un-exploded objects - Shelling
Environmental	
Examples of factors to consider	*Examples of observed effect*
Observed and/or projected climate shocks and stresses	- Changing weather patterns - Heavy rain - flooding
Significant changes in land or water resources or seasonal variations	- Drought - Landslide
Pollution and other forms of environmental degradation that impact the population (and food security, water security, etc.)	
Public health	
Examples of factors to consider	*Examples of observed effect*
Pandemics	- COVID-19 outbreaks - EBOLA outbreak
Epidemics	- Cholera outbreak - Measles outbreak - HIV/AIDS outbreak
Access to health facilities and medical treatment	- Denial of access and treatment of marginalized population groups - Attacks targeting health facilities

Annex 2: Scoring Contextual Factors by Impact vs Likelihood

The following scoring rubric is suggested for prioritizing contextual factors.

Impact	Likelihood
Negligible (Score: 1) **Minor additional humanitarian impact.** Implementation of the program can proceed without any adaptations needed	**Very unlikely (Score: 1)** A very minor chance of an event occurring in the current year (0-5%). For example, seasonal hazards that happened no more than once in the last twenty years.
Minor (Score: 2) **Minor additional humanitarian impact.** Implementation of the program can proceed with minor operational adjustment (e.g., adjustment of deadlines, training venue)	**Unlikely (Score: 2)** The event has a low chance of occurring in the current year (5-15%). For example, seasonal hazards that happened up to three times in the last twenty years.
Moderate (Score: 3) **Moderate additional humanitarian impact.** Program implementation requires 50% of indicators/activities to be adjusted to be able to proceed.	**Moderately likely (Score: 3)** The event has a viable chance of occurring in the current year (15-30%). For example, seasonal hazards that happened two or three times in the last ten years, or once or twice in the last five years.
Severe (Score: 4) **Substantive additional humanitarian impact.** Program implementation requires 50% of indicators/activities to be adjusted to be able to proceed.	**Likely (Score: 4)** The event has a notable chance of occurring in the current year (30-50%). For example, seasonal hazards that happen every second or third year, or happened twice in the last five years.
Critical (Score: 5) **Massive additional humanitarian impact.** Program implementation requires more than 50% of indicators/activities to be adjusted to be able to proceed. The program implementation should be considered as put on hold.	**Very Likely (5)** The event has a very high chance of occurring (over 50%). For example, seasonal hazards having happened three or more times in the last five years, or five or more times in the last ten years.

Annex 3: Examples of updates to contextual factors and vulnerabilities

When considering how often the contextual factors relevant to the program you are monitoring should be updated, the following events may be considered as a trigger for when the contextual factors you are monitoring should be updated.

- ✓ ***Seasonal event out of the ordinary*** – *e.g., heavy rain at unusual time of the year or unexpected delay of rainy reason*
- ✓ ***Natural hazards*** – *As natural hazards are difficult to predict they may not have been included in the initial risks analysis. Natural hazards such as earthquakes would be expected to have a major impact on the vulnerability profile of all population groups but especially vulnerable population groups.*
- ✓ ***Change of local or national government*** – *a change of local or national government may come with a change of the legal environment that could be either beneficial or harmful for specific population groups.*
- ✓ ***Change in dynamics of armed conflict*** – *changes in dynamics of an armed conflict may lead to a different risk and vulnerability environment that needs to be assessed to identify potential new hazards that could affect the program that is being monitored*
- ✓ ***Major changes in public health*** – *this should only include major interruptions of the public health, which could change the vulnerability profile of people. A good example of this is the Covid-19 outbreak in early 2020, which drastically changed risk and vulnerability profiles of people and had major implications on implemented programs.*
- ✓ ***Time since fist risk analysis*** – *regardless of any of the events listed above happening, it is highly recommended to update the risk analysis on an ongoing basis as the risk environment and context are always changing and some changes may not be visible until a comprehensive analysis has been conducted. Depending on the context and type of program being monitored, the risk analysis may be required to be updated as often as every second month but could also be every 6 months. Regardless, how often to update the risk analysis should be agreed upon from the beginning of the project.*

The following questions may be considered when updating the contextual factors relevant to the program you are monitoring, the scoring of your event and identification of pre-existing vulnerabilities.

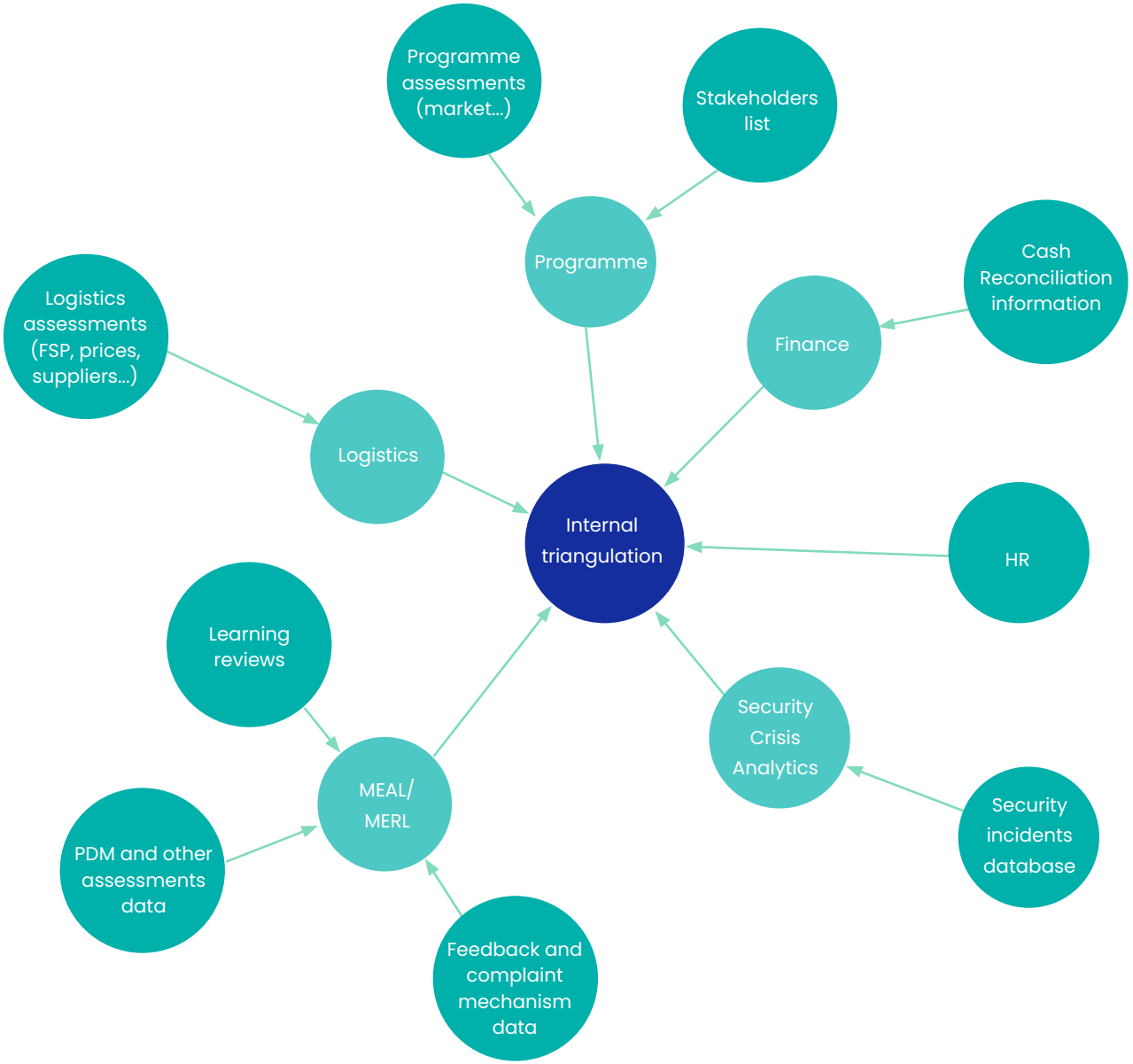
Identification of pre-existing vulnerabilities

- *Have pre-existing vulnerabilities changed since the last risk analysis from a theoretical perspective? If yes, do you need to include new vulnerability indicators to your map?*
- *Have any of the already identified vulnerability indicators changed?*
- *Has the availability of data for your vulnerability indicators changed?*
- *Have pre-existing vulnerabilities changed disproportionally for vulnerable and/or marginalized population groups?*
- *Have any major movements happened since the last risk analysis and has that changed where different population groups live?*

Risk severity score:

- *Did the score of the previous events change?*
- *Did the score of the likelihood of events occurring change?*
- *What caused these changes? (the answers to this question may inform your identifications of contextual factors)*
- *Did the risk severity score change for any of the events?*
- *If the severity risk scores changed how did that change the overall priority of events to monitor?*

Annex 4: Examples of internal data sources



Annex 5: Checkbox for Iterative Triangulation

Although they are separated as steps in this guidance, **triangulation remains an iterative process**. The table below is presented to give a broader understanding of the process. If a need for specific information seems relevant to the program after it's been launched, there is still time to take it into account.

Although access is a continuum that can't be clearly delineated, three scenarios are used to show, where appropriate, the influence of access on the triangulation process.

- **Scenario 1:** Full remote access where teams can go to the field when needed.
- **Scenario 2:** Limited remote access where teams can go to the field but are often prevented from doing so.
- **Scenario 3:** No team presence is possible in the field; activities are implemented through partners.

If this step is mandatory, this symbol appears in the column.

If it is advised but can be skipped, then the symbol is mentioned.

Checkbox	Main steps	Tool to use	Estimated duration	Lead	Contributors	Scenario 1	Scenario 2	Scenario 3
Prepare the triangulation								
Identify what you need to triangulate								
☐	Collaboratively identify the information you need to take better decisions	Tab 1: Objectives & Data Sources	A few hours (which could be more depending on the number of participants)	MEL team	Program teams All departments	!	!	!
Select data sources relevant to your needs								
☐	Know your operating context!	Market Assessment tool	Depending on the market analysis, you're going to undertake. It varies between 48h to several weeks based on the tool and the scope of the assessment16	MEL team	Program teams. Security and crisis analytics. Operations department (finance, logistics, Human Resources – HR – …) MEL	!	!	!
		Stakeholder matrix	This tool is something that is conducted at the country office level (few hours may be necessary to update it)	MEL team	Program teams Security and crisis analytics Operations department (finance, logistics, HR…) Partnerships' department	👍	👍	👍

Checkbox	Main steps	Tool to use	Estimated duration	Lead	Contributors	Scenario 1	Scenario 2	Scenario 3
☐	Determine whether you'll use secondary data or collect primary data.	Tab 1: Objectives & Data Sources RAAM Toolkit	Depending on the availability of data at internal level and the number of objectives. It could take between a few hours to a day	MEL team	Program teams All departments	!	!	!
☐	Consider the use of RAAM approaches specific to a reduced access context		1–2 hours (time to consider if each approach will be relevant for the program)	MEL team	Program teams Depending on the approach (for instance with transaction analysis: finance and logistics teams should be solicited as they will have information and may support the use of this approach)	👍	!	!
Assess data source evaluability, reliability and sensitivity								
☐	Identify the data or information that will be utilized from the chosen data source	Tab 1: Objectives & Data Sources	Few hours	MEL team	Program teams All departments	!	!	!
	Assess the evaluability of each source you have identified		Few hours (time to identify for each source the type of analysis that will be conducted)	MEL team	Program and Information Management teams (if existing)	👍	👍	👍
Triangulate data								
☐	Schedule data collection (if relevant)	Forms Tab 2: Tri-angulation Plan	Depending on the data collection method and the sample	MEL team	Program teams Security and crisis analytics Operations department (finance, logistics, HR…)	!	!	!
☐	Verify and clean your quantitative data	Data cleaning sheet	1–2 day(s) for a 500-households survey	MEL team	MEL and Information Management teams (if existing)	!	!	!
☐	Code your qualitative data	Coding matrix	Almost immediate if you have used a table to report the an-swers of your respondent.	MEL team		!	!	!

Checkbox	Main steps	Tool to use	Estimated duration	Lead	Contributors	Scenario 1	Scenario 2	Scenario 3
Interpret and take informed decisions based on results								
Triangulate results or findings already produced								
☐	Compare your results with the original source	Trian-gulation Database Template	Almost immediate	MEL team	Program team	!	!	!
Analyse raw data for in-depth triangulation								
☐	Filter your raw data with a coding matrix	Coding matrix	Depending on the number of sources to triangulate it could take 1 to 5 days.	MEL team	Depending on the findings (for instance, logistics may support you in understanding the lack of ac-cess in a specific area)	!	!	!
☐	Increase the depth of your analysis							
☐	Ensure the validity of your result							

Annex 6: CVA delivery mechanisms

Category	Description	Possible provider
Direct cash payment	Cash handed out directly to recipients by the implementing organization	Implementing organization/ partner
Delivery through an agent/ Over the counter (OTC)	Cash delivered to recipients through a formal or informal institution that acts as an intermediary. Does not require recipients to hold an account.	Money transfer agents, post offices, traders, microfinance institutions, banks.
Pre-paid card	Plastic card usable at cash machines (automated teller machines or ATMs), used for cash grants and vouchers. Can be swiped at point-of-sale devices. Always requires network connection for transaction authentication.	Banks, nonbank financial service providers, microfinance institutions, post office.
Smart card	Plastic card with a chip, valid with point-of-sale devices and ATMs, used for cash grants and store purchases. Can provide offline transaction authentication when network connectivity is off.	Banks, nonbank financial service providers, post office
Mobile money	Encrypted code that can be cashed at various retail or other outlets, used for cash grants and vouchers. Requires mobile network connection for transaction completion.	Mobile network operator (MNO), Banks
Bank account	Personal bank accounts or sub-bank accounts that are used to deposit cash grants. Requires recipients to have formal identification (ID) documents and often formal residence status.	Banks
QR and Bar code Voucher	QR codes and barcodes are both types of data matrixes used in automated identification and data capture systems, they function differently and store information in clear way. These technologies are frequently used for vouchers redeeming purchased items, both systems provide advantages for shops, vendors, and users, to improve the purchasing and transactional experience.	Software Company

Annex 7: TA Objectives with example analysis and decisions

Each objective can be actioned in different ways, and the analysis type and decisions made will be affected. These examples are not comprehensive, but provide a starting point for brainstorming, and have associated exercises in the RAAM toolkit to support capacity development. Consult the spreadsheet.

1. Distance to access assistance

Map the GPS point of the transaction

By utilizing GPS mapping of transaction points, you can assess the frequency of transactions and detect market dysfunctionality. Additionally, analyzing the distance between participants' residences and transaction locations enables you to identify those who regularly travel long distances for their purchases.

Distance is very much context specific (urban/rural settings, depending on the country). In some situations, there is no vendor in the immediate vicinity of the participants, and it may be necessary to reconsider the modality. Distance can tell you about your supplier base such as where the supplier or the place you can use the received voucher is located. If participants regularly and consistently choose to go to a vendor who is not the nearest, you should find out why.

Create a scatter plot that illustrates the time and day of transactions

This visual representation will provide insights into the operating hours of markets/vendors in the area. By examining the time data, you can determine the days the markets are open and compare with the information you've collected in the design phase. Do you consider the operating hours to be satisfactory based on your program objectives? Ensure the coherence of this information in the contractual agreements.

You will then need to confirm if the distance is acceptable with external data sources and triangulate your findings with:

- Post Distribution Monitoring (PDM) data (on distance to the sale points, on market accessibility)
- Organizing interviews with suppliers and participants
- Checking feedback and complaint mechanism channels

Potential actions to take

- If your supplier base is insufficient, expand it to reduce the distance participants have to travel. The Sphere manual defines the appropriate distance between homes and markets as less than 5 kilometers. (Sphere, "The Sphere Handbook on Humanitarian Standards," 2018)
- If there is an apparent sufficient network of suppliers, investigate with participants why they are not using the nearest vendor. Organise group discussions if you have access to the beneficiaries or at a distance via telephone interviews.
- If the participants regularly travel through certain routes and take this as an opportunity to redeem their vouchers, you may consider increasing the number of traders along the route.
- Traders may face difficulties to serve some participants, leading them to have to travel further. In this case, identify with the traders how you can support them and/or strengthen their capacity.
- Some traders may also behave inappropriately, hence why participants don't use their services. Based on feedback, don't hesitate to terminate collaborations with suppliers engaged in fraudulent activities or misappropriation of resources.

2. Breakdown of supplier sales

Examine the financial volume processed with each supplier

Look at a specific period and ensure you are using the correct currency to be able to draw comparisons (if different currencies are used, convert them using the exchange rate of the day of the transaction). Generate bar charts using the above information to identify any prominent vendor(s) that stand out (e.g. one vendor has more than business than 30% of the other vendors). If that is the case, investigate further the rationale of this imbalance.

If a supplier strongly dominates the market, triangulate this result with:

- Interviews with suppliers and participants
- Market assessment/monitoring data from your organization
- Feedback and complaint mechanism channels

You can ask questions to vendors as part of your market monitoring to understand the results of the monitoring of the vendor's performance monitoring.

Potential action to take

There will not always be a need to take corrective measures as disparities in transaction volume may result from vendor size or accessibility. Consider incorporating new suppliers to foster increased competition among suppliers and prevent the formation of market power situations such as oligopolies or monopolies. Based on feedback, if any fraud or misappropriation it should be reported make sure to follow your organization's Safeguarding and Fraud policies.

3. Participants' access to market

Create a scatter plot that illustrates the time and day of transactions

This analysis allows you to understand shopping patterns and serves as a proxy for market accessibility. Take into account that changes in access can be the result of seasonality or a change in the security context that may reduce market access temporarily or permanently. To analyze market access in more detail, break it down based on individual vendors and the demographics of participants, such as gender, age, or location. Look for any unfamiliar patterns in the data. If certain groups, defined by gender, age, or locality, have different access hours or days, they could meet unique barriers to accessing the market.

Create a diagram illustrating the number of transactions per day and per vendor

If it seems some participants may not access the market, try to confirm the information by triangulating your findings with:

- Interviews with suppliers and participants
- Market assessment/monitoring data from your organization
- Feedback and complaint mechanism channel

Potential action to take

If some participants do not access the market, investigate the reason(s) and find a solution to restore access. If no solution is found, consider changing the modality and revert to in-kind for this group. Be mindful that such changes may require permission from the donor and renegotiation of contracts.

4. Price variation

Price monitoring is a foundation to any market monitoring as prices are symptoms of market functionality, or lack thereof. For more on how to set up and interpret price monitoring, refer to the MARKit guide.

Analyze the price change for each item

Compare the trends with those in other locations and periods. Compare the price evolution across vendors to determine if they follow similar patterns. It's not necessarily needed to compare each item, especially if the variety is huge - focus can be just on those items that a) more expensive, b) most frequently bought, and/or c) have higher seasonal variations.

Any price changes can significantly impact participants' purchasing power, either positively or negatively. Examining prices also serves as a proxy for assessing market integration. Price variations may indicate potential issues within the market's supply chains that require attention. Additionally, it can help detect collusion among vendors if prices are increasing despite no changes in demand and supply. In the event that you detect anomalies, try to triangulate the findings with:

- Interviews with suppliers and participants
- Market assessment/monitoring data from your organization
- Feedback and complaints mechanisms channel
- PDM data (on availability or prices of the commodities bought)
- FAO World Food Price Index: http://www.fao.org/worldfoodsituation/foodpricesindex/en/
- REACH Initiatives: https://www.reachresourcecentre.info/theme/cash/
- World Food Program: http://foodprices.vam.wfp.org

Potential action to take

Carefully evaluate the severity and duration of the price change and its impact on both participants and non-participants. Consider the risk of exacerbating the price change by continuing the intervention. Based on the level of adjustment required, consider the following actions:

- Share the findings and recommendations with the broader humanitarian/CVA community, incorporating them into lessons learned and new proposals or project designs.
- Modify the quantity, frequency, or choice of commodities distributed.
- Adjust the modality or make significant changes to the quantity distributed.

Keep in mind that implementing such changes may necessitate obtaining permission from the donor and renegotiating contracts. To minimize disruptions, begin with low-impact adjustments and gradually introduce more substantial changes.

5. Availability of basic commodities

Analyze the number of transactions for a specific item within a given timeframe

Use the data to create a choropleth map. A choropleth map is a thematic map in which areas or regions are shaded or patterned in different colours or patterns to represent the distribution or variation of a specific geographic variable or data set, and multiple tools and references are available online to create one. Variations between regions are possible due to cultural preferences and pricing factors, so it's essential to examine data over a given period to identify potential differences. In addition, track the evolution of the item using a simple diagram. Although not a perfect approximation, examining the list of products sold by vendors provides valuable insights into goods availability. This list serves as a starting point for asking further questions of vendors and determining the availability of specific items.

As indicated, the evolution of an item is not sufficient to confirm the unavailability of the basic products. Triangulate with:

- Interviews with suppliers and participants
- Market assessment/monitoring data from your organization
- Feedback and complaints mechanisms channel
- PDM data (on availability or prices of the commodities bought)
- FAO Global Information and Early Warning System GIEWS: http://www.fao.org/giews/pricetool/
- REACH Initiatives: https://www.reachresourcecentre.info/theme/cash/
- USAID Famine Early Warning Systems Network FEWS NET: https://www.fews.net/sectors/markets-trade

6. Household consumption patterns

Keep in mind that TA will provide a partial overview of household expenditures, as they are likely to have other sources of incomes and other means to access key commodities. Additionally, the more restricted the vouchers, the more partial the information will be (e.g. a voucher restricted to food items will not provide information on the overall share of food expenditure of the HH). This part of the TA is only relevant if there is limited to no restriction to assistance.

TA can support the contribution of the effectiveness of the grant by supporting the identification of household consumption patterns. Further, the more restricted the vouchers, the more partial the information will be (e.g. a voucher restricted to food items will not provide information on the overall share of food expenditure of the HH). This part of the TA is only relevant if there is limited to no restriction to assistance.

Look at the share of expenditures per category

The analysis involves observing the expenditure items of assisted households and understanding the purchases made with the provided assistance. The level of granularity in the analysis depends on the delivery mechanism and the contract with the Finance Service Provider (FSP). Comparing the results over time (e.g. XX months after receiving assistance, with a potential baseline) or with another population is valuable. By analyzing changes in patterns, such as the percentage of expenditure allocated to food, we can gain insights into food insecurity. When a household devotes a significant portion of its resources to food, it may have to reduce spending on other essential expenses, thereby negatively affecting the well-being of its member.

Exercise caution when making comparisons as household characteristics can impact expenditure patterns. Rural households, for instance, may have limited access to goods and services, which significantly influences their spending habits. Careful selection of populations is vital for meaningful comparisons. Furthermore, rural populations rely more on local production, which isn't accounted for in the analysis of household consumption patterns. It's important to acknowledge this limitation in the available information. Additionally, consider the influence of seasonal factors on expenditure patterns. Seasonality can cause variations, and it's crucial to incorporate this aspect for accurate and meaningful comparisons.

Again, before making any conclusion, triangulate your findings with:

- Household Expenditure Assessments conducted by other organizations
- Minimum Expenditure Basket (MEB) information or data from other organizations or clusters Interviews with suppliers and participants
- PDM data (on the share of the assistance per expenditure items)
- Feedback and complaints mechanisms channel

Potential action to take

Household consumption patterns are more of an informative tool. It is hard to take a decision based on how participants are spending the assistance. However, if you have a portion of the assistance allocated for a specific purpose (such as food) combined with a multipurpose cash grant, check if households used the unrestricted assistance to purchase items from the category covered by the restricted assistance. If they did, inquire whether the amount provided is adequate. If the assistance doesn't cover the expenditure items you intended to support within your program, contemplate either restricting a portion of the assistance to a specific expenditure item or seeking another organization to cover it.