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The 72-hour Assessment Approach:

A guide for vulnerability and spatial analysis in sudden-onset disasters

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VAM Units in various WFP country offices, together with government institutions, UN agencies and other knowledge partners, have worked hard to implement 72-hour assessments and by doing so, have contributed to the development and refinement of the methods and tools, as well as produced assessment reports that constitute an important knowledge base for future reference. A list of organizations that have contributed to the 72-hour assessment approach is included in the Partnerships section.

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Photo credits

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ACRONYMS

ADAM	Automatic disaster analysis and mapping
CERF	Central Emergency Response Fund
CFSVA	Comprehensive food security and vulnerability analysis
CO	Country office
DHS	Demographic and health survey
EFSA	Emergency food security assessment
EMOP	Emergency operation
EPR	Emergency preparedness and response
EPRP	Emergency preparedness and response package
GIS	Geographic information systems
IR-EMOP	Immediate response emergency operation
ICA	Integrated context analysis
IPC	Integrated food security phase classification
IDP	Internally displaced person
IASC	Inter-Agency Standing Committee
LSMS	Living standards measurement study
MPA	Minimum preparedness action (for the EPRP)
MIRA	Multi-sector initial rapid assessment
MICS	Multiple indicator cluster survey
PRRO	Protracted relief and recovery operation
RB	Regional bureau
SDI	Spatial database infrastructure
VAM	Vulnerability analysis unit
WASH	Water, sanitation and hygiene

AN INTRODUCTION

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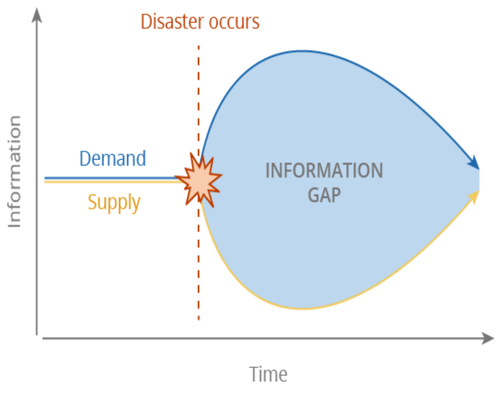
Why this manual?

In the past, WFP's emergency assessments have often not provided information quickly enough in a sudden-onset disaster to be useful for guiding immediate relief activities. Instead, WFP´s assessments have been released weeks after the disaster. Meanwhile, WFP and other humanitarian actors on the ground must make immediate decisions on how much assistance to provide and where. The delays have typically been due to a long sequence of time-consuming activities associated with traditional assessments, including, for example, attempting to travel and gain access to the worst affected areas, designing and agreeing on assessment methods and tools, training and deploying assessment teams, and coordinating between various humanitarian and government agencies. All too often, by the time the traditional VAM rapid assessment is completed and the report drafted and released, its findings are already out-of-date and operational decisions will have already been taken. WFP decision-makers therefore often had to rely on their own initial estimates of priority areas and numbers of people in need of assistance.

It is essential that WFP equips itself institutionally to address this information gap and develop standard corporate guidance to ensure that its emergency assistance is based on the best available information and reaches those in need as quickly as possible. To do so, WFP needs an assessment approach that is timely, maximizes what can be done in the pre-disaster preparedness phase and instils sufficient confidence in initiating the immediate emergency response based on initial estimates and assumptions, and a process that allows these to be updated and become more precise with information from the field over time.

A new approach to rapid emergency assessments

The 72-hour assessment approach aims to provide a good enough snapshot to fill the initial information vacuum (see figure, below) in the first three days after a disaster based on the most recent available information and pre-disaster secondary data.



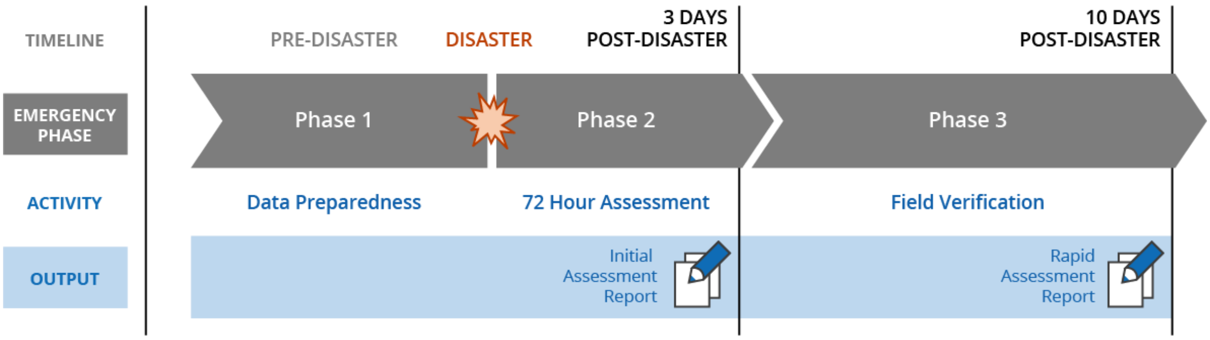
It aims to offer a solid basis to make operational decisions even in extremely challenging and complex situations with information being validated and refined through continuous updates as new data becomes available, from, for example, field visits, rapid assessments, remote sensing, mobile phone surveys, social media, and possibly more extensive emergency food security (or multi-sectoral) assessments at a later stage. The fine-tuning and updates of initial estimates are made over time and regularly communicated through sequential reports.

Objectives of the 72-hour assessment approach

The 72-hour assessment approach marks a shift in the existing approach to emergency assessments in sudden-onset disasters, not because the methods and tools themselves are particularly new, but rather because timeliness is stressed, i.e., VAM is able to fulfill its mandate to provide sufficient basic information to support WFP's emergency response operations at defined, critical time points in the programme cycle. It puts emphasis on speed and agility, by initially using information that is at hand or readily available, even when humanitarian access to the worst affected locations is constrained and information is limited or absent in the immediate aftermath of a cyclone, earthquake or flood.

By providing an immediate assessment of the disaster's likely impact and the resulting needs among the affected population – even if by no means perfect at an early stage – this initial estimation, which can be refined over time, helps to fill the post-disaster information gap when the demand for information is greatest yet its availability is severely limited. Ultimately, the objective is ensuring that WFP's management and programme unit have access to preliminary figures when they need it to ensure the timely formulation of WFP's emergency response operations. It puts the responsibility on VAM to provide this information when it is required and a means to do so in certain settings.

There are three phases to this approach, which are summarized as follows:



Phase I: Data preparedness

- A country office that is data-prepared has an organized and fully operational system for storing and sharing the country's available ready-to-map (i.e., georeferenced) data. By populating this system with up-to-date GIS layers and data on demographics, poverty, food security, nutrition and other pre-disaster information, the country office will be better prepared to conduct a 72-hour assessment.
- This and subsequent phases also rely on other areas of preparedness, including, for example, having stand-by agreements with partners, inter-agency contingency plans that have been tested in a pre-disaster simulation exercise, and other routine emergency preparedness steps that are part of the country office's emergency preparedness and response package (EPRP).

Phase II: Initial assessment

- Within 72 hours of a disaster, VAM should prepare and release an initial assessment report. The initial assessment aims to answer two questions that are critical to WFP's initial planning and response: **(1) Which are the priority areas for assistance?** and **(2) How many people need assistance?**
- To answer these questions, the initial assessment must use the best available information about the disaster's likely or known geographic impact, e.g., the storm track and wind buffers for cyclones; the epicenter, magnitude and ShakeMaps for earthquakes; the satellite imagery and local reports of the flood extent—and the corresponding estimate of the population located in or near the disaster and how many would potentially need assistance based on their vulnerability. This information should be available at as low an administrative level as possible.
- These initial estimations, even if based on pre-disaster information, likely impact and other population vulnerability assumptions, should inform WFP's immediate response. Specifically, they will be inserted into corporate emergency response documents and operational plans which require beneficiary caseload figures and must be prepared within days of the disaster.

Phase III: Field verification

- In the days after the release of the initial assessment report, VAM should continue to verify and refine the assumptions behind Phase II and adjust the estimated number of people in need of assistance and the priority areas as new data comes in.
- This verification process involves a combination of direct and indirect observation of the disaster´s impact, including, for example, from field assessment teams, phone calls to key informants in disaster-affected areas, satellite imagery, as well as secondary data. This process should start as soon as the first estimations are made, almost in parallel to the initial assessment if possible, but initiated no later than 3-4 days (and completed within 7-10 days) after the event. Assumptions and adjustments made should be openly and transparently communicated through the release of the rapid assessment report.

Opportunities and challenges

The 72-hour assessment approach has been adopted following different sudden-onset disasters, i.e., floods, earthquakes and cyclones, between 2015-2017, predominantly in countries in the Asia/Pacific and Latin America and Caribbean regions covered by WFP´s Regional Bureaus in Bangkok and Panama. This manual includes several examples from these countries to illustrate the step-by-step approach. The 72-hour assessment approach is not rigid and continues to evolve. Lessons learnt from each application of the 72-hour assessment approach to date have helped further develop the method and tools. Based on this the following opportunities and challenges have emerged.

Opportunities	Challenges
- Emphasizes VAM's readiness before a disaster, i.e., data preparedness, ready-to-use assessment methods and tools, and stand-by technical capacity and partners, which directly support a CO's EPRP. - Provides user-friendly, action-oriented outputs, i.e., priority areas, initial planning figures for beneficiary caseload, geospatial analysis and visualization in thematic maps. - Can be integrated into existing national disaster management mechanisms, including simulation exercises and contingency plans, and be linked to WFP's efforts at system strengthening and capacity development in disaster preparedness and response. - Utilizes new technologies and tools, such as mobile phones, social media, remote sensing products and geospatial data and analysis. - Leverages partnerships at the local, regional and global level with governments, humanitarian agencies, academia/research institutions and the private sector. - Can inform other types of rapid assessments that are cluster/sector-specific, e.g., shelter, WASH, health, or rapid multi-sectoral assessments, like the MIRA.	- Limited or outdated data at lower administrative levels. - Difficult to account for population movements in the immediate aftermath of a disaster. - Ability to produce sex- and age-disaggregated data and gender and generational analyses. - Consensus on what is a "good enough" assessment in the 72 hours after the disaster. - Full buy-in from CO management and programme unit and the level of confidence that is required to make operational decisions based on the 72-hour assessment approach. - Prioritizing the need to act quickly and the benefits of coordinating with other partners. - Complementarity and compatibility with the MIRA or country-specific, institutionalized rapid assessment methods and tools. - Applicability in contexts other than rapid onset disasters, e.g., conflicts, slow onset disasters. - Lack of country-specific evaluations, after-action reviews or lessons learned exercises that follow emergency operations to document the process, tools and outputs of the 72-hour assessment and determine if and to what extent it was able to provide an evidence-base to inform the delivery of humanitarian assistance.

Application in different contexts

In theory, this approach is applicable in all situations where there is a sudden event that could trigger a rapid deterioration in the well-being of the population and that demands urgent access to information and quick, yet informed decision-making. Thus, it could also be used in conflicts; however, the approach's applicability in such settings is untested to date. Conflicts, particularly those that are protracted, may not follow the timeline of sudden-onset natural disasters, although where there is sudden displacement of the population there are similarities. The core principles of the 72-hour assessment approach – the estimation of needs based on existing knowledge, available data and information and their systematic verification as/when new information becomes available – makes it, in theory, an appropriate assessment approach to use in conflict settings. Due to the nature and complexity of conflicts, the deadline for providing an insight into their impact cannot be as tight and naturally demands more time than in a sudden-onset natural disaster. Nevertheless, the use of innovative ways to utilize existing information and collect new data when access is constrained – fundamental aspects of the 72-hour assessment approach – are highly relevant for designing and implementing assessments in conflict settings.

What is innovative about the 72-hour assessment approach?

Rapid assessments are nothing new, conceptually or in practice. Two well-known resources, the 2009 WFP Emergency Food Security Assessment (EFSA) Handbook and 2015 Inter-Agency Standing Committee (IASC) Multi-Sector Initial Rapid Assessment (MIRA) Guidance, provide instructions for conducting an initial assessment within the first 72 hours after a disaster[1]. The challenge has been to follow the defined procedures to initiate and complete the initial assessment and produce the results within the stipulated time frame. All too often, three days became several weeks – or more.

To address this, the 72-hour assessment approach enables VAM to put forward initial estimates of humanitarian needs and thereby provide decision makers and programmers with a timely analytical basis on which initial operational decisions can be made at the right time. In the past, as noted above, the findings from elaborate, field-work intensive and statistically robust and representative assessments have been provided well after a disaster has struck. And, despite being rigorous assessments with well-designed reports, they have often fallen short of guiding WFP´s emergency response, providing results and conclusions too late to inform the initial decisions on which areas to prioritize, how many people need assistance and what type of assistance is needed. Essentially, the new approach provides a practical, step-by-step process for providing this information within 72 hours of the occurrence of a disaster and adjusting those estimates over time as more information becomes available and more time-intensive methods for assessing disaster impact and the food security situation become realistic to undertake.

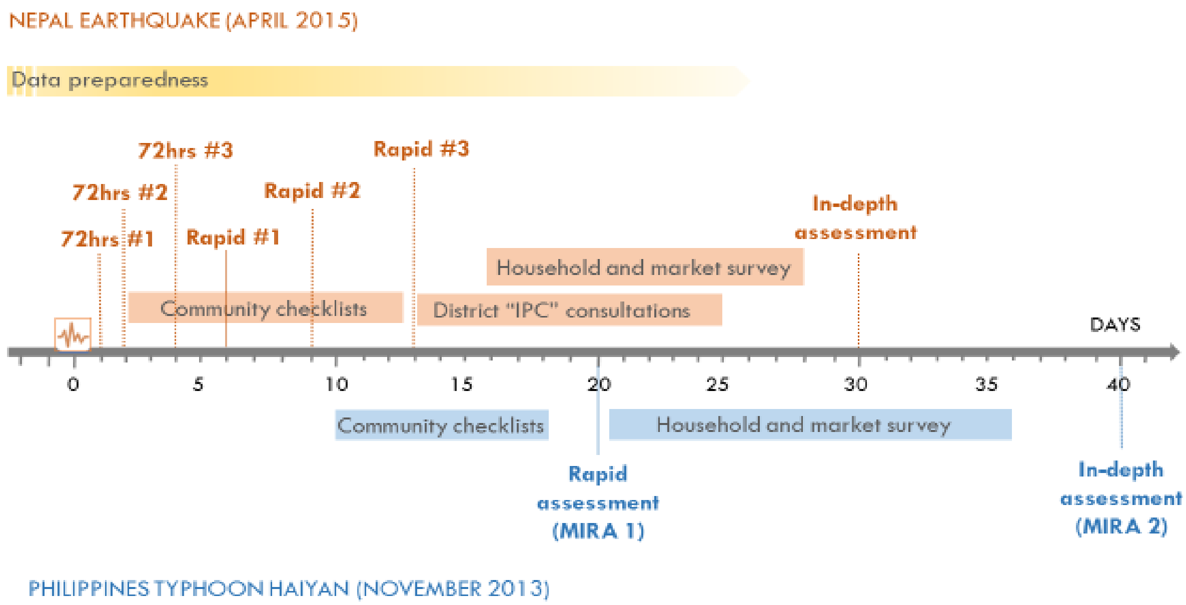
The conclusions reached at this early point in time are by default based on assumptions of the disaster´s geographic impact and the pre-disaster information on the population (i.e., demographics) and vulnerability status (see footnote below[2]) to the specific disaster. It is essential to spell those out as clearly as possible. Assumptions explain and justify initial conclusions and can later be referred to if the situation evolves differently than initially predicted. Clearly, those assumptions need to be continuously checked, validated and adjusted with time and the calculations to produce the population in need of assistance re-run accordingly. Thus, the 72-hour assessment approach does not finish after the initial three days. It is merely the first step in WFP´s established emergency

[1] A variety of resources are available, including the Operational Guidance for Coordinated Assessments in Humanitarian Crises (IASC, 2012); Humanitarian Needs Assessment – the Good Enough Guide (ACAPS, 2014), and Phased Agricultural Livelihoods Needs Assessment Framework and Tools (FAO, 2016).

[2] The 72-hour assessment uses an overall vulnerability classification model instead of a food security classification model. Food security indicators are often absent in the model due to data availability and quality. Instead, poverty, housing conditions, female headed/agriculture-based households, among other context-specific indicators are used as proxies for vulnerability.

assessment framework. Its reports are living documents that can be continuously updated.

The figure below illustrates the process and outputs of this new approach along a timeline, with an example of the 72-hour assessment in Nepal following the 2015 earthquake, and, for comparison's sake, an example of more traditional rapid assessments in the Philippines following the 2013 Haiyan typhoon. Note that in Nepal the first product - the initial assessment report - was released one day after the earthquake, followed by a series of sequential updates in the first two weeks and culminated in the release of an in-depth assessment report exactly 30 days after the earthquake and in time for the revised Flash Appeal (these reports are available in the section, **The Toolbox**). In this case, an investment in data preparedness and the government's food security monitoring system well before the disaster enabled the country office and regional bureau to immediately initiate the 72-hour assessment. By comparison, in the Philippines, the first product - the first rapid assessment report MIRA 1 - was released nearly three weeks after the typhoon and the second product - the in-depth assessment report MIRA 2 - was released more than five weeks after the typhoon.



Roles and responsibilities

In most cases[3], the country office VAM unit implements the three-phased 72-hour assessment[4] in close consultation with the programme unit and in coordination with the regional bureau VAM and EPR units and the headquarters VAM unit and the Emergency Preparedness Branch (OSEP). Although the precise roles and responsibilities will vary across country offices and regional bureaus, given the variation in staff, capacities and

[3] Where WFP does not have VAM staff in the country office, does not have a country-level presence, or when country office staff are overwhelmed during the immediate aftermath of the disaster, the regional bureau should initiate and drive the 72-hour assessment process and play a strong coordination role.

[4] In practical terms, if VAM does not determine the priority areas and produce estimates of the population in need, someone else will, which means either the Emergency Coordinator or Head of Programme, neither of whom typically have access to pre-disaster data, nor have vulnerability and spatial analysis capacities.

resources, the following table nevertheless provides general guidance. It is strongly recommended that individual country offices and regional bureaus explicitly define and document their country- and context-specific roles and responsibilities for the 72-hour assessment as part of periodic emergency preparedness and readiness processes (e.g., EPRP, UN-wide contingency planning, joint simulation exercises) and train all relevant staff (and partners where appropriate) accordingly.

The country office, regional bureau and headquarters have a shared responsibility to initiate immediate action following a disaster. Thus, depending on the circumstances, any of these can initiate the 72-hour assessment process. What is most important is that all efforts are pulled together to ensure a collaborative effort throughout the process and that the outputs of the 72-hour assessment are available in time to inform the immediate response of an emergency operation.

	CO	RB	HQ
Before the disaster (Phase 1 and other preparedness activities)			
Update the EPRP each year, with MPAs, including VAM-specific actions	✓		
Ensure sufficient level of in-country readiness for the 72-hour assessment, e.g., VAM staff (especially a GIS analyst[5]), technical capacities[6], assessment methods and tools, government buy-in, local partnerships, stand-by agreements, and resources	✓	✓	
Create, update and maintain a minimum data preparedness set	✓	✓	✓
Set up a virtual team across CO, RB and HQ in advance	✓	✓	✓
Set up regional and global partnerships		✓	✓
After the disaster (Phase 2 and 3 activities and subsequent actions)			
Coordinate with the government, OCHA, Food Security Cluster, and other partners and stakeholders to design, implement, analyze, and produce assessment reports	✓	✓	
Produce the initial rapid assessment (Phase 2) report and any updates	✓	✓	
Mobilize additional technical support, e.g., GIS, remote sensing, assessments		✓	✓
Validate initial estimates and assumptions following the disaster	✓	✓	
Produce the rapid assessment (Phase 3) report and any updates	✓	✓	
Circulate initial and rapid assessment reports via WFP email to in-country stakeholders (internal, external)	✓		
Circulate initial and rapid assessment reports via WFP email, VAM Shop, and other channels (e.g., ReliefWeb) to regional and global stakeholders (internal, external)		✓	✓
Support documentation, lessons learned, knowledge management and learning	✓	✓	✓

[5] Because the 72-hour assessment report consists of thematic maps based on georeferenced primary and secondary data, it is important to have at least one GIS specialist with strong geospatial analytical skills.

[6] This includes being able to rapidly appraise a complicated situation, coordinate with the government and partners, analyze information from different sources, and confidently communicate an initial picture of the situation. To do so, VAM staff should be well trained, have sufficient experience in data collection and assessments, have strong analytical skills and be knowledgeable about the country and its population.

A note on communication and dissemination

Throughout Phases I-III, as the situation evolves, our understanding improves, new information emerges, and the priority areas and estimates of population in need are refined, it is important to maintain a common and coherent message both internally, e.g., WFP management, programme, logistics, communications and donor/external relations, and with the government, United Nations agencies, partners, donors and other key stakeholders.

The country office should follow the checklist below to ensure adequate dissemination and visibility of 72-hour assessment reports.

1. Follow established country office protocols for review and clearance of assessment reports.
2. Share 72-hour assessment reports with all WFP staff involved in the initial response to the disaster, including all country office staff, relevant sub-office or field-office staff, any staff on temporary duty assignment (TDY), and regional bureau and headquarters focal points for the emergency response. Additional channels to disseminate the reports at the national level include the United Nations Resident Coordinators Office, OCHA, and cluster leads.
3. Include a link to the 72-hour assessment report in the emergency updates/sitreps and post it on the relevant cluster websites or any dedicated sites related to the emergency.
4. Request headquarters VAM to post 72-hour assessment reports on WFP websites. This will provide the country office and regional bureau with a single URL that can be disseminated to partners, donors and other humanitarian actors. This can be mirrored on ReliefWeb.
5. Request headquarters VAM to send out the 72-hour assessment report over email. The country office will need to provide the email list of the people and organizations, e.g., donors, partners, wider humanitarian community, who should receive this and update this list regularly. Note: when the report is shared via email, it is strongly recommended to clearly indicate the following information in the message to avoid confusion and ensure easy reference: (1) the report version number, e.g., version 1, (2) potential use of the information, and (3) any caveats which apply, e.g., the figures are tentative/to be verified.
6. Request headquarters VAM and regional bureau communications unit to share 72-hour assessment reports over social media, either by the VAM account or by the relevant regional bureau WFP account.

Partnerships

Partnerships with national and local government entities responsible for disaster management, UN agencies, I/NGOs, Red Cross Red Crescent national chapters, universities, research institutions, and private sector organizations are critical throughout the 72-hour assessment process. Areas of collaboration and capacity strengthening can include data preparedness, post-disaster data compilation, rapid assessment methods and tools, joint field verification, advanced technology and tools (remote sensing, GIS, and mobile phone call detail records), advocacy/communication and production of outputs. These partnerships can be put in place at the country, regional and global level, and can be instrumental in ensuring a timely response and buy-in, minimizing contradictions in the conclusions, identifying and using new methods and tools, and sharing experiences and learning from each other to conceptualize and conduct rapid emergency assessments in new ways.

Many of the examples of 72-hour assessments conducted to date (2015-2017) and featured in this document were a result of successful collaborations with a number of diverse entities, including national governments, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), MapAction, the Global Food Security Cluster, ACAPS, Pacific Disaster Center (PDC), the NASA and USAID SERVIR initiative, the International Centre for Integrated Mountain Development (ICIMOD), and the National Disaster Reduction Center of China (NDRCC).

The overarching objective should be to ensure that following a disaster, WFP, national governments and humanitarian actors systematically collect comparable data across impacted areas, through a coordinated (but fast) process, that guides the immediate emergency response. Nevertheless, there is often a trade-off between the need for coordination and collaboration and the pressure to get information and act quickly. The best approach will depend on the specific country context and will be depend in large part on the preparedness steps taken (see below) before a disaster occurs.

Preparedness

The WFP Programme Guidance Manual defines emergency preparedness as “Actions, arrangements and procedures in anticipation of an emergency to ensure that the response, when needed, be rapid, appropriate and effective.” Thus, COs are required to ensure a minimum level of overall preparedness. WFP´s emergency preparedness and response package (EPRP) provides a list of minimum preparedness actions (MPA) tailored to different functional units. For VAM, these include having updated geospatial and statistical datasets in a data storage system, pre-produced maps of key baseline indicators, seasonal and hazard calendars, stand-by agreements with partners, a roster of service providers (e.g., local NGOs or research institutes for data collection, call centers for mVAM), rapid assessment questionnaires, and trained WFP and partner staff. All of these are important to ensure an adequate level of preparedness to conduct the three phases of the 72-hour assessment approach.

Given the importance of partnerships, there are several joint preparedness actions with the government and other humanitarian actors that should be a prioritized and coordinated with the programme, logistics and/or EPR units, depending on the CO structure. Top among these is engaging in joint contingency planning and disaster simulation exercises to ensure a sufficient and common level of assessment preparedness across government organizations, UN agencies and other humanitarian actors at the national and sub-national level. WFP must be aware of how the 72-hour assessment approach can link to and support existing national disaster assessment processes and the humanitarian community's agreed inter-agency assessment approaches (e.g., MIRA). This includes identifying the existing post-disaster assessment coordination mechanisms and key stakeholders and initiating discussions on how WFP's 72-hour assessment approach can contribute to the information flow, its added-value (i.e., integrating various stakeholders' data and providing a more comprehensive disaster impact estimate) and areas of collaboration and technical support.

For each phase of the 72-hour assessment approach, specific preparedness actions are strongly recommended. For example, for data preparedness (Phase I) and the initial assessment (Phase II), this includes compiling and maintaining common, up-to-date datasets, establishing and maintaining a georeferenced data storage system, ensuring that the VAM unit has the staff and technical capacities to implement the 72-hour assessment approach, agreeing on the methods to produce the initial assessment results, and designing an initial assessment report template. These are described in more detail in the following section, **A Step-by-Step Guide**.

How field verification (Phase III) will be done should be planned and agreed in advance and well before a disaster. Thus, it is strongly recommended that WFP and stakeholders develop a joint field verification strategy which considers likely disaster scenarios and for each one identify feasible options for field verification. This should primarily determine what methods and tools will be used to verify the initial assessment findings (see Phase II) and who will participate in the field verification process, e.g., WFP, other UN agencies, I/NGOs, the local and national chapters of the Red Cross Red Crescent movement, local and national disaster management authorities, the private sector and any other stakeholders. Additional points to consider for each disaster scenario is the expected level of destruction, the availability of transportation and communication networks after the disaster, and the field presence of WFP and partners in the areas that are most likely to be affected. This is an opportunity to have a frank discussion on availability and contribution of partners' staff, vehicles and financial resources to conduct field verifications, and where relevant, put in place stand-by partnership agreements or long-term agreements (LTA) that can be easily activated after a disaster. The output is a field verification strategy which specifies agreed roles and responsibilities and includes the rapid assessment checklists/questionnaires, options for on-the-ground and remote data collection, and the rapid assessment report template.

In summary: the success with which data preparedness (Phase I) can support the production of an initial assessment report (Phase II) and field verification can be conducted and a rapid assessment report produced (Phase III) depends largely on the level of preparedness for the 72-hour assessment approach that is put in place prior to the disaster.

A STEP-BY-STEP GUIDE

A STEP-BY-STEP GUIDE

Phase I: Data preparedness

<u>Quick facts</u>

- ✓ **Output(s):** Georeferenced datasets in a spatial database infrastructure (SDI) and/or GeoNode platform established, updated and maintained
- ✓ **Aim:** Ensure minimum level of preparedness (overall and data related) in line with the EPRP
- ✓ **Informs**: The subsequent initial assessment (Phase II) and field validation (Phase III)
- ✓ **Data collection**: Secondary
- ✓ **Responsible**: CO and RB VAM for establishing and maintaining sufficient level of data preparedness at the country level; HQ OSEP for overall standardization and GIS capacity
- ✓ **Tip:** Support the CO to update the MPAs in the EPRP as part of data preparedness; Consult with RB VAM and HQ OSEP on the most appropriate data storage system

Data preparedness is recognized by the humanitarian community as a key step in overall emergency preparedness. The success of the 72-hour assessment approach largely depends on the level of data preparedness that is put in place prior to a disaster. VAM staff in data-prepared countries avoid the time-consuming tasks associated with collecting, cleaning and formatting the data for analysis and are better equipped to produce an initial assessment report (Phase II) in the first days after a sudden-onset disaster. In general, country offices can be categorized into one of three levels: minimally data-prepared, moderately data-prepared and fully data-prepared. A country office's level of data-preparedness depends largely on two factors: quantity and quality of available datasets and the type of data storage system. The following section describes these factors. A checklist at the end of this section provides suggestions on how to improve data preparedness.

Quantity and quality of available datasets

To become data-prepared, a country office must obtain all available georeferenced datasets potentially useful to WFP assessments and monitoring in different types of disasters. Data availability will differ between countries. Therefore, it is essential that VAM and GIS staff document what data is currently available, decide what data needs to be obtained and ensure that this data is stored and easily accessible in times of need, including checking that p-codes are usable and synced with those used by the government and other humanitarian organizations.

As a general guide, the following datasets are recommended. Any tabular data should be georeferenced and converted into a format readable by GIS software.

- Spatial and/or geographic layers, including administrative boundaries (equivalent to those used by the government and other organizations), topography, physical features, place names, roads, UNHAS routes, and other transportation infrastructure (e.g., airports, bridges, border crossings), markets and international and domestic supply chains for essential goods/commodities.
- Population and demographic data from the last population census and any projections. It is important to have sub-population estimates, such as urban/rural, IDP/refugee, and at-risk groups (e.g., people living in informal settlements that are hidden in official statistics).
- Socio-economic data from household surveys (e.g., LSMS, DHS, CFSVA, MICS) at the lowest administrative level available, including poverty, food security, nutrition, health, housing, sanitation, livelihoods, and income sources.
- Agricultural statistics (e.g., main crops, production estimates, surplus/deficit areas)
- Pre-disaster satellite imagery and remote sensing products (e.g., DEM, hillshade, slope, aspect).
- Average temperature and rainfall per month for the whole country.
- WFP's operations in the country, including past assessments, M&E information, country programme activity locations and distribution points, cooperating partners, sub-offices, warehouses, etc.
- Schools, health posts, safety net programmes, and other administrative features.

Since many of these data sources (e.g., administrative boundaries, the population census, household surveys) are updated and maintained by national governments and other organizations, the VAM and GIS staff must diligently liaise with their respective counterparts and maintain and populate the database for it to remain useful. The VAM and GIS staff should maintain and update the data catalogue (RECCE sheet) to keep track of the data acquired.

It might also be beneficial to review and verify how up-to-date and complete these datasets are as part of joint contingency planning and simulation exercises with the government and humanitarian actors, where the database can be used and tested in a mock disaster scenario. VAM and GIS staff are advised to have pre-produced administrative level one maps of key food security, nutrition and poverty indicators, as these are often the first maps requested following a disaster.

Type of data storage system

A data-prepared country office is characterized by having an organized, interconnected and useable system for storing and sharing that country's available geospatial and statistical data. Thus, a country office's data storage system is central to its level of data-preparedness. These systems range greatly in sophistication and functionality: from an unconsolidated, non-georeferenced database (minimally data-prepared) to a fully operational system containing all available national georeferenced data which are continually uploaded and synced to a spatial data infrastructure (SDI) system or to the GeoNode platform (fully data prepared).

The spatial data infrastructure (SDI) system is a distributed repository where ready-to-map information can be stored and shared across WFP: from country offices to regional bureaus to headquarters and vice versa. The aim is to synchronize data across the organization, with the SDI becoming the repository for the most up-to-date data available. GeoNode is the WFP's corporate web platform that allows offices with little or no GIS capacity to store geospatial data in a centralized system, share it with cooperating partners and easily create interactive maps.

Spatial data infrastructure (SDI)

An SDI is a holistic system for exchanging, storing and sharing spatial information. It encompasses the hardware (servers, laptops), the software (ESRI ArcGIS, QGIS), the data, and the processes by which all of these entities interact with each other. WFP is currently implementing an organization-wide spatial data infrastructure (SDI). The aim is to create a central repository of ready-to-map spatial and tabular data characterized by standardized nomenclature, common and standardized processes, and proper backup systems. The SDI will provide the platform to exchange data between all levels of the organization - from COs, to RBs, to HQ - in a streamlined, coordinated way.

Countries with SDIs in place are far better equipped for preparing the initial emergency assessment reports. The big win is that SDIs will enable synchronization of data across WFP enabling all relevant users to access them at all times. This 'one-stop-shop' for the most up-to-date data will reduce any confusion related to data validity and redundancy. Being able to access data via the SDI will also eliminate unnecessary and often problematic transfers of evolving information (e.g. through emails or USB sticks), making it easier for CO's to receive support in the event of a disaster. This system will enable country offices to receive GIS/VAM support from regional bureaus and headquarters much faster, during emergencies as well as in normal times. The implementation of the SDI-enabled server in a country office is therefore a critical step in making that country office fully data-prepared.

By the end of 2017, SDIs have been set up, i.e., servers installed and updated data synchronized and accessible by all relevant users across the CO, RBB and HQ, in five regional bureaus and thirteen country offices.

In addition to the pre-disaster baseline data stored on the SDI, the server also automatically provides updated disaster information when a disaster strikes. Country offices with an installed SDI will therefore be able to access round-the-clock disaster updates from key global sources of spatial information, e.g., earthquake ShakeMaps from the United States Geological Survey (USGS), storm information from the Global Disaster Alert and Coordination System (GDACS).

Additionally, mapping and analytical support can be provided in real-time from a virtual community of other country offices, regional bureaus and headquarters. This maximizes the working hours and expertise available to construct the initial assessment report in 72 hours.

Some challenges encountered with SDIs to date include the following: incomplete socio-economic data, lack of data at low administrative levels, different use of indicators across countries, and the difficulty in merging WFP´s SDI datasets with national SDIs or other national georeferenced data repositories. The terms of data sharing are also an important consideration where country offices have an agreement with the national government that restricts distribution or use of datasets.

The task of setting up a georeferenced database takes time and requires a GIS specialist. An SDI is usually rolled out in country offices with strong GIS capacity, which are identified in consultation with regional bureaus. Prerequisites include a server, trainings, and a person who is responsible to manage and maintain the system at country office or regional bureau level. Therefore, investments should be made to ensure sufficient GIS capacities (staff and training) are available at the country and regional level.

For more information, or to determine the feasibility of setting up an SDI in the country office, the VAM and GIS staff should contact the VAM or EPR focal points at the regional bureau and the Geospatial Support unit in the Emergency Preparedness Branch (OSEP).

GeoNode platform

While the SDI is a professional system used by GIS experts in WFP to store and update geospatial data, the GeoNode platform has been built to provide offices without GIS expertise with a solution to create their repository of geographic and tabular datasets, accessible to WFP employees and cooperating partners in case of an emergency. Easy-to-use interfaces are available in GeoNode to allow users to upload layers, Excel tables and static maps, fill in metadata for each object in order to make it easily discoverable by other users, and create standard styles. Furthermore, global datasets with logistics layers (airports, ports, UNHAS routes, supply routes, border crossing points, etc.), locations of interest for WFP (offices, warehouses, refugee camps) and disaster-related datasets (earthquakes and cyclones) are also published in GeoNode and available for download.
All processes to upload data, search for and download existing layers are fully described in a dedicated training module (link), which has been produced to let users familiarize themselves with the platform and to help country offices that cannot afford to implement a SDI to maintain in GeoNode all data required to carry out initial emergency assessments.

In fact, one of the main added values of the GeoNode platform is that, being the system centralized and maintained at HQ, no server is required at country office level. This reduces drastically the cost and effort required to maintain an official repository of GIS datasets.

On the other hand, data published in GeoNode is not directly accessible for mapping and analysis purposes, layers must be downloaded individually in order to be used by desktop software (ArcGIS, QGIS). Therefore, country offices that have sufficient GIS capacity are advised to set up their own SDI.

	MINIMALLY DATA-PREPARED	MODERATELY DATA-PREPARED	FULLY DATA-PREPARED
	CO is in a poor position to undertake a 72-hour assessment. After the disaster, VAM and GIS staff must find and geo-reference the relevant datasets.	CO is far better positioned to undertake a 72-hour assessment than one that is minimally data-prepared.	CO is in an optimal state to undertake a 72-hour assessment and able to liaise with and receive and share real-time mapping and analytical support from RB and HQ
DATASETS	WFP datasets are on file but non-WFP datasets are incomplete or out-of-date. Government agencies and other stakeholders are minimally involved in the data collection and cleaning processes.	Wide collection of WFP and non-WFP datasets are on file. Government agencies and other stakeholders are sensitized and engaged with the data collection and cleaning processes.	Complete and up-to-date WFP and non-WFP datasets, which are continually updated. Datasets are up-to-date and verified with government agencies and other stakeholders and shared online. There is a common understanding about and agreement on what numbers are to be used in the event of a disaster.
DATA STORAGE	CO has no organized or centralized storage system of geo-referenced secondary data. Processes are static in nature, built for a single purpose and reside on individuals' computers. Spatial data is isolated and at risk of not being fully utilised in disasters and are likely inaccessible for future use.	CO has an organized system for storing available spatial data (i.e., geo-database established which contains available WFP and non-WFP datasets). However, system remains localised within CO, e.g., only with the VAM or GIS staff.	All available geo-referenced data continually uploaded and synched to internal WFP channels such as the SDI (Spatial Data Infrastructure) system, and shared externally through online portals such as GeoNode and the HDX.

STEPS TO BECOME MODERATELY DATA PREPARED

- Organize all available data into a geo-referenced database.
- In the geo-database, collect and catalogue all base layers systematically.
- Geo-reference all tabular data so they are ready to use for mapping and analysis. This means collating the most up-to-date data, renaming them according to the standard nomenclature, building and saving the symbology for the datasets, and storing it in a temporary centralized system available locally (e.g., network drive) within the CO.
- Develop symbology for all layers and store in layer files.

STEPS TO BECOME FULLY DATA-PREPARED

- Install an SDI (Spatial Data Infrastructure) system or get trained on the GeoNode platform.
- If your CO does not yet have an SDI system or it's not familiar with the use of the GeoNode platform, RB and HQ can provide support and information.
- Once the SDI system and/or GeoNode platform is in place, the CO's geo-referenced datasets can be uploaded quickly to build the links and create the replicas between CO, RB and HQ.
- Time permitting, the CO should perform scheduled simulations to test for data gaps (e.g., VAM officers in flood-prone countries should perform a simulation before the rainy season).

STEPS TO STAY FULLY DATA-PREPARED

- All available geo-referenced data must continually be uploaded into the SDI system or GeoNode platform. In case the CO implements the SDI, data must be replicated and synchronized with HQ and RB.
- CO should continue to undertake scheduled simulations to test for data gaps.

Phase II: Initial assessment

Quick facts

- ✓ **Output:** Short report (3-6 pages) released 72 hours after the disaster, updated thereafter
- ✓ **Aim:** To answer how many and where based on best estimates and assumptions
- ✓ **Informs:** Operational decisions for emergency operations, funding appeals, and situation reports
- ✓ **Data collection:** Secondary
- ✓ **Responsible:** Shared CO, RB and HQ responsibility to initiate process; CO´s responsibility for implementation (with support from RB and HQ)
- ✓ **Tip:** State all data sources used and the assumptions made in the initial assessment

The 72-hour assessment approach is designed to inform the immediate, most urgent relief assistance. At that stage, in many cases, all people in the most affected areas or communities receive blanket food and non-food assistance, while in other less affected areas or communities, or where there is less vulnerability, relief assistance may be targeted. Initial conclusions on the number of beneficiaries and priority areas should be reflected in WFP´s emergency planning documents and the Flash Appeal. Only as the situation evolves and new information comes in via field assessments or other information sources can more refined programme options be put forward along WFP´s Emergency Programming Framework. As such, the report's findings are intended to directly inform the initial emergency operation for the immediate response (i.e., the period traditionally covered by an IR-EMOP document) rather than for medium- or longer-term emergency or recovery programming (i.e., the periods traditionally covered by an EMOP and PRRO document, respectively).

This section takes you through the process to conduct an initial assessment, with three scenarios (earthquake, cyclone, flood) and case studies from different countries, and how to prepare an initial assessment report within 72 hours of the sudden-onset disaster happening.

Best available information to answer two key questions: how many and where

1.1: Estimate the disaster's assumed geographic impact

To assess the likely geographic impact a severity scale has to be developed to classify each geographic area (at whichever administration level is deemed suitable) into an impact severity category, e.g., low, moderate, high and extreme impact. The choice of the scale depends on the type and magnitude of the disaster. The source of information will vary, but can be based on readily available databases and reports from national and international disaster and weather monitoring agencies, for example, the United States Geological Survey (USGS), the Joint Research Center (JRC) / Global Disaster Alert and Coordination System (GDACS), and the European Centre for Medium-Range Weather Forecasts (ECMWF).

The following section explains how to assess the assumed geographic impact for three sudden-onset disaster scenarios: earthquake, cyclone, and flood.

Earthquake scenario

Since 2015, WFP acquires information on earthquakes from global natural hazards databases and disseminates this information through the Automatic Disaster Analysis and Mapping (ADAM) system. Within 30 minutes of the earthquake, ADAM will provide subscribers with an automatic one-page dashboard showing basic information on the earthquake, e.g., time, epicentre, depth, magnitude, ShakeMap, and estimated number of people living in areas at risk. This georeferenced data is available in WFP's GIS infrastructure (see Phase I).

VAM should use the ShakeMap to estimate the assumed geographic impact for an earthquake. To determine the severity categories, load the shapefiles of the ShakeMap in the GIS software and decide how to aggregate and re-classify the 10 Modified Mercalli Intensity (MMI) categories (e.g., intensity I to intensity X) into 3 or 4 severity categories for the earthquake. There is no prescribed way to this and will depend on the scale and reach of the earthquake, local knowledge and assumptions. An example from Nepal is included below.

Case study: Nepal
In Nepal, after the earthquake, the 10 MMI categories were aggregated into 4 severity categories: low, moderate, high and extreme, as follows.

	I	II	III	IV	V	VI	VII	VIII	IX	X
Severity category	**Low**				**Moderate**		**High**		**Extreme**	

Note that aftershocks can cause significant damage, compounding the impact of the initial event. In the case of Nepal, there was a large aftershock three weeks after the first earthquake and several hundred smaller ones in subsequent months. It is important to re-assess the assumed geographic impact based on this new information. This was necessary in Nepal and resulted in a new geographic focus for the emergency operation.

Cyclone scenario

WFP acquires information on cyclones from global natural hazards databases and disseminates it through the Automatic Disaster Analysis and Mapping (ADAM) system, which provides subscribers with a one-page dashboard showing basic information on the cyclone, e.g., current location, track, wind speed, and winder buffers, forecasted wind speed, and estimated number of people living in areas at risk. This dashboard can be frequently updated with the latest information before and after the cyclone makes landfall. This georeferenced data is available in WFP's GIS infrastructure (see Phase I).

VAM should use the cyclone's track, wind speed and buffers to estimate the assumed geographic impact. To determine the severity categories use the cyclone's track and wind buffers - the closer to the cyclone's track, the greater the assumed impact. Often, however, known geographic features may also help to reclassify areas as their presence is likely to influence the impact, e.g., in a storm's path, due to storm surges, you might assume coastal areas will suffer a greater impact than areas which are similarly close to the storm's eye but on the other side of a mountain range. Two examples from Vanuatu and Haiti are provided below.

Case study: Vanuatu

In Vanuatu, the wind speeds for cyclone Pam were classified into three severity categories. The original wind buffers from GDACS were deemed too wide, putting nearly all of the islands in a single severity category, so narrower wind buffers (i.e., 50km) were used in this case.

Severity category	Description
Extremely high	>120 km wind speeds (with 50 km buffer on both sides of the cyclone's track)
High	>90 km wind speeds (with 50 km buffer on both sides of the cyclone's track)
Moderate	<90 km wind speeds (with 50 km buffer on both sides of the cyclone's track)

Case study: Haiti

An expanded version of this was done for Haiti to estimate the assumed geographic impact of hurricane Irma. In addition to wind speed, data on seven-day forecasted rainfall and flood risk was also used in the model. Using ECMWF data, the expected/forecasted rainfall (in millimeters) for each district (admin2 level) was classified in 3 classes/groups (high rainfall, medium rainfall, low rainfall), using the Jenks optimization method. The flood risk, based on an earlier Integrated Context Analysis (ICA) exercise, was classified in three groups: high flood risk, medium flood risk, and low flood risk. The wind speed, flood risk, and rainfall groups were combined as follows to create three severity categories (in this case, called priority areas). This analysis was repeated 24 hours later based on new weather forecast data.

Priority Area 1	>120 km wind speeds (with 50 km buffer on both sides of the hurricane's track)
Priority Area 2	>90 km wind speeds (with 50 km buffer on both sides of the hurricane's track)
Priority Area 3	<90 km wind speeds (with 50 km buffer on both sides of the hurricane's track)

Flood scenario

Flood event data is usually presented as unclassified polygons/raster of the flood extent as identified by satellite imagery, which can be acquired through different means, including from HQ VAM's Geospatial Analysis team, other UN agencies (UNITAR-UNOSAT and OCHA by activating the International Charter on Space and Major Disasters), specialist government institutions, and regional and global research institutions.

Once the flood extent imagery is acquired, there is currently no standard flood severity index. The questions are: how do we methodically turn one neutral group of flooded areas into classified areas of different levels of impact? How do we attribute different areas into least affected and most affected? How can indicators such as height above nearest drainage (HAND), topography, historical data, and water catchment areas help classify floods into different categories? Two options for doing this as part of the 72-hour assessment in Bangladesh and Sri Lanka are described below.

Case study: Bangladesh

In Bangladesh, to address the gap of the flood severity index, VAM created a vulnerability index using available socio-demographic indicators. In this case, poverty, nutrition, livelihoods, and flood risk data were combined to determine the level of vulnerability for a geographic area.

	Indicator	Source
Vulnerability Index	Poverty (proportion of households living below the poverty line)	Bangladesh Bureau of Statistics, 2010
	Undernutrition (proportion of children under five who are stunted)	Bangladesh Bureau of Statistics, 2010
	Livelihood (proportion of households relying on agriculture)	Census 2011
	Flood risk classification (based on historical record of flood events)	Bangladesh Space Research and Remote Sensing Organization

The assumptions behind this method were that vulnerability is a result of the impact of the disaster on households' livelihoods, resilience and food security situation. Households who are poor and households that have a chronically malnourished child under five – which in both cases are assumed to co-exist with and likely be related to food insecurity – in the areas which are more exposed to flood occurrence are assumed to be more vulnerable to natural disaster impact compared to their better-off counterparts. Also, another dimension of the vulnerability is the recovery period: for households who are poor and depend on agriculture and livestock to meet their basic needs, the time to recover after the flood event is assumed to be longer as a function of lower resilience.

Case study: Sri Lanka
Flood modeling is another method that uses historical and current observational data to derive the inundation area and create a flood hazard map. In the absence of having information on the flood extent this method has been proposed in Sri Lanka in the first 72 hours after a flood event. WFP is currently exploring the use of HEC-RAS[7] software, which has the capability of simulating the flood extent using precipitation and river gauging data in a particular river basin. HEC-RAS is an open source software for one-dimensional or two-dimensional simulations of the evolution of a flood, which could have a stable or an unstable flow rate. When using the HEC-GeoRAS extension in ArcGIS, the data can be inserted into the equation, and the results can be visualized through flood hazard maps. The primary data inputs required for HEC-RAS are digital elevation models (DEM), river data (e.g., river line, flow direction, river banks, cross sections, culverts) and precipitation or gauging data.

1.2: Estimate the number of people affected by the disaster

Estimating the number of people affected by the disaster depends on several factors, including the availability and accuracy of pre-crisis demographics for the affected areas; whether there is any population displacement; and the availability of data in the affected areas, including those that are isolated, remote, with limited communication or physically inaccessible.

To estimate the number affected, aggregate the population estimates available for the affected areas by severity classification (see 1.1 above). The total affected population is a sum of the areas. Depending on the severity of the disaster, you may decide not to include the population living in low impact areas.

Population numbers should already be available in the SDI or other geodatabase repository as part of data preparedness (see Phase I). Estimates should be taken from the most recent population census and be available at the lowest administration level as

[7] Hydrologic Engineering Centre, River Analysis System (RAS), created by the Institute of Water Resources, U.S. Army Corps of Engineers (HEC).

possible. The lower the administrative level, the more meaningful and operationally useful the information is.

If there is no such demographic data or if it is outdated, information may be derived from other sources, including administrative data from health facilities, vaccination campaigns, or school records, if these are readily available. Another option is to estimate population numbers from **Landscan**. Data sources should be listed and appropriate disclaimers included in the report.

1.3: Describe the affected population

Pre-disaster information should be used to understand and describe the key characteristics of the affected population in short profiles in the initial assessment report. This will depend on data availability and relevance in the emergency context. For example, these can include the following:

- **Resilience profile**: poverty, housing conditions, market access, household expenditures on food, coverage of essential public services (e.g., health care) and social safety net schemes
- **Livelihood profile**: main sources of income, agricultural crops, seasonal calendar (e.g., planting, growing and harvest periods, traditional lean seasons), and storm season
- **Food security and nutrition profile**: typical diet, household food consumption and dietary diversity, malnutrition (wasting, stunting, obesity) among children under five and women of reproductive age, access to safe water and adequate sanitation, latest Integrated Food Security Phase Classification (IPC) results

If an Integrated Context Analysis (ICA), Consolidated Livelihoods Exercise for Analyzing Resilience (CLEAR) or similar resilience or climate risk analysis has been conducted, the results can also be used.

A note on sex, age, gender and specific vulnerabilities

Sudden-onset disasters affect different groups of people in different ways. Demographic characteristics like race, sex, age, income group and urban/rural residence can have a profound effect on the degree of vulnerability to and impact from disasters. Similarly, gender inequalities across different sectors including security, sanitation, and food security are known to exist before, during and after a disaster. Disadvantaged groups, such as people with disabilities, those belonging to different castes or marginalized minorities, or those with a different faith/religion than the majority, also have unique circumstances that must be considered in this context. Hence, whenever feasible, disaggregated data on these different groups should be generated during the initial assessment and rapid assessment; where this is not possible, more qualitative information should be collected and featured in the 72-hour assessment reports where relevant.

However, how to capture information that is relevant to the design of emergency programmes - beyond the number of different sex and age groups - requires country-level, case-by-case discussions and agreement. That is to say, we need to understand from WFP management and programme unit what gender-sensitive information, for example, they need in the first 72 hours to make a difference for operational decision making and programme implementation. In this case, VAM can initiate the conversation with protection and/or gender focal points in the country office and other relevant partners to expand the indicators that should be factored in the vulnerability model (see the next step below) and field observation (see Phase III).

At the same time, the interpretation of this information needs to be made based on a thorough understanding of the country context. For example, female-headed households may be more vulnerable but this is not always the case: in some countries female-headed households were observed to be more resilient because of better management of family members and financial resources to cope with the crisis. This again requires a collaborative effort at the country level to establish the country specific analysis for this part.

1.4: Estimate the affected population’s likely vulnerability to the disaster

Based on what you know about the affected population (as determined in the previous step), an indicator should be constructed to estimate the population’s likely vulnerability to the impact of the disaster. For example, in a strong cyclone, a community containing a high proportion of concrete houses will probably fare better than one in which most people live in grass/bamboo housing. Similarly, we would expect that communities with a lower prevalence of poverty would also have better housing and more resources to cope (and thus be less vulnerable) following a disaster.

In the 72-hour assessment, there is no strict approach in how to determine the population´s vulnerability in a given area. What is important is that a rationale for the chosen approach is provided, clearly stating any assumptions made and data sources used, in the initial assessment report. The idea is to establish a ranking, from high to low, that clearly distinguishes between different areas.

The approach depends largely on the type of data available on the population. This ideally should be extracted from the SDI or geo-database (see Phase I). Depending on what information is available, a single indicator or a combination of indicators are developed to represent the affected population´s vulnerability. Each indicator used should (1) be available at a low administrative level, (2) suit the context of the disaster and (3) be a plausible proxy of vulnerability. Suitable indicators could be poverty, main livelihoods, income sources, housing type, food consumption, elevation, availability of all-season roads, among other possibilities. Two examples from Vanuatu and Nepal are described below.

Case study: Vanuatu

In Vanuatu, two indicators, housing type and livelihood type, were combined to create a single vulnerability indicator for cyclone Pam in 2015. The table below describes how this was constructed and the assumptions. All geographic areas were categorized as having low, moderate, or high vulnerability.

Indicators		Housing type: Prevalence of traditional housing	Livelihood type: Prevalence of subsistence farmers
Data source		Census 2009	HIES 2010
Assumptions		Houses built with traditional materials (woven bamboo walls and thatched roofs) would be <u>less</u> strong and <u>more</u> likely to be damaged by the cyclone than houses built with cement.	Households whose main livelihood was own-food production would be <u>less</u> well equipped to cope with the impact of the cyclone. For these households, the crops/food stocks destroyed by rainfall and high winds would translate into reduced food intake.
Vulnerability indicator score and thresholds	**High = 3**	>50% (of all households)	>75% (of all households
	Moderate = 2	25-50%	50-75%
	Low = 1	<25%	<50%

Final vulnerability classification:

Final classification for each geographic area	**Summed vulnerability indicator scores (indicator 1 + indicator 2)**
High vulnerability	5-6
Moderate vulnerability	3-4
Low vulnerability	1-2

Case study: Nepal

In Nepal, a single indicator, housing type, was used as a proxy for households' vulnerability after the earthquake in 2015. Unlike for the cyclone in Vanuatu, thresholds were not created for this indicator and it was directly combined with the assumed geographic impact (based on the USGS ShakeMap).

Indicator	Housing type: Prevalence of weak housing
Data source	Census 2011
Assumptions	Houses built with mud-bonded or unbaked bricks would be less strong to the earthquake than houses built with cement/wood.
Thresholds	N/A

Priority areas map and estimates of the population in need of assistance

The ultimate goal of the initial assessment is to give a best estimate and provide answers to two immediate disaster response questions: (1) How many people are in need of assistance? and (2) Where are they located? The priority areas map serves to illustrate the classification of different geographic areas and the number of people in need of assistance in each of those areas. This map is a key element of the initial assessment report and should feature on the front page.

To generate a priority areas map the following information (from the previous sections) needs to be combined and overlaid: (1) assumed geographic impact; (2) estimated number of affected people; and (3) estimated number of affected people in need of assistance based on their vulnerability.

Importantly, there is no single, standard method to combine the information, and each context will require different decisions on how to do so. It is important, however, that the method and any underlying assumptions made during the process are clearly stated in the report and transparently communicated to decision makers. Below are two examples from Vanuatu and Nepal.

Case study: Vanuatu

In Vanuatu, the assumed geographic impact of cyclone Pam was overlaid with the vulnerability indicator to determine the priority areas. Areas classified as priority 1 had experienced an extremely high geographic impact from the cyclone and had a high or moderate level of vulnerability. The entire population in areas classified as priority 1 were considered in need of assistance.

<table>
<tr><td colspan="2" rowspan="2"></td><th colspan="3">Geographic Impact</th></tr>
<tr><th>Extremely high</th><th>High</th><th>Moderate</th></tr>
<tr><th rowspan="3">Vulnerability*</th><th>High</th><td rowspan="2">Priority 1</td><td rowspan="2">Priority 2</td><td>Priority 3</td></tr>
<tr><th>Moderate</th><td rowspan="2">None</td></tr>
<tr><th>Low</th><td>Priority 2</td><td>Priority 3</td></tr>
</table>

*Note: In the original report, this was referred to as 'resilience'. For the sake of consistency, the term 'vulnerability' is used, whereby higher resilience is assumed to equate to lower vulnerability.

Case study: Nepal

In Nepal, the earthquake´s assumed geographic impact was combined with the vulnerability indicator to determine the population in need of assistance for each priority area.

Assumed geographic impact	Priority area	Affected population	Estimated population in need of assistance
Extremely high impact areas	1	100% of population	66% x population living in weak houses
High impact areas	2	100% of population	33% x population living in weak houses
Moderate impact areas	3	100% of population	25% x population living in weak houses
Total		**Total affected population**	**Total population in need of assistance**

Priority areas were determined solely by assumed geographic impact. But, unlike Vanuatu, the estimated population in need of assistance did not equate to the total population within each priority area. Instead, it was assumed that weakly constructed houses, consisting of mud-bonded or unbaked bricks, faced a greater risk of destruction if located in areas closest to the epicenter of the earthquake. Therefore, of the population living in weak houses in extremely high impact areas, a higher proportion was considered in need (i.e. 66%), and this proportion was decreased in high impact and moderate impact areas (33% and 25%, respectively).

Initial assessment report

The initial 72-hour assessment report is intended to inform WFP's immediate emergency response and should be available within the first three days after the sudden-onset disaster. Thus, its primary use is to generate content (beneficiary caseload figures, priority areas, and context narrative) to be inserted into WFP emergency operations documents, Flash Appeals and WFP situation reports.

In the days following the release of the initial assessment, WFP's understanding will continue to become clearer about the disaster's impact as more information becomes available. In turn, the initial assessment report must be updated and revised versions released. VAM staff must decide how to incorporate newly available information to ensure each report version contains the most up-to-date and accurate details about the disaster's impact. This will involve revisions to the priority areas, maps, and estimates of the number of people in need of assistance.

Information sources for such revisions will depend on the situation. These could include initial rapid assessments by national chapters of the Red Cross Red Crescent movement, field assessment reports from government agencies, I/NGOs, and UN agencies, national and local media (newspapers, television), social media, key informants in the affected areas, and the first results from the field verification process (Phase III).

The most important section of the initial assessment report is the priority areas map and the initial planning figures for the beneficiary caseload. Also, given that the conclusions reached at this early point in time are by default based on assumptions, it is essential to spell those out in precise but plain language. In other words, clear explanations as to how the estimates were calculated should be given in the report and written to be comprehensible to a non-technical audience. When in doubt include more information on assumptions than less.

A recommended outline of the report is provided below. The first page consists of the priority areas map, geographic impact, geographic profile (e.g., epicenter, type of terrain, administrative areas affected, etc.), profile of the affected population (e.g., number of households and people affected, severely affected and in need of assistance), and livelihood profile (e.g., most prevalent livelihoods in affected areas). Other sections of the report cover relevant background information useful for WFP staff responding to the disaster. Depending on the information available from partners and other stakeholders this can be a few sentences to a paragraph.

- Geographic impact: summary statement
- Livelihoods: types and number/proportion of people engaged by main livelihood type
- Food security and nutrition: most recent data, if available
- Markets: description of market networks, functionality, food prices, and assumptions on how these may have changed since the disaster

- Logistics, transportation and communication infrastructure: up-to-date summary of airport, land, and sea transportation links to affected areas, warehouses, and communication networks
- Past disasters in country: summary of impact/recovery from similar events
- Traveler information: tips for deployed staff
- Contact information: contact details of report's author(s)
- Version information: release date, number in the series of releases, short summary on key changes since the previous version
- References: links to key websites and documents with relevant disaster information
- Statistical profile: summary table with data by administrative area on the population and the pre-disaster prevalence of poverty, food insecurity, malnutrition, etc.
- Assumptions and any caveats: acknowledge data sources and assumptions and calculations behind population estimates. It is important to always clearly state that any figures provided are based on the best available information at that time and will be updated in future releases.

A recommended report template for a 72-hour assessment report and examples of these reports from different countries can be found in **The Toolbox**.

Phase III: Field verification

<u>Quick facts</u>

- ✓ **Output**: Short map-based rapid assessment report released within first 7-10 days
- ✓ **Aim**: Verify initial estimations (and related assumptions) of priority areas and population in need of assistance
- ✓ **Informs**: Emergency operations, Flash Appeals and situation reports
- ✓ **Data collection**: primary and secondary data
- ✓ **Responsible**: CO VAM and partners (with support of RB and HQ)
- ✓ **Tips**: Utilize WFP's institutional capacities, established and new partnerships, field presence and communication channels to the maximum extent

The final step of the 72-hour assessment approach is field verification. The purpose is to validate – and update where needed – the estimates and assumptions in the initial assessment report (Phase II). This is done by collecting primary data in the field and remotely on the affected areas and number of affected people. It should include any new information on population movement or displacement and the best available population estimates in the affected areas. Essentially, VAM needs to verify the assumed geographic impact and any assumptions behind the vulnerability indicator (see Phase II). Any additional information from the field from different humanitarian sectors/clusters or cross-cutting areas, e.g., food security, nutrition, WASH, gender, markets, health, logistics, will be helpful to contextualize and triangulate the results. Through field verification, our understanding of the post-disaster situation will reflect a closer approximation of the actual conditions on the ground based on whatever empirical evidence is available and feasible to collect. Data collection should be completed within five to six days from the first release of the initial assessment report (Phase II). The output of Phase III is a rapid assessment report which should be released within 7-10 days following the disaster.

Rapid assessment tool and data collection

Information for the field verification process can come from different types of data collection exercises. The most suitable data collection methods and tools will depend on the context of the country and disaster, the level of detail required and the urgency for new information to refine the estimates and assumptions behind the initial assessment report.

VAM, together with partners, can use a range of tools to collect information more quickly, in remote areas, and with and without deploying enumerators to the field. Examples of these include observational checklists, mobile phone technology, remote sensing and geospatial analysis, economic modeling, mobile phone data (call detail records), geostatistical modelling, aerial photography, social media (e.g., Twitter, Facebook) and radio. Some are widespread, some have only been tested in a few countries, while others remain prototypes that VAM may explore in the future.

It is important to note the specific technical and human prerequisites, as well as pros and cons, that must be considered when deciding which tools to use. Clearly, the context, human and financial resources, partners and technologies available will determine what tools can be used to fill information gaps following a disaster and facilitate the process of validating initial analyses of the immediate aftermath. Most importantly, whichever approach is used, it should produce georeferenced data that can inform the immediate emergency response. In any case, VAM, together with partners, must be aware of the different options, their prerequisites and potential contribution to the verification exercise and make a judgement on how to proceed.

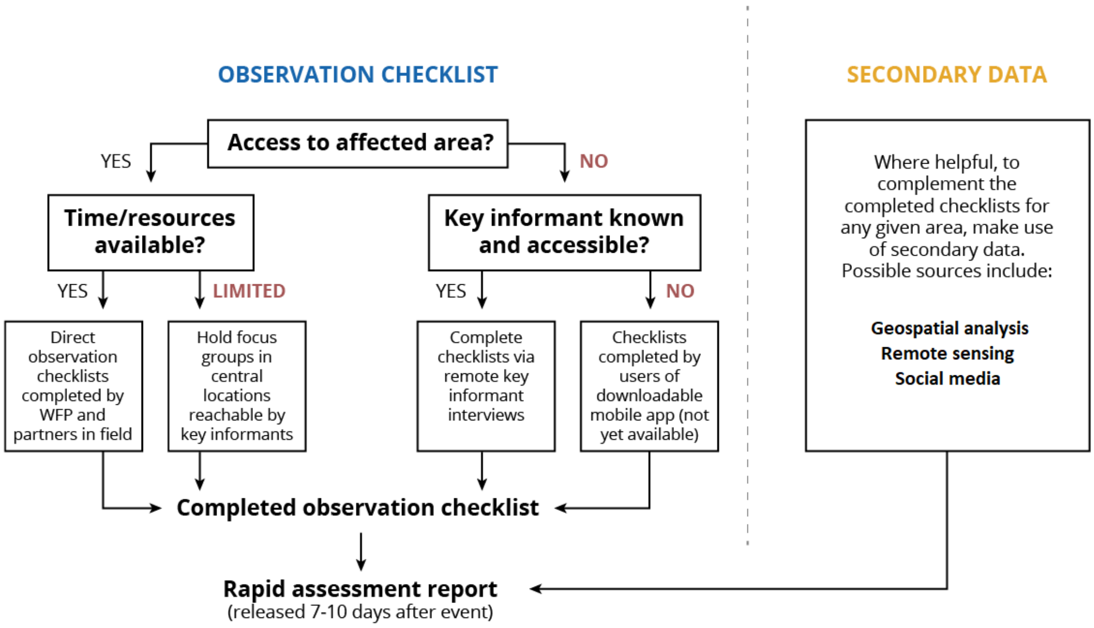
To date, the most frequently used rapid assessment tool in Phase III was an observational checklist. This tool and data collection process are described in detail below. Other corporate VAM tools that could be used in the rapid assessment include remote sensing and geospatial analysis, mobile VAM (mVAM) and the Shock Impact Simulation Model (SISMod). Each of these are described in **Annex 1.** Additional tools to collect data remotely following a disaster are described in **Annex 2.**

Each of these have great potential to understand and inform where and to whom to assist following a disaster. Yet, none of these should be used in isolation. Instead, it is important to draw from a range of information sources throughout the 72-hour assessment process. For example, the value of social media monitoring lies in its power to quickly collect a mass of data for the validation of initial assumptions, but only until better, more robust and less (potentially) biased data becomes available. Similarly, remote sensing data and analytics can augment, but not replace, field data or ground-truthing in the form of assessments. In sum: the integration of multiple data sources is key when the analyses are to reflect the reality on the ground.

Observational checklist

In the 72-hour assessment approach, an observational checklist is recommended and has been used successfully in several countries for different sudden-onset disasters. The aim is to capture georeferenced information which can be quickly and easily collected and summarized, and then presented in a series of thematic maps in the rapid assessment report.

Completing the observational checklist requires the collection of post-disaster primary data by deploying enumerators to affected areas to observe the situation directly and interact with affected people or by contacting key informants in affected areas remotely by mobile phone. Options for administering the observational checklist are presented below.



A number of factors will determine the best approach, including the following:

- Who are the enumerators, how many are available and where are they located?
- Have the enumerators conducted an assessment before? Have they been trained recently?
- How and when will the data be collected?
- Which geographic boundary level will be used for reporting the results (e.g., administrative level, urban/rural, livelihood zone)? Ideally, the unit of analysis is the same as in Phase II.
- Can a minimum of one observational checklist be completed in each affected area?
- How will information be collected in hard-to-reach locations due to poor physical access, lack of network coverage, limited funding and time for on-the-ground data collection?
- How will government officials and/or other partners at higher administrative levels be contacted to act as key informants (in case data collection is impossible at lower administrative levels)?

Given that there is little or no time for a training of enumerators at this early stage, an observational checklist needs to be easily understood and applied, i.e., simple enough for untrained, non-WFP staff to administer, since in practice, enumerators are likely to come from a wide variety of humanitarian organizations, government agencies, and possibly even the public.

The observational checklist consists of a series of sector- or topic-specific ranking exercises, typically from 1 for no/least damage to 4 for worst damage, accompanied by graded impact icons and brief descriptions. This can be used for different sectors or topics, such as housing damage, displacement, agriculture, livelihoods, food stocks, markets, water sources, sanitation, and health facilities. An example of the observational checklist for housing damage used for the earthquake in Nepal in 2015 is shown below.

Categorize the level of destruction in the area (*tick only one)*		
4 (worst damage)		Most houses and buildings have been completely destroyed or severely damaged
3		Many houses and buildings damaged, some destroyed.
2		Some houses and buildings moderately damaged (i.e. visible cracks) but remain habitable.
1 (no/least damage)		Few houses and buildings sustained any damage.

The complete checklists used in Nepal and Vanuatu can be found in **the Toolbox**. To date, only paper-based checklists have been used. However, digital data collection via a smartphone application, KoBoToolbox, is currently being developed and tested. VAM can explore other options with in-country stakeholders depending the resources and technology available.

Ideally, VAM and partners should design observational checklists for the most likely disaster scenarios; if this cannot be done before the disaster, it is critical that it is done immediately after and in parallel to the initial assessment process (Phase II). The design of the observational checklist will depend on the disaster type and country context but for WFP its focus should be on verifying immediate food assistance needs that can be used for WFP's emergency operation. As stated above, it could potentially also capture georeferenced data relevant for other sectors, e.g., the state of infrastructure and accessibility to public services, the functionality of local markets, the number of displaced persons, etc., but this depends on the context. Lastly, a free response section at the end of the observational checklist can be used to capture other relevant information that is easily acquired but not recorded in the ranking exercises, e.g., GPS coordinates of key features, comments from community leaders or other key informants, and the enumerators' own impressions, that can inform the narrative of the rapid assessment report. To the extent possible, georeferenced photos of the damage and conditions in the affected areas should also be captured during the field verification. These can be a powerful addition to reports and presentations.

Rapid assessment report

The purpose of the rapid assessment report is to present the current situation in affected areas within seven to ten days following the disaster. Its primary use is therefore to provide updated content (beneficiary caseload figures, priority area maps, narrative) for operational planning and for drafting related later-stage documents for WFP's emergency operations, situation reports, donor briefs and funding proposals, like the Flash Appeal and UN Central Emergency Response Fund (CERF), which are developed in tandem.

The report should include field data collected from the areas expected to have been the most affected by the disaster. In addition, and depending on the context, the report may include information from other secondary sources, such as satellite imagery and social media. The sectors covered in the report will depend on the observational checklist and/or other data collection tools used for field verification and will vary by country and context. Previous rapid assessment reports have included sections on food stocks, markets, water and sanitation, health facilities, among other topics.

A central feature of the rapid assessment report is a set of colour-graded thematic maps. Given the simple classification of severity categories across the different sectors in the observational checklist, creating these maps will be a straightforward task for VAM and GIS staff. The maps should be accompanied by a short but meaningful narrative, along with any additional relevant information obtained from other sources to show the severity of the disaster's impact across the affected areas. The data for the report should be generated at as low an administrative level as possible to be useful to the process of operational planning at this early stage.

As with the initial assessment report, the method(s) employed and assumptions made during the verification process should be stated clearly and transparently in the rapid assessment report.

Depending on the country context, type and scale of disaster, and CO management's plans, the initial release of the rapid assessment report can be internal or external. Like the initial assessment report, as more information becomes available about the situation, VAM can release sequential updates of the report. For example, in Vanuatu only one rapid assessment report was released, while in Nepal there were three, each providing increasingly more detail on the impact of the disaster.

After the 72-hour assessment

In-depth emergency food security assessments and beyond

Following the initial assessment (Phase II) and field verification (Phase III), an in-depth emergency food security assessment (EFSA), which is often statistically representative of the population and administered at the household level, might be necessary. The type and timing of an EFSA largely depends on the disaster, available resources and intended use. For example, to inform the revised Flash Appeal it should be completed and released within 30 days of the disaster. It can also be used for ongoing emergency operations and subsequent recovery operations in the same areas; in these cases the type and timing of the assessment may be longer. Two examples of in-depth assessments that were conducted following the 72-hour assessment approach can be found in **The Toolbox.** For more information on how to conduct an EFSA, see the Emergency Food Security Assessment (EFSA) Handbook (WFP, 2009).

Other methods and tools may also be suitable. For example, the Integrated Food Security Phase Classification (IPC, 2012) could be used if the IPC structure and capacity at country level are already in place and functional and sufficient data is available to conduct the analysis.

Documentation and learning

Country-specific evaluations, after-action reviews or lessons learned exercises that follow emergency operations are an opportunity to document the process, methods, tools and outputs of the 72-hour assessment and to determine if and to what extent the 72-hour assessment provided an evidence-base to inform the delivery of humanitarian assistance. This will ensure that any learning and potential improvements that arise from the application of the 72-hour assessment approach in different contexts will be documented and available for practitioners. Examples to date include the corporate lessons learned exercise for the Level 2 (L2) emergency in Nepal following the 2015 earthquake and the OSE case study on Haiti and hurricane Irma.

THE TOOLBOX

THE TOOLBOX

The toolbox contains a list of 72-hour assessment reports that were produced between 2015-2017. They are arranged to illustrate the progression from initial assessment reports (Phase II) to more detailed rapid assessment reports (Phase III) in a specific country. The toolbox also includes examples of a 72-hour assessment report format, observational checklists, and a video. Although these resources are provided here to allow VAM to save time and avoid reinventing them each time an emergency occurs, they are flexible enough to be adapted to different country contexts and types of disasters. The 72-hour assessment approach is not meant to be overly prescriptive. New tools, checklists and reports should be developed, tested and refined as part of the evolution of the approach. Future updates will be available here.

Country	Hazard, Year	Assessment type	Phase
Reports			
Philippines	Typhoon Hagupit, 2014	Initial assessment	Phase II
Vanuatu	Cyclone Pam, 2015	Initial assessment	Phase II
		Rapid assessment	Phase III
Nepal	Earthquake, 2015	Initial assessment 0	Phase II
		Initial assessment 1	Phase II
		Initial assessment 2	Phase II
		Rapid assessment 1	Phase III
		Rapid assessment 2	Phase III
		Rapid assessment 3	Phase III
		In-depth assessment	In-depth
		Early recovery assessment	In-depth
Solomon Islands	Earthquake, 2016	Initial assessment 1	Phase II
		Initial assessment 2	Phase II
Sri Lanka	Floods, 2017	Initial assessment 1	Phase II
Bangladesh	Cyclone Mora, 2017	Initial assessment 0	Phase II
		Initial assessment 1	Phase II
		Initial assessment 2	Phase II
Bangladesh	Floods, 2017	Initial assessment 0	Phase II
		Initial assessment 1	Phase II
Nepal	Floods, 2017	Initial assessment 0	Phase II
		Initial assessment 1	Phase II
		Rapid assessment	Phase III
Haiti	Hurricane Irma, 2017	Case study	Phase II
Templates			
Vanuatu	Cyclone Pam, 2015	Observational checklist	Phase III
Nepal	Earthquake, 2015	Observational checklist	Phase III
Any	Any	Initial assessment report	Phase II
Videos			
Philippines	72-hour assessment	Overview of the approach	All

ANNEX

ANNEX

Annex 1 - VAM tools for rapid assessment

Remote sensing and geospatial analysis

Remote sensing uses Earth observation (EO) satellites to observe and collect imagery of the Earth at a distance. There are many sources of EO data available ranging from medium (250 meters to 5km), high (10 meters-30 meters), and very high (<1 meter) resolution. The remote collection of imagery provides information across large geographic and inaccessible areas over time. Among the many applications, EO data are used to monitor rainfall and vegetation development seasons and evaluate the impact on agriculture and pastoral land, produce seasonal forecasts, produce crop type mapping, detect flooding, and detect and monitor the creation of post-displacement settlements.

Geospatial analysis derives information from these EO datasets and creates map products to summarize and communicate key findings. For the 72-hour assessment, these tools can be used to validate initial assumptions in Phase II and update findings in Phase III, by, for example, assessing the location and scale of a sudden-onset or slow-onset disaster (e.g., flood extent, drought affected areas) or providing information on population movement/displacement (e.g., number of camp structures and roofing type).

Prerequisites to use these tools include having experts in remote sensing and geospatial analysis and the means to acquire and process the satellite imagery. Limitations include it being technically demanding, time-consuming and costly to acquire (only for very high-resolution data), process and analyze the data, the (potentially) limited accuracy depending on the resolution, and, in some cases, the need to ground-truth the results.

The Geospatial Analysis team at HQ VAM specializes in this field and works with several organizations, including UNITAR/UNOSAT, OCHA, UN Global Pulse Lab, Harvard Humanitarian Initiative, US State Department, Airbus Foundation, European Space Agency, NASA, among others. Recent focus countries included Central African Republic, Mali, Nigeria, Niger, South Sudan, Mozambique and Uganda. In addition, the International Charter for Space and Major Disasters can be activated after a disaster at the request of national disaster management authorities and UN organizations.

Mobile VAM (mVAM)

Mobile VAM (mVAM) uses mobile phone technology to contact households or key informants and collect information on food security and other topics. This can include computer-assisted telephone interviews (CATI), interactive voice response (IVR), and short message service (SMS). For the 72-hour assessment, mVAM can be used for field verification in Phase III and beyond, particularly where access to affected areas is limited and remote data collection is required, or when data collection will be more frequent and repeated over time.

Prerequisites for using mVAM are described below and are based on experiences with setting up and using mVAM in a variety of contexts and countries.

1. An assessment of the practicality of remote data collection in your setting has been carried out (see '*Decision Tree 1: Can you set up an mVAM project?*') and the best tool for remote data collection has been identified (see '*Decision Tree 2: Which tool is the most appropriate?*').
2. The mobile network is up and running in the affected areas.
3. An agreement with a local or regional service provider is in place (check with the regional bureau or HQ on existing LTAs) or an in-house call center is already operational.
4. An updated database of phone numbers is available. It could include either:
    a. Known numbers, i.e., phone numbers collected during previous face-to-face assessments, contacts of WFP key informants, etc.
    b. Unknown numbers, i.e., phone numbers provided by service providers, random digit dialing.
5. The observational checklist / questionnaire has been adapted to the remote data collection tool. Questionnaire design for mobile data collection varies according to whether you are using CATI, or automated tools such as SMS and IVR (for more guidance see '*Adapting food security questions to remote format*'). The main recommendation is that the questionnaire has to be very concise (generally no more than 15 questions for IVR and SMS and no longer than 10 minutes for CATI) and very clear and self-explanatory. Neither CATI, IVR nor SMS surveys support the usage of images.

Limitations of using mVAM in this context may be limited geographic coverage of the mobile network, limited mobile phone ownership, the type and suitability of vulnerability indicators that can be collected, and the administrative level at which the data is representative.

The mVAM team at HQ VAM supports mVAM activities and works with a variety of partners. To date, WFP has used mVAM in more than 30 countries across the world. More information on mVAM is available here.

Shock Impact Simulation Model (SISMod)

Shock Impact Simulation Model (SISMod) is a tool to measure the impact of shocks on household food security. It is an economic modelling system that provides early estimates of the impacts of shocks and programme activities to inform the initial development of response scenarios. The model can be set-up prior to the disaster and can be adjusted after. Key outputs include the proportion of food-energy-deficient population; depth of hunger measured in kcal/person/day; the food gap measured in kg/person/month; the total food assistance needed to meet the needs; and the number of individuals meeting the minimum expenditure basket (if available).

Prerequisites for using SISMod include having the model inputs, which include baseline secondary information, such as household demographics, income/expenditures, food consumption, etc., from national household surveys, and new information on shock factors, such as interventions planned, increases in food prices or the location of an earthquake or flood; and the expertise in economic modeling and statistical analysis.

Limitations of using SISMod in this context may be the availability of reliable data, the assumptions in the modelling, and the challenge of modeling the impact of different shocks, such as large-scale disasters and the sudden displacement of the population. The estimated outputs also tend to under-represent the nutrition factors linked with food insecurity.

The Economic and Market Analysis team at HQ VAM supports SISIMoD. To date, WFP has used SISMod in several countries, including Chad, Pakistan, Niger, Yemen, Nigeria, and Nepal. More information in SISMod is available here.

Annex 2 - Additional tools to collect data remotely following a disaster

Social media

Social media (e.g., Twitter, Facebook, Instagram) can provide citizen-generated, real-time public text-, image- or video-based feeds sent directly to and from people in disaster affected areas. It can provide a large volume of geolocated information on population movement, behaviors and observations during and immediately after a disaster, and thus can be used to validate initial assumptions in Phase II and update findings in Phase III. Prerequisites for using social media is having network coverage in the affected areas and the availability/accessibility of smartphones among the affected population. Limitations may include (potentially) unreliable and unrepresentative information on the populations´ needs, an inherent bias towards certain groups in society, e.g., young, male, well-educated, better-off, urban, etc., producing qualitative data that needs to be read and interpreted by humans (i.e., automated processing and analysis is not recommended), and the need to complement it with other data sources, such as satellite imagery and field assessments. To date, WFP has worked with the BBC Nepali Service in Nepal (earthquake, 2015) in the 72-hour assessment.

mVAM chatbot

A chatbot can conduct surveys and share information by means of a smartphone chat application. Currently in prototype with HQ VAM, the chatbot can collect geolocated data and qualitative information from the affected population or key informants on the impact of a disaster. Prerequisites for using the mVAM chatbot is having network coverage in the affected area and the availability/accessibility of smartphones among the population. Limitations may include that the sample of respondents is not representative of the target population and the respondents' willingness to use the application. To date it has been tested in Haiti, Nigeria and Kenya and will be piloted in 2018 in the Kakuma refugee camp in Kenya to complement the WFP helpline for two-way communication with beneficiaries.

Radio

Radio broadcasts provide public discussions about selected topics which can be machine-read through the use of speech recognition technology and translation tools, thus transforming radio content into text for analysis. It can monitor trends and opinions about selected topics among larger groups and communities (not individuals) and reaches across the digital and rural-urban divide (typical of social media). Prerequisites for using radio is wide radio coverage and the aforementioned software (radio content analysis tool). Limitations include that the information is not geolocated and may potentially be unreliable and not representative of the affected population, the choice of discussion topics may be restricted due to participants´ fear of exposure, and the qualitative data collected needs to be read and interpreted by humans (i.e., automated processing and analysis is not recommended). To date it has not been used by WFP but it has been used by the UN Global Pulse Lab Kampala in Uganda.

Financial transaction tracking

Financial transaction tracking provides anonymous records of daily point of sale (POS) transactions and ATM withdrawals at high geospatial resolution (e.g., amount, date/time). It can provide insight into behaviors related to financial services before and after a disaster. Prerequisites for using financial transaction tracking is bank account access among the affected population and an agreement with financial service providers to access the data. Limitations include that the sample may not necessarily represent the general population affected by a disaster, e.g., a bias towards those with access to bank accounts, not capturing the 'unbanked" who are often the poorest households. To date it has not been used by WFP but it has been used by the UN Global Pulse Lab New York in Mexico before and after a hurricane.

Web-surveys

Web-surveys collect data through online surveys. One way to do this is by reaching random respondents as they surf the web: when users navigate to a link that is broken or inaccurate, they encounter a web-based survey form instead of a broken link notification (this is known as Random Domain Intercept Technology). The web-based survey methodology facilitates rapid, direct contact with a wide range of people over a large geographic area. In the 72-hour assessment context, it could be used to collect geolocated information on the impact of a disaster at household or community level in

Phase III. The main prerequisite is internet access among the target population. Limitations include that the sample may not necessarily represent the specific population affected by a disaster. To date it has been used to assess urban food security in Port-au-Prince, Haiti, social cohesion with Syrian refugees and Turkish nationals in Turkey, and urban vulnerability in Manila, Philippines. WFP is working with RIWI Corporation to deploy this in other countries.

Call detail records (CDR)

Call detail records (CDR) provide an automated, de-identified data record documenting the geolocated details of a mobile phone call or other telecom transaction, providing attributes of the call, e.g., time, duration, completion status, source, number, and destination number. It can monitor (and potentially predict) a disaster's impact on large-scale population movements/displacement, so is useful for planning and implementing disaster response activities. It has less bias than other methods when used for estimating population movements/displacement. Prerequisites to use this tool are the availability/accessibility of mobile phones among affected population, a data-sharing agreement with the mobile operator, and extensive technical skills for data management and analysis. Limitations may include access to the mobile phone operator's CDR data, establishing and maintaining the IT infrastructure to process CDR data, limited representativeness of CDR data depending on market share in the affected areas, and the need to validate CDR-based analysis with other data. To date it has not been used by WFP but it has been used by FlowMinder/WorldPop in Nepal (earthquake, 2015), Bangladesh (cyclone, 2013), and Haiti (cholera outbreak, 2010). WFP is working with FlowMinder/WorldPop to apply this in other countries.

Geostatistical modelling

Geostatistical modelling provides high resolution (e.g., 1km^2) maps based on secondary data from household surveys (e.g., DHS), satellite imagery and mobile operator data (call detail records). It can produce geolocated estimates of demographic characteristics, such as population density, age, sex, number of births, pregnancies, and socioeconomic characteristics, such as poverty. It can assess the affected population without depending on administrative-level data, allows for continuous updating provided new data is available, and decreases uncertainty using gridded sampling. Prerequisites to use this tool include having experts for statistical analysis and mapping and the availability of high-quality secondary data. Limitations include that it is time-consuming to produce and it does not replace field verification. To date it has not been used by WFP but it has been used by FlowMinder/WorldPop in Bangladesh and Stanford University in a number of countries.

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