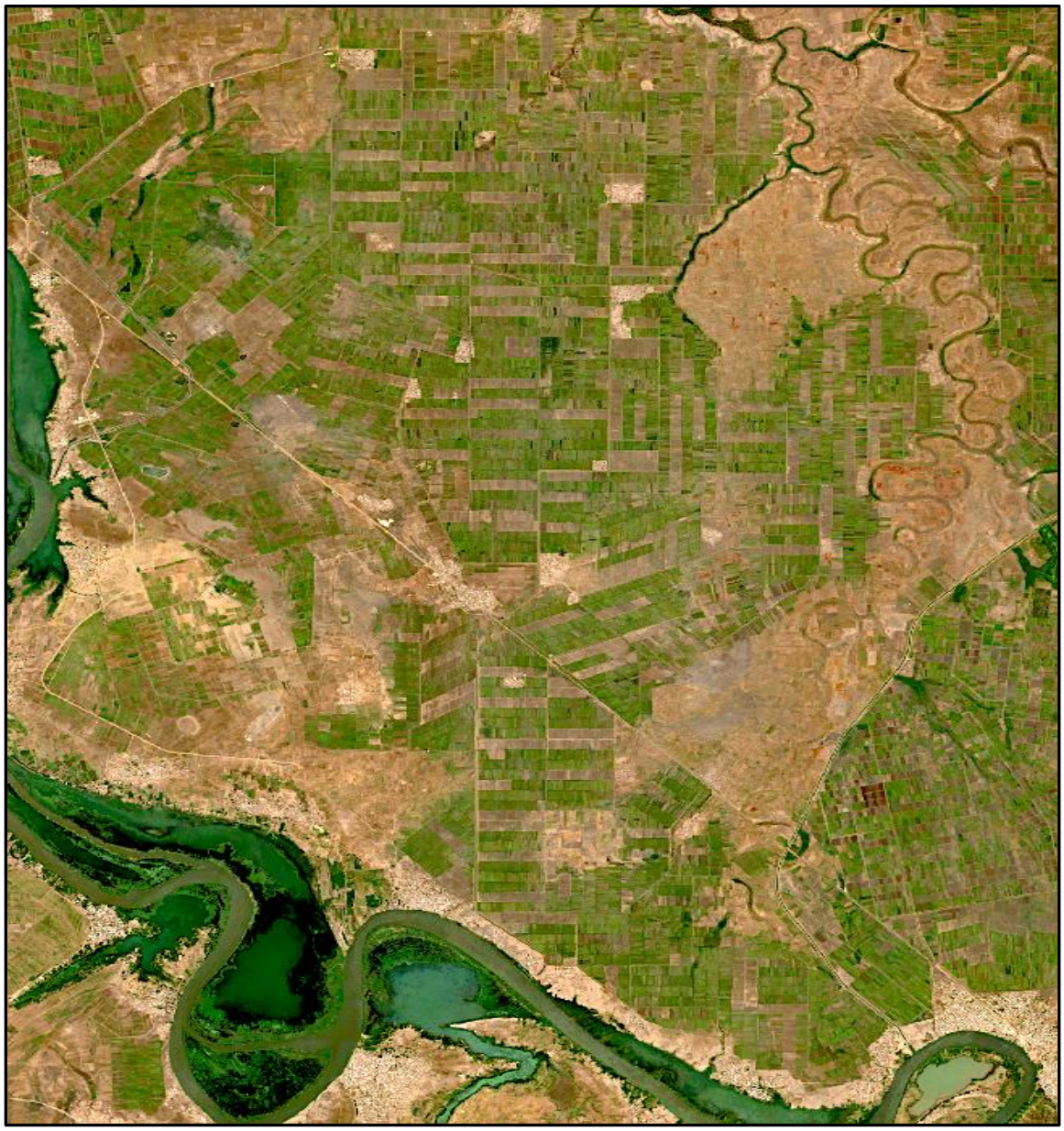

ARE WE GEO-READY?

A Landscape Analysis on Spatial Data Readiness at Mercy Corps

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Acronyms

AOI	Area of Interest
DEM	Digital Elevation Model
ESA Region	East and Southern Africa Region
GIE	Geospatial Impact Evaluation
GPS	Global Positioning System
KII	Key Informant Interview
MEL	Monitoring, Evaluation and Learning
MENA region	Middle East and North Africa region
WASH	Water, Sanitation and Hygiene
WCA region	West and Central Africa region

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We would also like to acknowledge and thank the many, many Mercy Corps team members from across the globe who contributed to this report through answering surveys, follow-up questions and interview questions. Your insight and support, especially during such a tumultuous time for the organization and the sector, were invaluable in putting together this report.

Executive Summary

Background & Objectives

A persistent barrier to conducting geospatial impact evaluations (GIEs) and other advanced spatial analyses in humanitarian and development programming is the lack of sufficiently granular, geo-referenced data that captures the specific timing and location of interventions. Such evaluations have the potential to greatly enhance understanding of which interventions work, how they affect communities, and how programming can be adaptively managed-while also reducing the need for costly and time-intensive field data collection. Although the routine collection of GPS data has become more common, driven by donor requirements and the increasing accessibility of digital data capture tools, the spatial detail and data types collected often fall short of what is required for robust geospatial analysis and impact evaluation.

This landscape analysis was commissioned as part of the GeoField program to provide a comprehensive assessment of Mercy Corps' readiness to conduct GIEs by **examining current practices in spatial data collection, identifying barriers and enablers, estimating resource needs**, and **sharing findings with a broad audience of stakeholders, but particularly other implementing organizations on similar journeys**. The analysis aims to establish a baseline of spatial data collection practices at the program level, estimate additional spatial data that may be required for detailed analysis, and identify programs that have collected sufficiently granular data to enable further geospatial analyses.

Methodology

The research first leveraged Mercy Corps' annual internal MEL Tech survey, which is distributed to all country offices and collects information on data technology use, including spatial data practices. Survey responses were supplemented with emails to program points of contact, seeking further details about the motivations, types, and uses of spatial data collected. Key informant interviews (KIIs) were then conducted with programs demonstrating more sophisticated spatial data practices, exploring in greater depth the processes, costs, barriers, and ambitions associated with spatial data collection. Qualitative analysis was conducted using a coding framework to systematically categorize and interpret the information gathered. To protect sensitive information, all identifying details of specific programs, respondents, and implementation locations have been omitted from this report.

Limitations

The assessment faced several limitations. Data collection began in February 2025, after the US government issued stop-work orders for all USAID programs, leading to the abrupt termination of

many programs and limiting follow-up with key staff. The MEL Tech survey achieved coverage of more than 95% of active country offices, but some programs may have been missed due to incomplete respondent knowledge or office closures. Additionally, definitions of what constitutes a distinct program vary within Mercy Corps, complicating efforts to draw precise conclusions about the prevalence of spatial data collection.

Analysis Findings

By the Numbers

Out of 258 active Mercy Corps programs operating in 2024, 56 were identified as collecting some form of spatial data, with detailed follow-up information obtained for 33 programs. All 33 collected GPS points for households or implementation sites; 17 also mapped other relevant locations such as schools or water points, and 13 collected more complex spatial data types like lines or polygons. Nine programs reported using Earth observation or remote sensing data. Of the 33 programs analyzed, 21 reported using spatial data for program decision-making, indicating that spatial data is already informing operational choices in many cases. Based on these findings, **at least 12.4% of all Mercy Corps programs in 2024 can be considered "GIE-ready"- defined as collecting at least the GPS points of program households or implementation locations**, though this is likely a conservative estimate due to the limitations noted above.

Motivation

Motivations for collecting spatial data varied, but a key driver was the desire to map and visualize program activities and impact. This included integrating spatial data into baseline and endline surveys, improving program planning by overlaying development plans and risk maps, and enhancing monitoring, evaluation, and learning (MEL) activities. Other motivations included mapping communities and beneficiaries to understand geographic reach and coverage, validating data quality, and supporting needs assessments and strategic decision-making. Notably, only one program cited impact evaluation as a primary motivation for collecting spatial data, highlighting a gap between current data collection practices and the potential for deeper analytical use as well as a sensitization gap around the possibility of Geospatial Impact Evaluation.

Costs

Costs associated with spatial data collection varied widely across programs, reflecting differences in data needs, technology, and staff capacity. Most programs reported that basic GPS data collection could be accomplished with minimal additional expense, leveraging existing MEL technology platforms and staff resources. However, programs seeking more granular spatial data-such as polygons, lines, or integration of remote sensing-often faced higher costs related to

specialized training, advanced equipment, and data acquisition, with some citing budget constraints as a barrier to adopting more sophisticated geospatial methods. **Ultimately, we estimate that these additional costs would be in the neighborhood of 10-30% rather than 100+ %, which is often a commonly held assumption.**

Barriers and Enablers

Programs reported several key barriers to more robust spatial data collection and use. The most common challenges included insufficient technical capacity among staff, limited access to advanced GIS tools, and a lack of clear organizational standards or guidance on spatial data collection. In some cases, the use of spatial data was further constrained by resource limitations, such as inadequate budgets for specialized training or equipment, and by a focus on collecting only basic GPS points rather than more detailed or comprehensive spatial data types. On the other hand, enablers identified by programs included the growing availability of user-friendly MEL technology platforms, increasing donor interest and requirements for geo-referenced data, and the presence of motivated staff who champion spatial data initiatives within their teams. These factors have supported the uptake of spatial data collection practices in some programs, but broader adoption will require addressing the persistent barriers of capacity, resources, and organizational guidance.

Recommendations

Mercy Corps has demonstrated a growing capacity and motivation for spatial data collection across a diverse portfolio of programs, with a significant minority already collecting data suitable for GIEs. However, broader adoption of more sophisticated spatial data practices is constrained by technical, resource, and knowledge barriers. To enable more widespread and effective use of geospatial analysis in impact evaluation and beyond at Mercy Corps, this report recommends the following:

1. ***Lean-in to spatial data collection and organizational buy-in***
   Foster a stronger organizational culture that values and prioritizes spatial data collection by integrating it into core program and MEL processes. Leadership should champion the importance of spatial data for decision-making, learning, and accountability to encourage widespread adoption across teams.
2. ***Develop and implement minimum standards, process guidance and protection protocols for spatial data collection***
   Establish clear minimum standards and process guidance for spatial data collection to ensure consistency, quality, and comparability across programs. Protection protocols should be put in place to safeguard sensitive location data and uphold ethical standards, especially in high-risk contexts.

3. ***Provide more extensive resources and support for training and capacity building on GIEs and collection and use of spatial data***
   Increase investment in training and capacity building for staff at all levels on spatial data collection, management, and analysis, as well as on geospatial impact evaluations (GIEs). This should include practical tools, ongoing support, and tailored learning opportunities to build confidence and expertise.
4. ***Repeat a light-touch version of the geospatial landscape assessment in 2-5 years to judge progress***
   Plan to conduct a simplified follow-up assessment within the next 2–5 years to monitor organizational progress in spatial data readiness and identify emerging gaps or opportunities. Regular reassessment will help track improvements and inform future strategy.
5. ***Develop partnerships with commercial data providers and equipment providers to help decrease costs for high-quality/resolution data collection***
   Pursue strategic partnerships with commercial data and equipment providers to reduce costs and improve access to high-quality spatial data and tools. These collaborations can enhance data quality and analytical capacity while making advanced geospatial resources more affordable and available to programs.

Background & Objectives

A common barrier to completing geospatial impact evaluations (GIEs) (or other geospatial analyses) in humanitarian and development programming is the lack of appropriately geo-referenced data capturing specific time(s) and location(s) of interventions (see *Summary Report on Implementer Barriers to Integrating EO in Impact Evaluations, Mercy Corps, 2024* – Available upon request). Such impact evaluations and spatially-informed analysis have the potential to dramatically increase our knowledge about what kinds of interventions work and how they affect neighboring communities, as well as enable adaptive management and avoid unnecessary field-based data collection during implementation.

It is increasingly common for implementing partners to collect GPS coordinates when conducting routine monitoring and evaluation, driven in part by donor requirements and in part by increasing ease of collecting this data due to the proliferation of digital data capture technology (i.e. smart phones and tablets) and Monitoring, Evaluation and Learning (MEL) technology platforms that make collecting this data push-button simple. For some purposes, just GPS coordinates may be sufficient – for example, if geo-referenced data is only needed to verify generally where the data was collected. Other purposes may require specific spatial data types (e.g. polygons or lines) or very precise and comprehensive point measurements, so simply collecting the longitude and latitude of an interview, center of a community, or other landmark means missing an opportunity for more in-depth geospatial monitoring and evaluation of interventions.

More information is needed to accurately understand implementing partners' readiness to engage in GIEs, and what actions/strategies are needed to address any gaps in readiness. In Mercy Corps, the "MEL Tech" survey has been run annually since 2021 to generate insight into use of technology among MEL staff in programs. Previous surveys have captured limited information about use of spatial data for mapping participant locations and activity implementation locations, but this information lacks granular depth about the specific programs doing this mapping, what sector those programs cover, what kind of spatial data was actually collected, and if it is of a quality and breadth sufficient to inform a GIE. This landscape analysis seeks to more holistically evaluate Mercy Corps' spatial data collection and use to provide an illustrative example of an international NGO's spatial data readiness, as well as serve as an approach that might be replicated by other implementing partners to better understand their capacity for conducting GIEs.

For the purposes of this report, spatial data is used to describe any data with a locational component describing a location on the earth including vector data (GPS coordinates, points, lines, polygons) and raster data (satellite images, land cover datasets, etc.). This term is used in place of other commonly used equivalent terms like GIS data or geospatial data for clarity and consistency.

Landscape Analysis Objectives

The objectives of this landscape analysis are to:

1. understand the extent to which implementing partners like Mercy Corps are currently collecting sufficiently detailed GIS information that can be leveraged for GIEs (and other geospatial analyses);
2. identify key barriers and enablers, especially regarding data system design, availability of GIS-related MEL Tech, and skillsets to use it;
3. estimate the resource needs to capture more detailed GIS information and appropriate spatial data types;
4. share these results with other implementing partners to stimulate discussion regarding whether they observe similar situations in their respective organizations and identify any solutions or strategies others have used to overcome these issues etc.

To achieve these objectives, Mercy Corps is conducting an internal landscape analysis to:

1. Document at the program level what georeferenced data is collected to establish a baseline assessment of what georeferenced data is collected, how it is collected, and how decisions are made regarding what spatial data is collected.
2. With that baseline understanding in mind, estimate what additional spatial data may be currently collected to facilitate relevant detailed geospatial analysis for M&E purposes, and document what additional costs may be incurred and any additional resources (capacity, technology, etc.) may be required.
3. Identify activities that have collected sufficiently granular spatial data that may enable further geospatial analyses (including but not limited to a geospatial impact evaluation) and further investigating the people, processes, and decisions that resulted in collecting this level of detailed spatial data.

The primary intended audience for this report is the GeoField project and wider community of organizations interested in use of spatial data for impact evaluations, however we expect the findings are relevant to a broader group of persons with interest in how data can be and is used for humanitarian action and international development.

Methodology

To achieve these objectives, the research team leveraged an existing internal MEL Tech survey which is administered to all Mercy Corps country offices and asks broad-ranging questions about the use of data technology and related topics. For all surveys, respondents have been asked to list whether they were producing maps on program implementation locations, participant locations, or other topics. For the 2024 instance of the survey (which was conducted in early 2025), an additional question was included to gather the specific names of programs producing such maps. (see Appendix 1).

Programs named in the survey responses were documented alongside internal records on their sectors, donors, points of contact in Mercy Corps, funding amounts, and start/end dates for implementation. Emails were then sent to the points of contact for the named programs to ask additional questions about the spatial data. Standard questions included inquiries about the decision or motivation behind collecting the data, the type of data collected, and whether the map was used to answer a question, make a decision, or inform the program in some way.

Based on the responses to these emails, Key Informant Interviews (KIIs) were scheduled with programs that indicated relatively sophisticated use of spatial data. These interviews aimed to gather additional information on their process for collecting the data, the costs involved, barriers and enablers, ambitions for using spatial data, and more. Definition of "sophistication" in use of spatial data was subjective, but generally follow-up interviews/questions were sent to any program that reported collection of spatial data other than GPS coordinates, and/or analysis of spatial data for a particular analytical need (e.g. going beyond simply showing where the program/participants were). See Appendix 2 for our detailed KII tool.

A qualitative analysis framework was designed for the documentation collected through email responses and KII records, including a coding system to match analytical objectives (see Appendix 3). Coding and analysis of the data was conducted using MaxQDA software.

Data Privacy and Safety

Identifying details of all specific programs included in this analysis – including names of programs, respondents, locations of implementation, and communities – have been omitted from this report to ensure protection of sensitive information.

Limitations

- Data collection for this assessment began in February 2025, after the US government had already announced stop-work orders for all USAID-funded programs, including those

implemented by Mercy Corps. Subsequently, many of the programs in our survey population were then terminated later that month. While data collection on the MEL Tech Survey was still able to be completed and the program list constructed, some follow-up information via email or key informant interviews could not be collected due to key personnel having been laid off or programs having been closed or left in limbo.

- The MEL Tech Survey collected information from more than 95% of active country offices (some offices were in closure at the time of data collection). Between 1 and 3 persons in each office responded based on their best understanding of what programs were doing with data and technology in 2024, and their responses were cross-referenced and are considered generally reliable. However, it is likely that some programs were not named in the survey responses due to lack of respondent awareness or lack of comprehensiveness in their responses and therefore were missed in the analysis.
- Clear definitions for what constitutes a single, distinct program are not always available in Mercy Corps (or peer organizations). It is possible for the same set of activities to be defined as one program or several depending on specifics about the funding streams, reporting structures, and activities. Most programs directly reach participants on the ground, but some are research-oriented and have no direct participants, and program size varies massively (From <$100k to >$100 million in budgets). This makes it complicated to draw accurate summary conclusions about the prevalence of spatial data collection in Mercy Corps. Researchers have relied on internal records of programs (however imperfect) for this analysis and have not attempted to interrogate or correct the definitions used.

Analysis Findings

By the Numbers

- 56 programs or departments were named in the survey as collecting some form of spatial data. **Detailed information was obtained for 33 distinct programs through follow-up emails and interviews**.
    - Other responses were either eliminated from the analysis because they were not actually reflective of a program that could be evaluated, or eliminated because they did not respond to information requests.
- Of 33 programs analyzed that stated they were mapping locations of program implementation and participants, **all 33 programs were collecting GPS points of households and/or program implementation locations**.
    - **Seventeen (17) programs collected GPS coordinates of other locations**, such as schools or water points which were relevant for implementation but not actual sites of implementation.
    - **Thirteen (13) programs collected other forms of spatial data**, including lines/polygons of relevant phenomena like field boundaries. This was often in addition to collecting GPS points.
    - **Nine (9) programs reported using some kind of Earth observation / remote sensing data in their workflows.**
    - 12 programs were collecting only GPS points of households, but most were collecting more than one type.
- Of 33 programs analyzed, **21 reported using the spatial data collected for program decision-making**.
- In fiscal year 2024 (July 2023-June 2024), Mercy Corps operated 258 programs in total (according to an internal Mapping Our Reach report) which reached participants directly. Programs which did not have any direct participants (e.g. research grants) are excluded from this total.
- Based on this analysis, **at least 12.4% of all Mercy Corps programs that operated in 2024 can be assumed to be "GIE-ready"**, defined as collecting at minimum the GPS points of program households/implementation locations (though subsequent engagements with an impact evaluator may reveal other data needs).
    - As noted above in the Limitations section, it is highly likely that more programs were collecting sufficient spatial data than were identified in this analysis, however our experience suggests that this number is not likely to be very large.

Detailed Findings

Sectors collecting spatial data

Programs analyzed implemented activities in diverse sectors, including agriculture, market systems development, resilience, education, WASH, basic needs for refugee/IDP populations, and more, with most implementing activities in more than one sector. Since spatial data is often considered more relevant for the agriculture sector, the analysis sought to determine an approximate breakdown of the sectors of programs collecting spatial data. One of three categories were assigned to each program based on subjective interpretation of activities conducted:

- *Agriculture* – majority of activities appear to be agriculture-focused, though the program may be implementing in other sectors
- *Humanitarian Assistance* – the majority of activities appear to be direct assistance to vulnerable populations (e.g. cash distribution, basic needs provision, shelter, etc.)
- *Other* – all other programs (e.g. education, nutrition, economic development)

This categorization is unavoidably imperfect but is meant to help discover if agriculture stands out in its collection of spatial data. In the analysis, this did not appear to be the case. The programs that reported collecting and mapping some kind of spatial data which were analyzed in this report fell relatively evenly across the categories (10 in Agriculture, 11 in Humanitarian Assistance, and 12 in Other). Of the 10 programs in the study collecting data on agriculture, 5 of these programs were collecting field level data of plots or agricultural locations at a minimum while the others were primarily collecting household or participant registration information only.

There also did not appear to be any significant difference in collection of different spatial data types by sector. Program respondents from each category mentioned collection of GPS points and line/polygon data at similar rates, with Humanitarian Assistance programs reporting it slightly more often. Programs also mentioned use of or interest in remote sensing/satellite imagery the same number of times for each category. Overall, this analysis suggests that motivation and capacity to collect spatial data is spread relatively evenly across different sectors, not just in agriculture.

Motivation

Motivation for spatial data collection varied widely across programs, but mapping and visualizing program activities and impact was found to be a key motivation for collecting spatial data. This includes integrating data into baseline and endline surveys and improving program planning by overlaying development plans and risk maps. Enhancing MEL activities is also a significant motivation, as is mapping communities and beneficiaries to understand geographic reach and coverage.

The data collection motivation determined from this analysis can be organized into three categories (with examples):

1) Mapping/GIS for general program implementation (**32 of 33 programs surveyed**)
    a. Implementation location (including understanding the context of the implementation area)
    b. Data quality & triangulation (e.g. validating enumerators, analysis or models)
    c. Registration of program participants
    d. Distribution of aid
    e. Needs assessment/selected locations for strategic decisions
2) Mapping/GIS as a *tool* of implementation (**17 of 33 programs surveyed**)
    a. Soil degradation, understanding reforestation
    b. Identifying water points (constructed/rehabilitated)
    c. Monitoring agricultural land status
    d. Modelling of flood data to identify 'high-risk' zones
3) Context Mapping (**10 of 33 programs surveyed**)
    a. Safety & security updates
    b. Forecasting for decision makers

Overall, we found that most programs were collecting spatial data with an express purpose in mind and had a minimum plan for what they would do with it. As we will discuss later in the barriers section, that intended use could be at times limited in scope due to various capacity and technology issues which could be addressed with more sensitization and training efforts around use of spatial data.

Of particular note, only 1 of the 33 programs surveyed mentioned evaluation of the program outcomes as a motivation for collecting the data, which leads us to conclude that programs were generally not considering program evaluation as motivation for collecting data. This is a telling finding on the overall sensitization to use of spatial data for evaluation that will be discussed more in the "Findings Interpretation and Discussion" section below.

Costs

Information on costs was collected exclusively in KII interviews, so a limited sample was collected which yielded a variation in costs across programs for spatial data collection of different kinds. However, the general sentiment from the responses were that unless highly specific technology or methods were being used for spatial data collection (i.e. GNSS devices in the case in an East/Southern Africa (ESA) program or participatory mapping processes in another ESA program), the costs around logistics and enumerators were generally seen to be in line with typical data collection efforts. A respondent in the Middle East and North Africa (MENA) region who led data collection of plot boundaries for validation of agricultural analysis said:

"*I would say that the data collection would be the same as in terms of the data collection [logistics] and also enumerators. It will be the same as the regular monitoring data collection.*" (Program in the Middle East, KII)

Another respondent in a program in Asia stated that the tech investment in collecting GPS data was not a major issue and did not incur significant additional costs because the survey was already planned for and well-absorbed by project budgets. (Program in Asia, KII) Programs are already doing regular data collection and none of the respondents explicitly felt that routine spatial data collection (point, line and polygon collection using standard devices like smartphones or tablets) would be an undue burden financially.

Some specifics on costs for different aspects of data collection were provided in the KII response, and while it would be difficult to say that adding field boundary collection to a routine baseline survey of participants for an agricultural program would increase the cost by a specific percentage or dollar amount, we are comfortable concluding that routine spatial data collection using smartphones or tablets and would not typically add an undue burden to the length or cost of data collection and would not be exorbitantly above and beyond the typical costs of data collection for a program (enumerators, vehicles, devices).

Cost and time consideration does need to be made for things like more complex or longer enumerator training to properly collect data on boundaries or lines, or specific types of assets, as well as additional time needed for actual collection (walking a field boundary takes longer than collecting a single GPS coordinate). Ultimately, additional costs would be in the neighborhood of 10-30% rather than 100+ %, which is often a commonly held assumption.

Special cases mentioned for specific kinds of data collection technology or data included the purchase of survey quality GNSS antennae and PDA devices used in an agricultural survey boundary assessment for a program in the ESA region where high precision boundaries were needed to establish land rights for a conflict mitigation project. These antennae cost roughly $420 each and the tablets cost an additional $280. A subscription was also needed and expert support on training and utilization of this equipment was also procured for the activity at an unknown cost. While it would be more challenging and relatively expensive to do data collection like this on a very large scale (entire implementation districts with tens of thousands of plots), this program was able to map around 4,000 with just 4 antennae and devices and spent roughly $2,000 on additional equipment and subscriptions.

The cost of high-resolution data was also noted. In our discussions with a team in Asia, it was noted that high resolution Digital Elevation Model (DEM) datasets for an Area of Interest (AOI) would cost the team around $8,000. This was seen as a high cost that would need to be justified to program leadership but also was noted to potentially be a good substitute for survey quality data collection of elevation for a flood exposure analysis activity. In a program activity in the MENA region, roughly $4,000 was spent on a few high-resolution datasets (ranging from sub-meter to 5m resolution) to test the quality of vegetation analysis that could be done and validated in a roughly 100 sq km area. While higher quality analysis was able to be done with free satellite imagery due to

its temporal frequency of images, the high-resolution data did give a high degree of accuracy and could have been useful in digitization of field boundaries. However, the high cost of commercial data is still difficult to swallow and justify, and efforts should be made to forge discount agreements and partnerships with data providers.

Overall, sentiments and figures around costs for spatial data collection using routine equipment showed that it would not be prohibitively expensive to institute spatial data collection more widely in programs, especially with good guidance and protocols in place for smooth and accurate data collection. In special cases where more precise or complex data needs to be collected (i.e. survey quality precision or high-resolution datasets are needed to aid collection), costs can increase but can also offset typical data collection costs if procured data can be used for digitization or in place of survey-quality data.

Barriers

According to the KII responses, various barriers hinder spatial data collection and use, including logistical challenges, restricted movement in conflict-affected areas, and limited technical capacity within teams. Data quality issues, such as outliers and inconsistencies, pose significant problems, as do ethical concerns around data ownership and protection.

In many conflict-affected areas where Mercy Corps works, limited access and restricted movement make it challenging to collect spatial data directly on the ground. This makes any data collection in these areas very difficult or completely impossible in most cases. Additionally, in some cases restrictions from authorities and perceived or actual risk to Mercy Corps programs make spatial data collection on the ground difficult or impossible. Mercy Corps has worked to fill this data gap through efforts like the creation of the Reduced Access Analysis Methods (RAAM) toolkit which focuses on supporting programs in thinking through programmatic use of methods including remote sensing and context mapping with publicly available data to ultimately provide programmatic insight where routine monitoring and data collection is much more difficult. Generally, access barriers would pose immense challenges to conducting quality GIEs. However, there is a growing spatial data infrastructure to build on for GIEs in these contexts including OCHA's Common Operation Data-Administrative Boundaries (COD-AB).

Data quality, cleaning, and validation issues, especially with GPS coordinates, are prevalent, resulting in outliers, inconsistencies, and messy data formats. For instance, a program in the ESA region encountered incorrect naming conventions for fields and noted cases where multiple discrete geographic locations were collocated with a single GPS coordinate (i.e. a water point located at a school uses the same GPS coordinate instead of having its own record of the location within the school grounds). A program in Asia noted challenges with GPS accuracy across data collection efforts, finding that in some cases, due to either device accuracy or enumerator error, GPS coordinates were off location and could be difficult to reconcile with exact locations. The

respondent noted that the error was typically occurring in just 1 in 100 records and could be mostly solved with careful training of enumerators.

Additionally, ethical and sensitivity-based concerns around data ownership, storage, and protection create hesitation among communities to share sensitive spatial information, as highlighted by a key informant from a program in our West and Central Africa (WCA) region who mentioned participants' misconceptions about household spying. The absence within Mercy Corps of established protocols and standards for spatial data collection and integration into program decision-making further complicates efforts, but this is being addressed both at Mercy Corps and in the wider sector (see "Recommendations" section below).

While efforts have been ongoing to provide access to training to program teams in GIS including through a training program geared toward MEL staff, ad-hoc trainings, and a geospatial / data science community of practice, respondents noted a need and desire for more technical capacity and skills to work with spatial data and tools like GIS software, necessitating more training and capacity building across all teams. The most mentioned barrier on this topic was the lack of training or understanding of geospatial processes and information. Teams often struggle with limited understanding of GIS tools and technologies, leading to issues like the "accumulation of errors in data collection" (program in ESA region, KII). Additionally, in many cases teams were collecting spatial data like GPS coordinates of participant locations but were not using it for one reason or another. In some of those cases, respondents cited lack of staffing or lack of knowledge on geospatial technology and data as the reason why that data was not used further for visualization or decision making. In others, they were able to accomplish a great deal but relied on self-teaching and training. A respondent from a program in the WCA region noted that deeper analytical skills were also necessary saying: "One of the limiting factors could be the capacity to generate the deeper insights and going beyond basic maps, this I believe should be the continued focus" (Program from WCA region, KII). When asked the question, respondents universally welcomed more capacity strengthening in spatial data collection and analysis.

Enablers

Several factors enable effective spatial data collection and use in Mercy Corps programs. Capacity building and training for enumerators and teams are crucial, along with leadership buy-in and knowledge capacity. In the aforementioned program in the ESA region doing high-precision plot boundary surveys, the team worked with an outside organization to train on techniques but also engaged trained surveyors to do the data collection, which allow for more precise and streamlined collection.

Community engagement and trust-building are also vital, as is realistic budgeting and exploring cost-effective solutions. In a country in our MENA region, community engagement and trust building played a big role in enabling successful data collection: "We emphasize to the team that if

any of the farmers is not interested or not cooperative… community committees will help the team to identify other farmers who are interested" (Program in MENA region, KII)

Ensuring community members and authorities understand the purpose of data collection further facilitates successful implementation. While several programs were successful in engaging authorities or communities (including the one in the MENA region mentioned above), one in the WCA region said that it would be beneficial to have "clear communication guidelines around [spatial data collection]. These questions will be asked [by authorities and community members]… across the team." (WCA Region, KII).

A program in the WCA region cited donor encouragement geospatial data collection enabling factor for their collection of implementation sites for a youth education program, which fed into larger donor databases and visualizations. The data collected was then used by the team as "crucial data for reporting and decision making" including logistics around monitoring activities (i.e. which clusters of schools to send enumerators and program staff to based on their location) and comparative cost effectiveness of operations from one area to another. Donor requirements were generally not cited outside of this case, but this example highlights how requirements or encouragement from donors can have an enabling effect on the collection and use of spatial data.

Other key enablers mentioned included: external support to help the team in gaining access to and selecting software and sources that are best for the program/project's needs, participation from communities in creation of data or validation, sensitizing the community to be comfortable and familiar with the purpose of these data collection processes, and having proper access to suitable tools and data (including satellite imagery).

Process

Data collection methods in Mercy Corps programs are diverse, ranging from paper-based mapping to using standard smartphones and tablets and specialized GPS devices. However, all respondent programs were using digital collection methods, and most in the second category of relatively standard smartphones and tablets. The choice of technology depends on factors like availability and accuracy requirements. Sampling approaches vary, with some programs covering the full population and others using a sampling method. The choice of technology seems to depend on factors like availability, accuracy requirements, and local context. For example, in Southern portion of one of our MENA Region countries, they used tablets for GPS coordinates, while in the North they had to resort to paper-based methods due to restrictions.

Special processes were also implemented for unique data collection needs. In one program in the ESA region, a data collection process developed by the team to map the existing water network in the implementation municipality allowed for spatial data enabled monitoring of water network infrastructure and up-to-date progress on water network construction activities. In another ESA program, a participatory mapping process involved community members in mapping grazing locations, taking data collection out of the field and into a conference room to build consensus

among community leaders about locations, names and designations of key locations to build community rangeland maps for more effective local and government rangeland management.

Across the programs, there is a common emphasis on training enumerators and field staff on data collection methods, often involving a mix of Mercy Corps staff and external enumerators. The duration and depth of training seemed to vary, and poor training certainly correlated with lower quality data.

Data cleaning and validation processes also differ across programs, though most reported doing some sort of verification or validation of the data being collected either through the GPS points themselves (enumerator monitoring to ensure enumerators work collecting data at the correct location) or more in-depth validation of the geographic data itself. In the ESA region rangeland program previously mentioned, the participatory mapping program involves verifying locations with communities in a consultative process, while in a program in the Asia region, spatial locations and attribute data are validated to ensure accuracy. The ESA region survey project validated plot boundaries with local authorities and landowners as they were being collected, then data models were reclassified to ensure correct categorization.

Additional validation is mentioned by teams as being completed by various methods including:

- In-person interviews and triangulation of data collected
- Manual/digital review of the data collected to see if it is correctly placed in implementation areas or if there are problems or outliers in the data
- Validating data with local authorities or governments (in some cases used for program implementation in land conflict mitigation programming)

Data Use and Decision Making

Maps play a crucial role in strategic decision-making and reporting for various Mercy Corps teams by providing a comprehensive visual representation of critical data points. Most of the in-depth KIIs involved very specific use of the spatial data collected for a particular program activity above and beyond routine monitoring or satisfying reporting requirements. In one context mapping collected spatial data helped in understanding the distribution of crops and monitoring participants and routes for production visits. Analytical reports and ad-hoc requests, including safety and security assessments, donor advocacy, and context learning, benefit significantly from geolocated administrative boundaries and places of concern. Context and MEL dashboards utilize maps with collected spatial data to track conflict, market prices, commercial transport, and to validate improvements in productive units.

Program map use from the assessment can be categorized into three ‘buckets’ of use which directly link to the data collection motivations:

1) Program implementation and monitoring including:

    - Understanding spatial distribution of land use classes like agricultural and savannah areas to quantify degradation and focus programmatic restoration work programs at these degraded areas
    - Creating rangeland management maps to support local management of pastoral rangelands
2) Program management
    - Visualizing implementation area
        - Including understanding the spatial distribution of surveyed households (most common use)
    - Validating enumerator work & data quality
    - Needs assessment (e.g. Deciding what areas to reforest, support site selection)
3) Context monitoring including:
    - Safety, security and logistics for program team activity and movement
    - Environmental and climate trends (e.g. understanding the rainfall or vegetation trends to understand the areas most prone to drought)
    - Modelling hazard risk (e.g. risk of landslide, risk of flooding to locate high risk areas for operational awareness or programmatic focus, i.e. implement early warning systems in these areas)

Spatial data collected by teams especially informs decision-making processes in Mercy Corps programs. In a program in the ESA region, spatial data helps determine productive areas and track implementation needs. Programs use GIS software to visualize geographic reach, monitor regeneration areas, and track IDP movements. In a program in Asia, the team layers data collected with other spatial data and analysis to create risk maps, and they have further plans to create a more comprehensive decision support tool with risk profiles for streamlined emergency response. The visual power of mapping spatial data aids in advocating for program impacts and persuading stakeholders to engage in planning and resilience activities. Other examples of data use for decision making include:

- Teams use spatial data to better understand the geographic context and target areas for their programs. For example, they use GIS to "*visualize more around geographic reach*" (WCA region program) and "*determine where areas are previously productive*" (ESA region program). This helps them design programs that are tailored to the specific needs and conditions of different locations.
- Teams use GIS for active program monitoring and decision making. For example, to "monitor whether the area… has regenerated" (ESA region program) and track the movement of IDPs returning to their homes (WCA region program).

Findings Interpretation and Discussion

The total number of programs documented in this analysis as collecting relevant spatial data, when compared with the number of programs Mercy Corps operates in general, signals fairly substantial gaps. Even when considering that many of the programs reporting spatial data use were large programs representing significant chunks of Mercy Corps' portfolios (as of 2024), and that it is likely the analysis missed some relevant programs, **the majority of programs (as high as 87%) are not collecting enough spatial data about their implementation to make a GIE feasible**. This means those programs are also missing out on significant benefits that use of spatial data could bring to all other aspects of their program MEL. Evaluation was also generally not listed as a motivation for collection spatial data in most of the programs surveyed. Many programs focused on active program implementation and contextual motivations for collecting the data, and while most programs do undertake evaluation in some form, most were not explicitly drawing the line between the collection of spatial data and the ability to do evaluation or other advanced analysis with it. This hints at a sensitization gap with conception and understanding of GIEs and how they could be used in evidence generation.

At the same time, **33 programs collecting usable spatial data represents substantial potential, and the detailed findings suggest that there could easily be more with relatively limited investment**. For most programs, collection of spatial data is integrated with larger data collection events, such as baselines, which are usually (but not always) well-planned and budgeted for, and utilize relatively inexpensive equipment. Programs did not report the collection of spatial data as adding more than marginal costs to those data collection events, though many understood that collection/acquisition of more sophisticated spatial data (e.g. high-resolution DEMs) could be more costly. And a select few programs are making advanced use of spatial data, such as classifying land use and modelling hazard risk, relying heavily on the existing skills of team members and their interests/enthusiasm for geospatial analysis. Additionally, considering only one or two of these 12.4% of programs surveyed are currently being evaluated with a GIE, this leaves tremendous room for further rigorous evaluation where it makes sense (11 of these programs were focused on agriculture alone).

Program team members who contributed their thoughts and feedback almost universally noted that they were interested in doing more to collect and use spatial data, citing more training as an example of an action that could help them to push its use in their programs. However, it seems likely that intervention must start at least one step before that. When program budgets or timelines get strained, it is natural for teams to deprioritize things that are frequently seen as “nice to have but not required”, like spatial data. But with the actions of the US Government in 2025 creating lasting contraction and chaos in the sector, good data practice must now, more than ever, be a matter of systems rather than individual initiative.

For nearly 5 years, Mercy Corps has been working to change its internal status quo from siloed and unaligned program MEL data systems to common technologies and data standards. This work is

now linked with a broader organizational initiative to develop and implement standard architectures for the collection and storage of all program data as well as practices and protocols for integrated analysis of this data to generate evidence and insight. This work is critical for improving the quality and availability of program data and increasing implementation efficiency and also creates significant opportunity for implementation of spatial data standards/frameworks that scale, reaching many programs with relatively little extra effort (See Recommendation 3 below for more).

Linking geospatial and temporal information about programs

The analysis did not address whether the program was linking temporal information about program implementation with the spatial data, something which evaluators need to perform an effective GIE. However, Mercy Corps' strategic direction toward standard data systems is expected to take care of much of this problem. For MEL data specifically, use of CommCare for data collection is growing and will likely soon become the organizational standard, in large part because of its built-in case management functionality. Case management – when implemented correctly – automatically structures program data in a form that links information about entities (e.g. households, institutions, fields) with additional information about that entity collected over time in subsequent program activities and data collection waves.

As an example, a humanitarian cash assistance program will typically use CommCare to collect case data on participant households during early phases of the program (typically during a baseline/registration data collection wave). This case data can and frequently does include GPS coordinates on their household location as well as data on the relevant administrative regions they are located in, often including multiple levels including state/province, municipality/division, and town/village. This case data will subsequently be verified and used for cash distributions, and cases will be referenced/linked within the platform for all follow-up data collection waves such as post-distribution and endline surveys. As a result, it will be straightforward to link spatial data for each individual case to data collected on that case in subsequent data collection waves. With standard program data architectures beyond MEL, the same would be true for other program datasets relating to implementation.

While full implementation of CommCare-based data collection in Mercy Corps will be an ongoing project in years to come, combining progress in that work with improvements in the quality and relevance of spatial data collection will be the single most important step organizations can take to be generally "GIE-ready" in terms of available and coherent spatial-temporal information about programs.

Implications for the Sector

Learning from past conferences, discussions, and other peer to peer sharing efforts that Mercy Corps has engaged in suggests that Mercy Corps' level of sophistication in data collection and management is typical of organizations in the international humanitarian and development sector. The sector broadly uses very similar technologies, follows similar data processes, and is moving in a similar direction. Other peer organizations also are adopting CommCare or a technology with similar case management functions and looking at developing data architectures and standards that are more capable of reliably tracking program information.

As a result, while it is possible that some peer organizations are already making strides in collecting better geospatial information on programs, we would expect that the findings from this report are relevant for other organizations.

Recommendations

From the results of landscape assessment, we can make the following recommendations for Mercy Corps (and by extension other implementing organizations):

1. Lean-in to spatial data collection and organizational buy-in
2. Develop and implement minimum standards, process guidance and protection protocols for spatial data collection
3. Provide more extensive resources and support for training and capacity building on collection and use of spatial data and of GIEs
4. Repeat a light-touch version of the geospatial landscape assessment in 2-5 years to judge progress
5. Develop partnerships with commercial data providers and equipment providers to help decrease costs for high-quality/resolution data collection.

Additional discussion of each of these recommendations is provided below.

1. Lean-in to spatial data collection and organizational buy-in

Programs at Mercy Corps are increasingly collecting spatial data and using this data for mapping and more advanced spatial analysis according to our annual MEL Tech survey and this assessment. Mercy Corps programs and country offices should continue to lean-into that momentum, attempting to capture more precise spatial information where appropriate and safe, and seek new ways to use that information for program implementation, management and reporting. In an ideal world, precise spatial information (i.e. a GPS coordinate for a household location or the location of a WASH asset, boundaries of plots for participant farmers), would be collected for every program implementation activity regardless of whether a GIE was explicitly planned giving programs the option to do more detailed monitoring and evaluation work if needed. Obviously, privacy concerns around use and storage of this information would be of paramount importance and would also need to be thoroughly addressed (see recommendation 2).

Baking spatial data collection into Mercy Corps' broader data collection practices will not be a simple process. To achieve this, buy-in from organizational and program leadership (and even donor support and encouragement at times) will be essential to making this happen. Without organizational leadership from program and headquarters leaders who see the value in how this data can be valuable for evidence generation including evaluation, monitoring, and program implementation, the efforts are likely to fall short.

2. Develop and implement minimum standards, process guidance and protection protocols for spatial data collection

It is also clear from this assessment that in order to achieve more universal precise spatial data collection, more resources need to be available to programs to accurately capture, safely store,

and appropriately use spatial data. One step toward that is to establish minimum standards for collecting spatial data. Establishing these standards for common types of data collection (i.e. collecting GPS coordinates of activity locations or boundaries of agricultural plots) supports the feasibility of locational analyses required to conduct GIEs, but will also serve to strengthen the quality and interoperability of spatial data across programs and countries at Mercy Corps. Appendix 4 contains an outline and illustrative examples of standards and processes for spatial data collection that we intend to implement as parallel work is done at Mercy Corps to better coordinate, collate and standardize our program data processes (please reach out to Mercy Corps T4D if you would like to see the latest version of this document).

While these standards focus on the quality and consistency of data, other standards and protocols are needed to govern the storage, protection and lifecycle of (in most cases) highly sensitive spatial information like household locations or plot boundaries. It is nearly impossible to fully anonymize spatial data in the way that tabular data can be anonymized, so risks for inappropriate storage, or use of the data becomes much higher. Thus, spatial data governance protocols need to urgently be established for this data, especially since there are programs already collecting and using it (seemingly appropriately from this survey it should be noted). Mercy Corps needs to continue to work closely with our Data Protection and Privacy team on this effort, but could also work in concert with other NGOs and draw on existing protocols from other organizations and other data initiatives like the Demographic Health Survey (DHS) and the World Bank Living Standard Measurement Study (LSMS), which both have published protocols for how they handle sensitive GPS information from their datasets.

3. Provide more extensive resources and support for training and capacity building on sensitization, planning, collection, and use of spatial data and of GIEs

Many assessment participants cited a gap in capacity or desire to have additional capacity building resources around the sensitization, collection and use of spatial data including support with geospatial analytical methods, software training, and support with utilization of data for program activities and decision making. All participants asked if they would like additional resources responded in the affirmative. Thus, it is clear that volume and reach of this support function from headquarters, regional and/or country level must increase. There are already initiatives underway at Mercy Corps including curated resources for data packaged in a generative AI chatbot, allowing users to query specific things about their use case and get relevant, sector specific support with their answer. The MEL tech training suite launched in 2022 provides specific training on tools like QGIS and institutional data collection software like CommCare and Ona, and a community of practice around AI and data science is planned for launch in the near future. These investments need to continue and increase, adding more explicit support for spatial data collection processes, and developing guidance on how to effectively use data (including spatial data) in decision making processes.

Additionally, investment into making analysis and tools more accessible to program teams should be prioritized. The reality is that program teams are often stretched in the time and capacity that they can put toward training and analysis, so efforts to simplify analytical barriers like software setup, data acquisition and crafting of analysis (through efforts like providing automated off-the-shelf analyses for common operations [like generating a program footprint map or tracking periodic remote sensing indicators on agricultural projects]) will be fruitful in analysis.

With these time-constraints for program staff in mind, it's also important to build sensitization and understanding of both the potential for GIEs in general and when expert support for data collection or analysis is necessary versus doing it in-house. In certain cases, external expert support is needed to achieve a technical geospatial task or function (GIEs are a great example of one of these) rather than attempting to do something in-house due to time needed to undertake and specific methodological knowledge and technical skills. Assessment results suggest that several programs have already been engaging with experts independently, but these programs tend to have staff with relatively high familiarity with spatial data and geospatial technology who are able to conceive of and plan more complex applications of spatial data and geospatial technology. Through wider sensitization of country and program staff to geospatial technology, data and potential uses for programmatic decision making and M&E, some of these gaps can be filled. Additionally, several Mercy Corps headquarters teams including Technology for Development (T4D), Technical Resources and Quality (TRaQ) units, and Evidence and Learning (E&L) units also have support functions in which they work with programs on scoping and procuring expert support on activities that would involve spatial data and methods (like analytical products, ecosystem services valuations, and IEs/GIEs). By increasing awareness and access to these support functions, programs could more readily and confidently plan for GIEs/other spatial analysis and access the resources they need (expert support, training, etc.) to execute these projects.

4. Repeat a light-touch version of the geospatial landscape assessment in 2-5 years to judge progress

Monitoring of programs' continued uptake of geospatial data collection, standards and processes will be important to judging progress towards more universal GIE readiness as well as helping to benchmark overall progress with utilization of spatial data for Mercy Corps. This could be done through additional more detailed spatial data collection in the annual MEL Tech survey or an email campaign similar to the second step of data collection in this assessment based on MEL Tech responses. This also keeps HQ teams accountable to making progress in sensitization of geospatial technology and data and dissemination of resources and capacity building support for programs.

5. Develop partnerships with commercial data providers and equipment providers to help decrease costs for high-quality/resolution data collection.

Many assessment participants cited the high cost of certain equipment and high-resolution Earth Observation data as a barrier for doing more precise collection and advanced analysis of spatial data. Where possible, Mercy Corps should seek to develop institutional partnerships with commercial data providers or developing a consortium with other NGOs to try to negotiate down the price of data. Additionally, it is important to identify and document non-profit programs and pricing for commercial data and products, as these are not always well advertised or even mentioned as options by providers if a Mercy Corps program is working directly with a company. At the HQ and regional levels, we should also well document, internally advertise, and support procurement through these partnerships and non-profit programs to ensure that Mercy Corps country programs know about them and how to take advantage of them.

Conclusion

This landscape analysis gave us comprehensive overview of Mercy Corps' status for spatial data readiness and engaging in GIEs, revealing both strengths and areas for growth in the organization's capacity to leverage geospatial information for impact evaluation and program management. The findings demonstrate that a notable subset of programs—at least 12.4%—are confirmed "GIE-ready" and systematically collect GPS data on at least implementation sites, a number that may actually be modestly higher due to survey limitations (including non-response and program reporting gaps). Spatial data collection is not confined to a single sector; instead, it is distributed relatively evenly across agriculture, humanitarian assistance, and other development fields, indicating broad-based recognition of its value. Programs are motivated by a range of objectives, from enhancing monitoring and evaluation (MEL) activities and improving program planning, to mapping communities and supporting context-specific decision-making. Most programs collect spatial data with clear, practical intentions, although the depth and sophistication of use are sometimes constrained by technical and capacity barriers.

This topline number leaves a lot of room for growth, but this could be something we see pace much more quickly than one might expect. Mercy Corps is well down the road in standardizing our data systems and collection processes to more effectively manage, store and protect our program data. Folding in explicit standards and processes for spatial data is a clear priority as a result of this assessment. Additionally, we are actively working towards better sensitization of and access to resources for data and technology (including geospatial data) through communities of practice, gen-AI chatbots, trainings, and guidance to make it easier for programs to use and learn from the data once it's collected.

Looking forward, the organization will need to focus in on standardizing practices and processes around the collection of spatial data and focus efforts on strengthening access to capacity building resources, training and on the sensitization to the value of geospatial analysis and impact evaluation for program management, reporting and evidence generation. By sharing these findings and our process for determining them with other implementing partners, we hope that we can foster dialogue, encourage the adoption of best practices, and ultimately enhance the sector's capacity to use spatial data for GIEs and learning so that programs become better and more impactful.

Appendices

Appendix 1: MEL Tech Survey Instrument

Included in the download zip with this report

Appendix 2: Draft Follow-up Email to Program Contacts

Included in the download zip with this report

Appendix 3: KII Instrument

Included in the download zip with this report

Appendix 4: Qualitative Analysis Methodology

Included in the download zip with this report

Appendix 5: Draft Spatial Data Collection Processes and Standards

Included in the download zip with this report – NOTE: these are a work in progress and may have substantially changed since publication, but are included as a baseline reference.

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About Mercy Corps
Mercy Corps is a leading global organization powered by the belief that a better world is possible. In disaster, in hardship, in more than 40 countries around the world, we partner to put bold solutions into action — helping people triumph over adversity and build stronger communities from within.
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