Technical Evaluation Reference Group: Thematic Evaluation of Data-Driven Decision-Making (DDDM)

TERG Position Paper, Management Response, and Final Report

May 2023

TERG Position Paper on the Data-Driven Decision-Making Evaluation (DDDM)

Executive Summary

Context

The Global Fund 2023-2028 strategy puts a much greater emphasis on data-driven decision-making. As this is one of the key changes of the new Strategy, the Strategy Committee (SC) found important to have an independent evaluation "to understand how the Global Fund investments currently support Data-driven Decision-Making, to identify gaps and lessons learned to inform the Strategy 2023-2028 implementation". This TERG evaluation focuses on data-driven decision-making at a country level for country programs and was conducted in conjunction with a related audit by the Office of Inspector General (OIG).

This evaluation was commissioned and conducted as part of the 2022 workplan for the TERG. As of 2023, the TERG has been replaced by a new independent evaluation model approved by the Board (GF/B46/DP06).

Findings

The evaluation generated 37 findings, highlighting that:

- The Global Fund has invested over USD 1 billion in developing health management information systems (HMIS) across its portfolio. This has contributed significantly to the development, strengthening, integration and interoperability of disease program health systems, tools, and capacities to increase the availability and accessibility of data for use.
- Despite these efforts, external support to instill a culture of data use is more successful in countries that have robust governance and coordination mechanisms, systems, longer-term support, and appropriate institutional incentives in place to use data throughout the health system.
- Greater partner collaboration is necessary to ensure that all donor assistance and investment support governments to take a leadership and coordination role in implementing their long-term HMIS strategies for the entire health system. This requires a phased approach across multiple funding cycles to instill a culture of data use, with a stronger focus at the sub-national level.
- Additional attention is required to support countries to collect and use more granular data for priority populations to better target services – particularly data collected by community organizations – and to integrate and use data from the private sector.
- Data from community health workers is increasingly being integrated into the overall HMIS.

The report provided eight recommendations, which are detailed in the body of this paper, and can be summarized as follows:

1. Focus strategic effort at the sub-national level.
2. Phase engagement strategically over multiple allocation periods.
3. Focus new investment on data use, rather than system improvements.
4. Support country leadership to strengthen culture of data use.
5. Support multi-year mentoring to strengthen data use habits of decision-makers.
6. Retain investments in digital HMIS platforms.
7. Share successful country tools and templates and support country-to-country learning.
8. Directly support the unit responsible for HMIS strategy to encourage horizontal leadership.

While in general agreement with the report's recommendations, the TERG provides caveats and qualifying comments on recommendation 2, 3 and 5. Building on one key finding from the evaluation, the TERG also provides an additional recommendation, for SC's consideration.

Input Received

- This evaluation has been discussed on several occasions, with early engagement of the Secretariat and the SC, including consultations on the terms of reference.
- The draft inception report was discussed at the 47th TERG meeting, the findings were discussed during the 48th TERG meeting, together with the Secretariat.

Report

Background

1. The Global Fund 2023-2028 strategy[1]places "much greater emphasis on data-driven decision-making, by investing in systems and capabilities to enable the rapid generation, analysis and use of high quality, timely, context-relevant, disaggregated data". Data-driven decision making is described as one of ten key changes in the new strategy and "aspects of the Global Fund partnership's Strategy that will change the Global Fund work to accelerate the pace of implementation".

2. The Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level (2017-2022) "supports good quality data and analyses to be used for decision making during all stages of the program cycle. It outlines how the Global Fund will support countries in strengthening their data collection and analysis capacity." The Global Fund supports countries' data systems mainly through regular country grants and a small percentage (around 3%) through the data Strategic Initiative.

3. TERG reviews (Improving use of M&E investments to strengthen country data systems, thematic review on RSSH, Strategic review 2020 (SR2020), thematic reviews on Private Sector Engagement, (PSE), Multi-country grant (MCG) and the Prospective Country Evaluation (PCE) have highlighted the challenges around using data to guide country program decisions. Recently, a Technical Review Panel (TRP) report highlighted "Insufficient use of empirical data for decision-making and prioritization of interventions[2]

4. The SC raised the need for an independent evaluation to understand how the Global Fund investments currently support data-driven decision-making to identify gaps and lessons learned to inform implementation of the strategy 2023-2028.

5. In response, the TERG undertook this evaluation, in conjunction with a related audit by the OIG, on data-driven decision-making (DDM) at a country level for country programs. It considered how the Global Funds' investments, and the technical support and guidance, have contributed to an increase in sustainable capacity for and actual use of data for decision-making in national program planning and implementation. The Global Fund Secretariat's internal data-driven decisions about grants and/or investments are not included in the evaluation scope.

6. The key objectives are the following:

   - **Objective 1**: To map the Global Fund data investments since 2017 and to document the progress that has been made in data use for country programs at the country level as a result of all data related investments.
   - **Objective 2:** To identify, using a health system strengthening perspective, gaps and the areas of weakness/challenge that need to be overcome to improve use of data for decision-making at the country level for country programs as well as country-level factors (e.g. data quality issue, program and national reporting systems alignment) hindering and enhancing data-driven decision making.
   - **Objective 3:** To identify potential scalable activities in data-driven decision-making at country level and document the areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global

[1] Global Fund Strategy 2023-2028

[2] TRP lessons learned

Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community-based data collection, in decision-making at the country level.

- **Objective 4**: To build on these findings, enriched by a desk-review of published literature findings and partners case studies, and to provide recommendations on how the Global Fund model can effectively support data-driven decision-making at country level.

Methods, Approach and Key Limitations

7. The evaluation used a case-study approach drawing on interviews with key stakeholder (at global, country, and sub-national levels) and a review of key documents. Eight countries were selected[3]: 155 country-level stakeholders, including 27 at the sub-national level, were interviewed.

8. Global interviews were conducted with 57 people, including the Global Fund and partner representatives. Consultations were also held with AEDES, the lead organization for the Global Fund-supported partnership preparing to improve capacity for analysis and use of data in West and Central Africa and covers some countries that overlap with case study countries.[4] Over 100 documents were reviewed, including reports produced by the TERG, the OIG and TRP as well as the Secretariat and external parties. Regular coordination meetings were held with the OIG, which was beginning an audit in a similar area.

9. The report mentions five factors which significantly affected the evaluation and should be noted when interpreting results:
   - The limited time frame overlapping with summer holidays which was compounded with the period when most of the grant cycle 7 guidance notes were already being prepared and updated, meaning that the evaluation findings would be available too late to influence them. Timing also coincided with early period of the Data SI implementation, which did not have many results to review.
   - Delay in finalizing the country selection resulting in case study data for many countries only becoming available late in the process.
   - The selected countries may not necessarily represent the global situation or the diversity of the Global Fund portfolio, but the scope did not allow for broadening the country sample.
   - The data-driven decision-making topic typically warrants detailed face-to-face discussions with in-country stakeholders. And conducting five case studies virtually with relatively limited connection time, being unable to look at systems directly, and with access to documentation limited to what others decided to provide, proved to be sub-optimal.
   - There seemed to be wide and diverse interpretations of the scope of work, which covered wide-ranging topics to explore in equal depth within the timeframe and level of effort.

Findings/Conclusions and Recommendations

10. The evaluation generated 37 findings (see table 1 in Annex 4 for detailed findings), highlighting that:
    - The Global Fund has invested over USD 1 billion in developing health management information systems (HMIS) across its portfolio. This has contributed significantly to the development, strengthening, integration and inter-operability of disease program health systems, tools, and capacities to increase the availability and accessibility of data for use.

[3] Benin, Cambodia, Cameroon, Ghana, Rwanda, Senegal, Tanzania, and Zambia.
[4] Benin, Cameroon, and Senegal.

- Despite these efforts, external support to instill a culture of data use is more successful in countries that have robust governance and coordination mechanisms, systems, support, and appropriate institutional incentives in place to use data throughout the health system.
- Greater partner collaboration is necessary to ensure that all donor assistance and investment support governments to take a leadership and coordination role in implementing their long-term HMIS strategies for the entire health system. This requires a phased approach across multiple funding cycles to instill a culture of data use, with a stronger focus at the sub-national level.
- Additional attention is required to support countries collect and use more granular data for priority populations to better target services – particularly data collected by community organizations – and to integrate and use data from the private sector.
- Data from community health workers is increasingly being integrated into the overall HMIS.

Conclusions:

11. "The evaluation team acknowledges that the Global Fund, with GMD and MECA's technical leadership, has continued to evolve its approaches and guidance in response to new learnings and identified gaps. The issues identified in this evaluation are already well known to MECA, and many are being addressed through the Data SI - although the results of the latest iteration were not yet available for consideration by this evaluation. Furthermore, it is also acknowledged that moving data-driven decision-making forward requires a whole-of-Secretariat approach, to ensure that it receives the prioritized support and attention needed. The progress to date is particularly impressive given that it has been achieved in diverse contexts, facing varied challenges at the country-level, few of which the Global Fund has much or any control over. The purpose of the conclusions was therefore to support actionable recommendations, and hence focus more on what needs to be done, rather than what has been achieved. With this lens, review of the findings across all objectives revealed the following 14 conclusions, supported by the evidence that led to the related findings. The evaluation team recognizes that countries are at different stages, and that conclusions will have varying applicability according to the context. Some countries, in fact are generating the lessons learned and best practices to guide others, which also indicate where the Global Fund's support can make most difference."[5]

12. Specific conclusions from the evaluation reports are the following:

Table *1*: Conclusions, mapped to findings[6,7]

Conclusions	Map to Finding
C1. Global Fund has invested significant financial and technical resources to strengthen data systems for many years, refining approaches to move from data availability to data use. However, investments and results to date are more evident at the national than the sub-national level.	F1, F2, F4, F5, F13, F18, F20, F25, F29, F35

[5] Final report, p.67
[6] In the final report: Table 8 p. 67
[7] Findings are described in annex 4

Conclusions	Map to Finding
C2. The countries that have demonstrated the most progress have also received support for the longest period of time. The track record reveals that long-term efforts in system and capacity strengthening are necessary to build a culture of data use.	F3, F25, F29
C3. Many countries have national strategies to strengthen their HMIS and data use, but three-year funding cycles promote short-term thinking and can create unrealistic expectations about what can or should be achieved in three years, resulting in significant recurrent cost investment and sub-optimal progress on long-term HMIS strategies.	F3, F33, F34
C4. Long-term investments in building data systems and improving the availability and quality of data are necessary, but not sufficient to address the change management and behavior change challenges of creating a culture of data use.	F2, F11, F25, F29, F33, F34
C5. Global Fund investments to date have focused on HMIS strengthening, with less DDM-specific investment, particularly at the sub-national level. While this is being addressed by the Data SI, current investment is insufficient without further investment through country grants (and analysis remains challenging due to inconsistent cost classification).	F2, F4, F6, F15, F16, F27, F29, F31, F33
C6. Global Fund requirements to use data for funding requests, NSPs, and reports have created an incentive to use data in the absence of a culture of data use at the country level. Requirements can therefore be used to build habits and change behavior towards a culture of data use, particularly at the sub-national level.	F8, F11, F31
C7. The support, skills, and incentive to use data effectively remains limited among decision makers in most countries, particularly at the sub-national level.	F18, F20, F22, F25, F35
C8. Long-term and individualized approaches - such as mentoring and on-the-job technical assistance - to supporting data use have proven effective at building a culture of data use for program development, implementation and monitoring, rather than promoting a culture of data compliance that only requires submission and forwarding.	F7, F22, F25, F33, F35
C9. The Global Fund's investments in health management information systems have been critical to improving the availability and quality of data for decision making. However, these gains require ongoing investment in maintenance and support to be sustained and built upon.	F17, F26, F27, F31
C10. Strengthening and maintaining the capacity for effective data use requires long-term support - particularly in the face of high turnover of staff in Ministries of Health, especially at the sub-national level.	F18, F20, F21, F22, F24
C11. Despite having long-term and detailed HMIS strategies in place, many countries still struggle to operationalize them, particularly instilling a habit of consistently using data to inform decisions throughout the health system. Countries with institutionalized dashboards and data review meetings have made more progress.	F12, F23, F24, F26, F29, F35, F37
C12. Good DDM practices exist in a number of countries with the use of appropriate tools, templates and practices (SOPs) that are working well at the national and sub-national levels. Other countries are still struggling to develop, adopt or adapt appropriate tools.	F9, F10, F12, F23, F24, F28, F35

Conclusions	Map to Finding
C13. Investments in data systems are not always well coordinated across donors, which can result in parallel systems that are not integrated or interoperable, resulting in inefficiencies in data availability and analysis for decision making. Coordination of HMIS investments and new initiatives works most effectively when the government (MOH) plays a leadership role, and has a clear strategy, standards, and structures to hold partners accountable.	F9, F14, F30, F36, F37
C14. Access to private sector data is critical to ensure that decision makers have access to the full picture of health data. However, this data is not consistently integrated into national HMIS, due to different country-level approaches, and less investment and guidance.	F10, F27, F29, F35

Recommendations

13. The evaluation team identified 8 recommendations, focusing on high-level policy and strategy recommendations, investment, and technical tools and guidance to support implementation. The recommendations suggest who would be responsible for its implementation and the period it needs.

Table 2: Recommendations, mapped to conclusions[8]

Recommendations	Mapped to Conclusion
Policy & Strategy	
R1. Ensure that the "Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level" is updated based on lessons learned and best practices in line with the new M&E Framework for the 2023-2028 strategy, with a focus on supporting data use for programming decisions at the sub-national level. This framework provides structure and technical guidance to country stakeholders to operationalize DDM approaches, including the effective use of appropriately disaggregated data. An updated version has the opportunity to place greater emphasis on DDM at sub-national levels, including practical examples of where this is working well. **Who:** Global Fund Secretariat. **When:** Developed in time to guide the planning and implementation of NFM4 and use during program reviews.	C1
R2. Ensure that GF's strategic engagement in HMIS is phased over multiple allocation periods to reflect each country's long-term HMIS strategy and/or plans. Existing national strategic plans can inform individual allocation period funding requests, to ensure a long-term approach to system strengthening, change management, and capacity and culture shifts towards effective data use – with intermediate milestones in each funding cycle. The Global Fund can also provide	C2, C3, C4

[8] In the final report: Table 9, p. 69

technical and financial assistance to countries to either develop or strengthen HMIS strategic plans where necessary. **Who:** Global Fund Secretariat. **When:** During preparation and implementation planning of NFM4 and subsequent allocation periods.	
Investments	
R3. Using the revised modular framework, shift and increase investments in the specific RSSH/HMIS elements explicitly focused on DDM, such as data analysis and interpretation, improvement of data quality and capacity building for use, **especially at sub-national levels**. This can include providing guidance to ensure the consistent classification of HMIS-related costs by country and finance teams, to support analysis. **Who:** Global Fund Secretariat. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	C5
R4. In collaboration with in-country partners, use country grants and the Data SI to further support country leadership to strengthen a culture of data use by ensuring that national policies, protocols, incentives and coordination mechanisms require and support data use - including at the sub-national level. This includes ensuring that investments support not only technical and capacity aspects of data systems, but also provide support for change management and enabling the necessary behavior change. **Who:** Global Fund Secretariat, partners (service providers) engaged by the GF, technical partners, and other development partners, as well as the TRP when reviewing proposals. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	C6
R5. Global Fund investments can strengthen the capacity of policy-makers, program, and facility managers through multi-year mentoring approaches for data analysis, interpretation and use. Mentors can empower national and sub-national cadres through pre- and in-service training in data analysis and use, including through providing on-the-job support to use analysis tools, design and customize dashboards and other digital tools, which are currently being developed through the Data SI and by partners. **Who:** The Global Fund secretariat via principal recipients and country governments, in collaboration with other lead donors, partners and implementers at the country level. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	C7, C8
R6. Retain investment in the digital HMIS platform, including DHIS2, for both its continued development and ongoing capacity strengthening to ensure continual	C9, C10

maintenance and evolution of digital health information systems, while continuing to work with local institutions to strengthen country-level capacity, and move towards sustainability. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers **When:** Continue making allocations in country grants and catalytic investments in HMIS, and advocating during engagement with partners and service providers.	
Guidelines and Technical Assistance	
R7. Share a suite of tools and templates based on best practices from the Data SI and country grants, and support countries to learn from each other and adapt tools to facilitate data analysis, interpretation and use by sub-national and national managerial and operational staff. Tools may include standard operating procedures, self-assessments, checklists, visualization tools/dashboards, algorithms, meeting protocols, and feedback mechanisms, based on good practices observed across the Global Fund portfolio. Minimum standards could be considered for the sub-national level. Implementation and adaptation of the tools and templates may be built into the technical assistance scopes of work of partners, as well as linkages to existing communities of practice. **Who:** Secretariat to develop tools and templates based on best practices from the Data SI and lessons learned from country grants. Secretariat to update terms of reference of Data SI implementers and partners to adapt tools and provide focused TA for different contexts. **When:** Provide a sample to countries and partners to guide strategic information investments, in time for NFM4 grant-making.	C11, C12
R8. Directly fund and provide technical support to the unit in the MOH responsible for HMIS governance and strategy to lead and coordinate the interoperability of all health information systems, linking all data to user-friendly dashboards to support decision making. These systems will include different health programs, human resources, laboratory, procurement and logistics, and private sector service delivery data, and require cooperation among different development partners to streamline indicators - including across the public, private and community sectors. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers and development partners. **When:** Begin discussions and support during NFM4 for full strategic roll-out in future allocation periods.	C13, C14

Discussion and TERG Position

14. The TERG broadly endorses the findings, conclusions and recommendations in this independent evaluation (except recommendation 5). Overall, it tells a coherent and emerging story around data use for decision making at the country level.

15. The TERG notes the limitations of this evaluation and most importantly the delays occurring in the approval of countries for case studies were particularly problematic as this evaluation was based mostly on data collection at country level. These delays have significantly reduced the timeframe for this evaluation, reducing the time available for data collection, analysis and synthesis and thus has put much pressure on the consultants to complete this work and maintain a high standard of quality. Furthermore, the inability to conduct all country case-studies through visits in all countries given travel restrictions by COVID19 needs to be noted (only 3 out of 8 case studies were conducted on site).

16. The TERG agrees with the recommendations of the consultants with the following caveats:

17. **Recommendation 2**: the TERG feels that in addition to the Global Fund Secretariat, the TRP also has a significant role to play in ensuring that funding requests for data management and DDM are in line with the countries' own strategic plans for HMIS,

18. **Recommendation 3**: the TERG notes that the modular framework operates at the level of budgets and not expenditure. While it will help to monitor requested allocations/amounts in funding requests, there is risk that allocated funds may not translate into absorbed/expended amounts for DDM. Thus, counting DDM investments at a budget level may only deliver marginal results, unless they are reinforced with additional qualitative (and quantitative) indicators obtained through reviews. In addition, the TERG notes that in the second part of the recommendation 3, the consultants aim to address the fact that "there is not a consistent classification (of expenditure) among countries and country teams[9]". The TERG thinks that the basis for clear quantification of the investment in data systems and the data-driven decision-making lies in all actors classifying expenditure on DDM in the same basic way. The TERG therefore recommends that classification criteria [and/or guidance] for expenditure around data and data use be made clear, simple and unambiguous.

19. **Recommendation 5** suggests mentoring to improve data use by managers through pre- and in-service training. The TERG does not think that pre-service mentoring is a practical modality for the Global Fund to invest in, given the vast number of pre-training courses and institutions and mentoring should focus on in-service. However, high staff turnover at the central Ministries of Health and the sub-national level may warrant a longer-term and more sustainable approach, to ensure the necessary HR replacements with incorporation of DDM in pre-service training programs. Therefore, the Global Fund may need to consider working with partners who invest in pre-service trainings program, especially in core and high impact countries, and emphasize the need for investments in DDM training modules that could have a more sustainable impact and even beyond HIV, TB and malaria. Additionally, the Global Fund could be encouraging further partner collaboration on cross-government efforts to instill a culture of data use for constructive performance improvement at all administrative levels.

20. Finding C14 around ensuring that private sector data is integrated into the national HMIS has not made its way into the eight recommendations of the consultants. In light of the importance of the private sector in the overall health delivery mechanisms in many LMIC countries, as well as the importance of the private sector in the forthcoming 2023-2028 strategy *"better engage and harness the private sector to improve the scale, quality and affordability of services"* the TERG feels that greater emphasis should be placed on harnessing and integrating private sector data in the future. The Global Fund Secretariat should be tasked with creating incentives in countries to ensure that efforts to integrate private sector data are incorporated into the HMIS funding.

[9] See Final report, p.

21. Similarly, the report found that “efforts to integrate community-based/led monitoring data remains nascent; the latest Data SI is addressing this, but it is early days.” And while this is noted in the recommendation 8, the TERG thinks community-based data collection, monitoring, reporting and analysis deserves greater attention and reiterates the need for the Global Fund to provide more support to country decision-makers and programs to better integrate community-generated data with the health management information systems.

Annexes

The following items can be found in Annex:

- Annex 1: Relevant Past Board Decisions
- Annex 2: Links to Relevant Past Documents & Reference Materials
- Annex 3: Summary of findings by evaluation question and strength of evidence (SoE)
- Annex 4: Abbreviations

Annex 1 – Relevant Past Board Decisions

GF/B46/DP03: Approval of the Strategy Narrative for the 2023-2028 Global Fund Strategy (November 2021)6	Approval of the Strategy Narrative for the 2023-2028 Global Fund Strategy (November 2021) GF/B46/03 revision 1 The Board approved the Strategy Narrative for the 2023-2028 Global Fund Strategy and requests that the Secretariat develop, for presentation to the SC in March 2022 and subsequently the Board in May 2022, an approach for Strategy implementation with a focus on delivering the key changes outlined in the Strategy using all existing levers and identifying where new solutions will be required.

Annex 2 – Relevant Past Documents & Reference Materials

- Global Fund Strategy 2023-2028
- TRP lessons learned
- The Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level (2017-2022)
- TERG Independent Evaluation Strategic Initiative Phase 2

- Technical Evaluation Reference Group: Thematic Evaluation on Strategic Initiatives
- Thematic Review on Resilient and Sustainable Systems for Health (RSSH)
- Strategic Review 2020
- Thematic Review on The Role of the Private Sector in Program Delivery
- Synthesis reports PCE

Annex 3: Summary of findings by evaluation question and strength of evidence (SoE)

Rating	Assessment of the findings by strength of evidence (SoE)
Strong (1)	• Supported by data and/or documentation categorized as being of good quality by the evaluators; and • Supported by majority of consultations, with relevant consultee base for specific issues at hand
Moderate (2)	• Supported by majority of the data and /or documentation with a mix of good and poor quality; and/or • Supported by majority of the consultation responses
Limited (3)	• Supported by some data and/or documentation which is categorized as being of poor quality; or • Supported by some consultations and a few sources being used for comparison (i.e., documentation)
Poor (4)	• Supported by various data and/or documents of poor quality; or • Supported by some/few reports only with no data/or documents for comparison; or • Supported only by a few consultations or contradictory consultations

Table 3: Findings by evaluation question and strength of evidence (SoE)[10]

Evaluation Question	Finding	SoE
Objective 1: To map the Global Fund data investments since 2017 and to document the progress that has been made in data use for country programs at the country level as a result of all data-related investments.		
1. What have been the elements of the HMIS/M&E/DDM investments in the global portfolio/country level?	F1. Global Fund investments - both grants and catalytic funding - cover: i) developing routine reporting systems; ii) undertaking analysis, evaluations, reviews, and establishing transparency of the data captured; iii) developing capacities for and undertaking program and other data quality audits; iv) undertaking disease, health facility, and household surveys; v) analyzing financial, human resources and supply chain data; and vi) community-based monitoring (CBM[11]).	

[10] Table from the final report, p.13

[11] Support for community-generated Information systems is regularly referred to as CBM. While also the former name of community-led monitoring (CLM), CBM is used in this context as an all-encompassing term and refers to the GF (TAP and Finance) classification of all information activities at the community level that are captured under CBM in the investment categorization, as reported in the investment table provided by GF/TAP. In practice, data captured by CHWs is usually found as an activity under the RSSH/HMIS/routine reporting sub-element, while data captured by CBOs on KPs, for example, is categorized under RSSH/CSS/CBM sub-element. However, there is not a consistent classification among countries and country teams.

Evaluation Question	Finding	SoE
	F2. Global Fund investments in HMIS and CBM emphasize health management information system development, with consideration of capacity strengthening for the system's use, while less specifically for data analysis, interpretation, and use.	
	F3. HMIS, including CBM development and strengthening, are long-term processes, requiring ongoing and continuous, yet iterative investment that is not always sufficiently or appropriately supported within individual funding cycles. This can be due to competing priorities for limited resources, and the extent of prioritization by the CCM or national leadership in general.	
2. What have been the most significant outputs of the HMIS/M&E/DDM investments in global portfolio/country level (from paper-based or blackboard data systems to integrated back-end databases with front-end dashboards in comprehensive data warehouse or training programs)?	F4. Global Fund investment has resulted in several outputs, the most significant of which have been support to establishing increasingly interoperable HMIS M&E systems, COVID-19 surveillance – including equipment and capacity strengthening, with additional examples demonstrated in country case studies.	
3. What have been the most significant data use systems or approaches established through GF investments?	F5. Global Fund investments have supported the development of multi-indicator and system performance dashboards, which are used in most countries to monitor programs, revise NSPs, and formulate funding requests.	
4. To what extent have the Global Fund investments to date contributed to an increase in programmatic level data-driven decision-making, and how?	F6. Establishing and strengthening the application of electronic systems (DHIS2 or other e-HMIS) increased the availability of data; it organizes the information in a manner that is more easily consumable thereby more likely to be used.	
	F7. The Global Fund investment and support for data use is different to that provided by other donors such as PEPFAR and PMI; the latter includes support for implementing partners to provide longer-term coaching and mentoring to support data use.	
5. To what extent is data used to inform CCM and PR decisions during the grant design and implementation?	F8. Since the introduction of the NFM, funding requests and NSPs have been much more data-driven because of application requirements and a more-evidence based grant-making process. This is supported by investments in information systems, different surveys, country dialogues, and program reviews.	
6. What have been the achievements to date to integrate community-based data and private	F9. There has been increased investment in developing community-based information systems, allowing for the integration of this (routine, service delivery, [gender and age] disaggregated) data into national systems.	

Evaluation Question	Finding	SoE
sector data in the national decision-making?	Apart from (phone based and simple) e-trackers to follow up on individual clients in some countries, data entry remains mostly manual. Overall, investments in community-generated data remain nascent – particularly for CBOs and providing separate data on KVPs and enhancing community-led monitoring.	
	F10. Limited initiatives or investments in capturing or sharing data from the private health sector were identified. It is more likely to occur if reporting is linked to accreditation requirements – and enforced – and where synchronization is technically feasible.	
7. To what extent does the Global Fund provide support to improve the quality and use of disaggregated data to support inclusive programs?	F11. The Global Fund's requirement of and support to sex and age disaggregated data has contributed to an increase in availability in routine data, but this has not consistently translated into improved use.	
	F12. Approaches to key population data collection varies based on the socio-cultural context, and national priorities. Many countries increasingly rely on surveys, program reviews, or civil society to collect KP data, while some embed it in routine data collection, with different strategies for protecting patient privacy.	
8. What are the categories or domains of data requested at global and in-country level and by whom and what is the data used for?	F13. All countries report that data captured is used for the following main domains, both in-country and internationally: Diseases epidemiology, programmatic health and management indicators, planning and use of resources, absorption of donor subsidies, and feeding regional and global reports. Data are being used by program managers, health planners and CCMs in-country, while at the global level it is used by the GF, particularly the country team and partners such as WHO, UNAIDS, Stop TB, RBM, and bilateral development partners.	
Objective 2: To identify, using a health system strengthening perspective, gaps and the areas of weaknesses/challenges that need to be overcome to improve the use of data for decision-making at the country level for country programs as well as country-level factors (e.g., data quality issues, program, and national reporting systems alignment) hindering and enhancing data-driven decision-making).		
9. What is the hindering and enhancing factors, gaps and challenges to be overcome to improve the use of data for decision-making at country level? This should include specifically looking at disaggregated data for the disease program, community-related data and private sector data?	F14. Government-led coordination of donors and HMIS investments enhances the likelihood of data system integration, interoperability, and shared approaches to indicators, interpretation, and data use. However, coordination is not government-led in all countries.	
	F15. Investments in DHIS2 to integrate different data sources have led to an increase in data availability and accessibility.	
	F16. Data from community health workers is increasingly integrated into national information systems, however it remains nascent for other community-based data, such as KVP data collected by CBOs that are forwarded to the national level through other channels.	
	F17. Data quality is necessary to ensure that data is trusted to inform decisions yet ensuring data quality is a resource-intensive process.	

Evaluation Question	Finding	SoE
	F18. Strengthening and supporting human resource capacity to use data is correlated with increased data use, but support remains inadequate overall, particularly at the sub-national level.	
	F19. DHIS2 has enabled improved access to health data throughout the health system, although it remains limited to prospective data users outside it.	
10. What are the examples (and reasons) for weak data-driven decision-making, and what are the key issues/risks to the country programs and the Global Fund of not having country level robust data-driven decision-making?	F20. Human resource capacity to use data for decision-making varies by country and within countries, with the greatest gaps being the lack of ownership over data, and lack of empowerment among data entry and decision-making personnel at the sub-national level.	
	F21. Limited electricity, internet connectivity, and tools remain constraints to the effective uptake of HMIS at the sub-national level.	
	F22. High turnover of (trained) staff was cited as an issue affecting DDM, particularly at sub-national levels.	
11. What are some examples of robust data-driven decision-making, systems and approaches at country level and how have these been achieved and are these sustainable?	F23. Countries with experience with customized and user-friendly data visualizations, such as dashboards, report that it facilitates better understanding and interpreting data, and increases the likelihood that data availability will translate into data use.	
	F24. Countries that require routine regular data sharing, review, and interpretation meetings demonstrate increased data use, and greater demand for quality data by regular review meeting participants.	
	F25. Countries that have data users who have an interest in extracting insights from data, use data more effectively than those who only use data for compliance purposes. This tendency is more likely to occur at the national, rather than at the sub-national level.	
12. Is age and gender disaggregated data being used to inform a more targeted and inclusive approach?	F26. Sex and age-disaggregated data are largely collected, but use for developing and inclusive approaches vary by country. Good examples of using age, sex, key population, and location disaggregated data were found that resulted in improved targeting, however the consistency of this is unknown, and the literature review suggests that this practice is not yet entrenched in the culture.	
Objective 3: To identify potential scalable activities in data-driven decision-making at country level and document the areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community- based data collection, in decision-making at the country level.		
13. How have recommendations of the recent Global Fund reviews and evaluation on data use contributed or (not contributed) to data	F27. While progress has been made against some previous recommendations, many – particularly regarding system strengthening and human resource capacity development – recur over several evaluations, and there remain gaps in longer-term phased investments	

Evaluation Question	Finding	SoE
used in country level decision-making?	and rigorous support for the application of tools and data utilization processes.	
14. How have Covid-19 data initiatives at country-level contributed (or not contributed to data use in country-level decision-making?	F28. COVID-19 created opportunities for improving data availability, real-time use, and generated creative solutions, and sharing data with the public. For example, simplified (bi) weekly ATM data monitoring systems in a selected number of health facilities provided as good a performance check as quarterly monitoring reports. But as this involved creating (a) separate system(s) it also led to increased burden on the staff involved.	
15. Are the resources for program monitoring and evaluation and the available incentives (guidance, strategic initiatives) in the countries sufficient to allow data-driven decision-making and did they contribute to data use for decision-making?	F29. Investments and resources provided to date have focused primarily on ensuring data availability, and data quality, and to a certain extent, to program reviews, epidemiological and impact analysis – particularly for Core and High Impact countries, and while preparing NSPs and funding applications. While these are essential fundamental elements for DDM, investment and technical resources to support developing a culture of data use have not yet ensured consistent DDM.	
16. What are the underlying conditions to ensure the scaling up of successful DDM approaches?	F30. County case studies point to national leadership that provides appropriate governance, systems and incentives have contributed to ensuring successful DDM approaches to improve health service delivery. Moreover, incentives for data collection and analysis and regular review contributed to greater data use. The increasing application of digital systems, whether at national level through electronic platforms or at community level through phone-based trackers has also led to an improvement of data availability.	
17. Are data for vulnerable populations collected and used routinely? What other systems are used to inform programming for vulnerable population? To what extent is data collection and use institutionalized?	F31. Apart from targeted KVP surveys, there is limited routine collection, integration, or use of key population data, which limits the opportunity to strengthen equitable programming. Routine collection of KVP data is sensitive and done through separate surveys or separated channels supported by CBOs. They are not necessarily part of a national information system to allow for regular monitoring and adequate or instant action-planning or decision-making.	
Objective 4: To build on these findings, enriched by a desk review of published literature findings and partner case studies, and to provide recommendations on how the Global Fund model can effectively support data-driven decision-making at country level.		
18. What can the Global Fund do differently, based on this review and globally available evidence to	F32. While there is growing evidence that data is being used particularly for funding request development and national strategic plans, data use remains uneven across and within countries, with an emphasis on compliance and national monitoring rather than programming improvements.	

Evaluation Question	Finding	SoE
increase use of data for decision-making	F33. The Global Fund should continue its support for the data system development and data quality, while focusing investments on elements specific to data use, particularly at the sub-national level.	
	F34. HMIS and CBM development and strengthening require time, attention, and continued investment beyond the current allocation period.	
19. What are the priority areas of technical assistance to support DDM going forward?	F35. Sub-national program staff have not received the same investment in capacity strengthening to build data use skills and habits, and - with few exceptions - the health and performance management system and culture does not empower the sub-national level to use data beyond compliance and reporting. Priority areas are to strengthen the capacity of the people entering data and local decision-makers, support pro-active use of appropriate tools, and empower them to use data for local decision-making - including the development of suitable analytical and decision-making tools and dashboards where necessary. Further technical assistance is required to ensure that public, private and community data systems are interoperable, and integrated in dashboards. These include routine disease data, health products, logistics, finance, and human resources.	
20. How can the Global Fund work together with other partners to increase DDM and with whom?	F36. Investments have proven to be more effective in supporting government-led coordination of all technical and other development partners, where they are made directly into the MOH unit responsible for HMIS governance and strategy. Going forward, this should be done with an increased focus on interoperable systems and DDM.	
21. What can the Global Fund do to encourage better use of disaggregated data for more inclusive health programs?	F37. The Global Fund could work with governments and partners to enable better use of disaggregated data - particularly for KVPs - by supporting the development or synchronization of electronic medical record systems with the national HMIS, while protecting patient privacy.	

Annex 5: Abbreviations and acronyms

ATM	AIDS, tuberculosis, and malaria
C19RM	COVID-19 Response Mechanism
CBM	community-based monitoring
CBO	community-based organization
CCM	country coordinating mechanism
CHW	community health worker
CLM	community-led monitoring
CSS	community system strengthening
CT	country team
DDM	data-driven decision-making
DHIS2	district health information system version 2
FPM	Fund Portfolio Manager
GMD	Grant Management Division
HISP	global movement to support DHIS2, linked with the University of Oslo[12]
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome
HMIS	health management information system
HMST	Health Management Support Team
KII	key informant interview
KP	key populations
KPI	key performance indicator
KVP	key and vulnerable populations
LFA	Local Fund Agent
LOE	level of effort
MECA	Monitoring and Evaluation and Country Analysis Team
M&E	monitoring and evaluation
MOH	Ministry of Health
NFM	new funding mechanism
NGO	non-governmental organization
NSP	national strategic plan
OIG	Office of the Inspector General
PCE	prospective country evaluation
PEPFAR	the United States President's Emergency Plan for AIDS Relief
PMI	the United States President's Malaria Initiative
PR	principal recipient
RBM	Roll-Back Malaria Partnership to End Malaria
RSSH	resilient and sustainable systems for health
QA	quality assurance
SC	Strategy Committee
SOE	strength of evidence
SOP	standard operating procedures
SI	strategic initiative
STC	Sustainability, Transition, Co-Financing
SR	sub-recipient

[12] https://www.mn.uio.no/hisp/english/about/index.html

Secretariat Management Response

TERG Evaluation on Data Driven Decision Making

Introduction

The Technical Evaluation Reference Group (TERG) is a critical component of the Global Partnership, providing independent evaluations of the Global Fund's business model, investments, and impact to the Global Fund Board through its Strategy Committee (SC). The Global Fund values transparency and publishes TERG reports in accordance with the TERG Documents Procedure approved by the Strategy Committee.

The Global Fund Strategy 2023-2028 "Fighting Pandemics and Building a Healthier and More Equitable World"[1], places greater emphasis on data-driven decision-making (DDDM) and aims to invest in systems and capabilities to enable the rapid generation, analysis and use of high quality, timely, context-relevant, disaggregated data. This is a key driver to accelerating the pace of implementation and impact. Over the last three grant cycles, the Global Fund has made significant investments in health management information systems (HMIS) through country grants and through the Data Strategic Initiative [2](funded through catalytic investments) which have, for example, focused on increasing timely and complete data, as well as strengthening in-country data collection systems, HMIS/ district health information systems (DHIS) platforms and capacity strengthening.

As part of the TERG annual 2022 workplan, the SC requested an independent evaluation to understand how the Global Fund investments currently support data-driven decision-making to identify gaps and lessons learned to inform implementation of the Strategy 2023-2028. This evaluation was undertaken in conjunction with a related audit by the Office of Inspector General (OIG), on in-country data and data systems (GF-OIG-23-006).[3] The TERG evaluation considered how the Global Funds' investments, and the technical support and guidance, have contributed to an increase in sustainable capacity for and actual use of data for decision-making in national program planning and implementation. The Global Fund Secretariat's internal data-driven decisions about grants and/or investments are not included

[1] https://www.theglobalfund.org/media/11612/strategy_globalfund2023-2028_narrative_en.pdf
[2] DATA SI funding 20217-2019 (20 million), 2020-2022 (35 million)
[3] https://www.theglobalfund.org/media/12953/oig_gf-oig-23-006_report_en.pdf

in the evaluation scope. The OIG audit focused more on data quality – including accuracy, timeliness, and completeness- and the findings point to the need to strengthen use of data. The OIG review was complementary to the TERG evaluation and there is agreement that more can be done to strengthen data use at country-level as it relates to accuracy of data that is being collected. The newly established Programmatic Monitoring Department (PMD) of the Secretariat will focus on strengthening data quality and data use for decision-making with the main goal of supporting countries to deliver greater impact.

The Secretariat notes that 2022 was a year of numerous concurrent evaluations which resulted in tensions in country selection for the TERG evaluation and that the sample size of eight countries is small compared to the overall Global Fund portfolio.

Areas of agreement

The Secretariat appreciates the effort and good collaboration with the TERG and the Evaluation Team, and in-country programs and acknowledges the significant amount of work that was carried out in a limited timeframe for this evaluation. The Secretariat broadly agrees with the overall findings, conclusions from the DDDM evaluation and related TERG recommendations most of which resonate with ongoing efforts to strengthen data-driven decision- making at country level.

The Secretariat agrees with the TERG's position that there should be more emphasis on harnessing and integrating private sector data into national systems (HMIS and community health information system (CHIS) data systems), however, it should be noted that the inclusion of private sector data into national reporting systems is something that must be driven by the government, while the Secretariat can advocate for this in collaboration with partners. Rather than '*creating incentives in countries to ensure that efforts to integrate private sector data are incorporated into HMIS funding'*, the Secretariat feels that it would be more appropriate to engage with partners in advocating for supportive actions that respond to country-specific context.

Similarly, the Secretariat agrees with the TERG on the need to further emphasize the importance of community-based data collection, monitoring, reporting and analysis and that while the Secretariat can play a role in advocating its inclusion and integration within HMIS, this requires support from other in-country partners and leadership from host governments.

Recommendation 5: Global Fund investments can strengthen the capacity of policymakers, program, and facility managers through multi-year mentoring approaches for data analysis, interpretation, and use. Mentors can empower national and sub-national cadres through pre- and in-service training in data analysis and use, including through providing on-the-job support to use analysis tools, design and customize dashboards and other digital tools, which are currently being developed through the Data SI and by partners.

While the Secretariat agrees that there is a need to support efforts to ensure that national and sub-national cadres of workers have sufficient training in data management and its use, the Secretariat agrees with TERG observation that pre-service mentoring is not a practical modality for the Global Fund to invest in given the vast number of pre-training courses and institutions and observes that mentoring should focus on in-service training. However, high

staff turnover at central Ministries of Health and the sub-national level may warrant a longer-term and more sustainable approach, to ensure the necessary human resource replacements with incorporation of data-driven decision-making in pre-service training programs. The Secretariat also agrees with the TERG that the Global Fund may need to consider working with partners who invest in pre-service trainings program, especially in core and high impact countries, and emphasizes the need for investments in DDDM training modules that could have a more sustainable impact beyond HIV, TB, and malaria. Additionally, the Global Fund could be encouraging further partner collaboration on cross-government efforts to instill a culture of data use for constructive performance improvement at all administrative levels.

Recommendation 2: Ensure that GF's strategic engagement in HMIS is phased over multiple allocation periods to reflect each country's long-term HMIS strategy and/or plans. Existing national strategic plans can inform individual allocation period funding requests, to ensure a long-term approach to system strengthening, change management, and capacity and culture shifts towards effective data use – with intermediate milestones in each funding cycle. The Global Fund can also provide technical and financial assistance to countries to either develop or strengthen HMIS strategic plans where necessary.

The Secretariat agrees with the TERG position that the TRP has a role to play in assessing how the interventions requested by countries as part of their funding requests fit into larger longer-term country strategic planning on information management and data systems. The Secretariat, in collaboration with partners and other donors can and does advocate and influence for longer-term investment and strategic planning in Global Fund-supported programs, including in data management systems. As the Global Fund operates on three-year funding cycles investments in monitoring & evaluation (M&E) need to consider the amount of funding available through country allocations (and if relevant catalytic investments) which are dependent on overall Replenishment amounts for a given grant cycle. Ideally these investments should be part of longer-term approach to system strengthening and countries should be able to clearly describe how their specific request to the Global Fund for data systems strengthening fits in with longer-term strategies and budgets and how these complement funding and investments from other donors and partners.

The Secretariat acknowledges that six out of eight recommendations are already being addressed through ongoing activities being implemented through the current DATA SI and through country grants. The current DATA SI ($35 million over grant cycle 6 (GC6)) will end at the end of December 2023. This may in part impact the ability of the Secretariat to fully address all the recommendations from DDDM evaluation.[4]

Recommendation 1: Ensure that the "Global Fund Strategic Framework for Data Use for Action and Improvement (DUFAI) at Country Level" is updated based on lessons learned

[4] An element of the DATA SI will continue as part of the Digital Health Innovation Accelerator under the "Incentivizing RSSH quality and scale" catalytic investment priority.

and best practices in line with the new M&E Framework for the 2023-2028 strategy, with a focus on supporting data use for programming decisions at the sub-national level. This framework provides structure and technical guidance to country stakeholders to operationalize DDM approaches, including the effective use of appropriately disaggregated data. An updated version has the opportunity to place greater emphasis on DDM at sub-national levels, including practical examples of where this is working well.

The Secretariat fully agrees with the principles in this recommendation and notes that the Global Fund M&E framework 2023 – 2028 was recently developed with plans underway to operationalize the framework with a focus on strengthening M&E at country level and building resilient systems. Part of the operationalization will include articulation of Global Fund country phasing of M&E activities and place greater emphasis on DDDM at sub-national levels.

In addition, the Secretariat has revised the M&E system profile indicators including key performance indicators that will be used to monitor country level effort to strengthen data systems, availability, analysis, and use of granular data for planning and program improvement.

As part of grant cycle 7 (GC7) the Secretariat has included essential M&E system strengthening interventions that is part of core information notes (HIV, TB, Malaria and RSSH). The RSSH information note provides detailed guidance on essential M&E investments. These resources are available on the website and aim to guide and support applicants to consider essential investments needed to strengthen data systems, analysis and use of granular data leading to DDDM at country level.

Recommendation 3: Using the revised modular framework, shift and increase investments in the specific RSSH/HMIS elements explicitly focused on DDM, such as data analysis and interpretation, improvement of data quality and capacity building for use, especially at sub-national levels. This can include providing guidance to ensure the consistent classification of HMIS-related costs by country and finance teams, to support analysis.

The Secretariat fully agrees with the recommendation and notes that as part of applicants supporting guidance for 2023-2025, the t revised the modular framework places more emphasis on interventions aimed at enhancing data availability, quality, analysis and use at national and sub-national levels. Some of the intervention areas included in the modular framework are:

1. Analyses, evaluations, reviews, and data use: Activities related to analysis, visualization, interpretation, and use of available data at national and sub-national level, collected through various sources, such as routine reporting, surveys, special studies, evaluations, reviews, and others.

2. Routine reporting: strengthening of national programmatic data systems, such as health management information systems (HMIS), both disease specific and/or cross-cutting.

3. Survey and surveillance systems: targeted and sub-national surveys aimed at generating granular morbidity, mortality, service coverage, outcome bio-behavioral data etc.
4. Data quality: aimed at monitoring and improving quality of data generated through routine systems (facility, community, and private health sector), surveys and assessments.

The Secretariat agrees with the TERG observation that the modular framework operates at the level of budgets and not expenditure, and that allocated budgets may not translate into absorbed/expended amounts especially at activity level. However, the Secretariat notes that annual progress updates and disbursement reports (PUDRs) and annual payment for results reporting track expenditure at module and intervention levels but not at activity levels. Classification by intervention is uniform across grants as much as this may not be uniform across partners supporting DDDM country-level initiatives.

Recommendation 4: In collaboration with in-country partners, use country grants and the Data SI to further support country leadership to strengthen a culture of data use by ensuring that national policies, protocols, incentives, and coordination mechanisms require and support data use - including at the sub-national level. This includes ensuring that investments support not only technical and capacity aspects of data systems, but also provide support for change management and enabling the necessary behavior change.

The Secretariat fully agrees with the recommendation and notes that the current DATA SI has a component on “normative guidance, policies, tools and software” aimed at strengthening data governance and country leadership on data systems and use. In addition, DATA SI also supports regional partnerships for analytical capacity and data use in west central Africa (WCA) and southeast Africa (SEAF) regions involving local academic institutions. The aim of the partnership is to strengthen analytical capacity and use of data by decision and policy makers at national and sub-national levels. This in the long run will strengthen country leadership in enhancing a culture of data use at all levels.

In acknowledgement of the importance of strong data governance and leadership in DDDM, GC7 guidance to applicants has included a component on “Data governance, leadership and management” encouraging applicants to allocate investments to develop and strengthen data governance structures, regulation and policies, strategies and work plans, and standards which institutionalize the foundations and governance of integrated data systems at all levels of the health system. This includes advocating for improving monitoring of health inequities and inequalities.

Recommendation 6: Retain investment in the digital HMIS platform, including DHIS2, for both its continued development and ongoing capacity strengthening to ensure continual maintenance and evolution of digital health information systems, while continuing to work with local institutions to strengthen country-level capacity, and move towards sustainability.

The Secretariat fully agrees with this recommendation and notes that retaining investments in digital HMIS as well as broader health information systems is key is sustaining current efforts and gains in strengthening digital HMIS mainly in data system governance, agility,

and transparency, digital HMIS foundations, community and private sector health service data and integration in HMIS, interoperability, case surveillance and individual level monitoring and data use in HMIS.

With less funding for separate catalytic investments in data in GC7, the Secretariat is exploring ways of supporting countries to maintain gains made over the years in strengthening HMIS. These will include more strategic engagement with country partners including mobilizing more domestic investments to support data systems and capacity building initiatives. While country grants can fund TA-related activities for data management and use, the Secretariat notes that country-specific investments and/or requests for TA will need to be considered against the overall funding (Global Fund and/or other partners) available for strengthening monitoring and evaluation systems and be weighed against other prioritized interventions. The Secretariat notes this recommendation was made prior to decisions around sources and uses of funds, including funding for catalytic investment priorities, for the 7th Replenishment.

Observations on other recommendations

Recommendation 7: Share a suite of tools and templates based on best practices from the Data SI and country grants, and support countries to learn from each other and adapt tools to facilitate data analysis, interpretation and use by sub-national and national managerial and operational staff. Tools may include standard operating procedures, self-assessments, checklists, visualization tools/dashboards, algorithms, meeting protocols, and feedback mechanisms, based on good practices observed across the Global Fund portfolio. Minimum standards could be considered for the sub-national level. Implementation and adaptation of the tools and templates may be built into the technical assistance scopes of work of partners, as well as linkages to existing communities of practice.

The Secretariat has a low level of agreement with this recommendation. While we agree with the importance of availing tools and templates to countries to share and learn best practices, the Secretariat does not agree with the way the recommendation has been phrased “secretariat to develop tools and templates based on best practices from the Data SI and lessons learned from country grants” and notes that sharing of tools and templates is the role of technical partners (WHO, UNAIDS, STOP TB, etc.) as the Global Fund is not a normative agency. The Secretariat acknowledges the need to continue engaging with countries and partners to support the development and dissemination of tools, guidance, training material, and best practices developed under current Data SI and other initiatives at country and global levels to enhance DDDM.

Recommendation 8: Directly fund and provide technical support to the unit in the MOH responsible for HMIS governance and strategy to lead and coordinate the interoperability of all health information systems, linking all data to user-friendly dashboards to support decision making. These systems will include different health programs, human resources, laboratory, procurement and logistics, and private sector service delivery data, and require

cooperation among different development partners to streamline indicators - including across the public, private and community sectors.

The Secretariat agrees that sufficient funding and technical support to HMIS units within Ministries of Health is critical to enhance efforts towards strengthening data systems and DDDM. However, the secretariat does not fully agree that the Global Fund should directly fund the unit in the Ministry of Health responsible for HMIS governance as this may imply having a separate funding for these units. Ministry of Health HMIS units in most cases will have specific budget lines within HIV, TB, and Malaria grants. Support for data governance can be included within these budgets and considered holistically within the overall funding request.

Conclusion

The Secretariat broadly endorses the overall findings, conclusions, and recommendations together with the publication of the report, the TERG Position Paper and the Secretariat management response.

As mentioned above, six out of the eight recommendations are already being addressed through ongoing activities mostly through the current DATA SI which will end at the end of December 2023. Efforts are underway to strategically engage with partners to maintain gains made over the years in strengthening DDDM at national and sub-national levels.

Summary of recommendations

Recommendations	Level of Agreement	Level of Control
1. Ensure that the “Global Fund Strategic Framework for Data Use for Action and Improvement (DUFAI) at Country Level" is updated based on lessons learned and best practices in line with the new M&E Framework for the 2023-2028 strategy, with a focus on supporting data use for programming decisions at the sub-national level.		
2. Ensure that GF’s strategic engagement in HMIS is phased over multiple allocation periods to reflect each country’s long-term HMIS strategy and/or plans.		
3. Using the revised modular framework, shift and increase investments in the specific RSSH/HMIS elements explicitly focused on DDM, such as data analysis and interpretation, improvement of data quality and capacity building for use, especially at sub-national levels.		
4. In collaboration with in-country partners, use country grants and the Data SI to further support country		

leadership to strengthen a culture of data use by ensuring that national policies, protocols, incentives, and coordination mechanisms require and support data use - including at the sub-national level.		
5. Global Fund investments can strengthen the capacity of policymakers, program, and facility managers through multi-year mentoring approaches for data analysis, interpretation, and use.		
6. Retain investment in the digital HMIS platform, including DHIS2, for both its continued development and ongoing capacity strengthening to ensure continual maintenance and evolution of digital health information systems, while continuing to work with local institutions to strengthen country-level capacity, and move towards sustainability.		
7. Share a suite of tools and templates based on best practices from the Data SI and country grants, and support countries to learn from each other and adapt tools to facilitate data analysis, interpretation and use by sub-national and national managerial and operational staff.		
8. Directly fund and provide technical support to the unit in the MOH responsible for HMIS governance and strategy to lead and coordinate the interoperability of all health information systems, linking all data to user-friendly dashboards to support decision making.		

RFP No TGF-22-12

Revised Final Report

Data-Driven Decision-Making (DDM)

Global Fund - TERG Evaluation

Submitted by Health Management Support Team
05 December, 2022

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Disclaimer Views expressed in this report are those of the author. The author has been commissioned by the Technical Evaluation Reference Group (TERG) of the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund) to conduct an assessment to provide input into TERG's recommendations or observations, where relevant and applicable, to the Global Fund. This assessment does not necessarily reflect the views of the Global Fund or the TERG.

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Appendix (separate document)

ACKNOWLEDGEMENTS

The HMST team appreciates the continued support it has received throughout this evaluation. The guidance received from the Technical Evaluation Reference Group (TERG), the independent evaluation advisory group of the Global Fund, particularly from the evaluation's focal points, Peter Barron and George Gotsadze, was critical to keeping the evaluation on track, as a topic this broad can be pulled in multiple directions. The team also valued the support of the TERG Secretariat, Ryuichi Komatsu and Sara La Tour. Sara was instrumental in connecting the evaluation team with the countries and key informants, to set up interviews, as well as providing the needed documentation. In particular, understanding and support of the TERG and TERG Secretariat for managing some of the delays and challenges encountered along the way ensured that more time was available to further refine the findings and analysis. The support of the Country Teams is also recognized, particularly amidst other evaluations and many competing demands on their time and attention. This included facilitating introductions, providing valuable information on the countries, and reviewing the case studies. The team also thanks the Monitoring, Evaluation and Country Analysis team (MECA) of the Secretariat, who has provided useful guidance and documentation, participated in interviews, and provided detailed reviews of drafts through multiple rounds of feedback.

The team has appreciated the time and thoughtfulness of all the people who participated in interviews for this evaluation – each of whom is listed in Annex 4 for the global level, and in the case study reports for the country level. Finally, the team expresses its appreciation to the representatives of the Secretariat and TERG who participated in a hybrid workshop to discuss and validate the preliminary recommendations – particularly since this occurred quite early in the process when data was still being collected. This feedback provided the necessary context to update the evaluation's focus and final recommendations.

EXECUTIVE SUMMARY

Evaluation scope and objectives

The Global Fund has made considerable investments into health management information systems (HMIS), monitoring and evaluation (M&E), and increasingly into data use at the country level. These efforts aim to ensure that data and information are used to inform appropriate decisions that guide actions to improve equitable service delivery, bring epidemics under control, and move towards disease elimination. Given the "much greater emphasis on data-driven decision-making"[1] (DDM) in the Global Fund's 2023-2028 strategy, the Strategy Committee requested an evaluation to understand how Global Fund investments currently support DDM in order to identify gaps and lessons learned to inform implementation of the new strategy. This evaluation was commissioned by the Technical Evaluation Reference Group (TERG) to focus on DDM at the country level. It considered how the Global Fund's investments, technical support, and guidance, have contributed to some extent to an increase in capacity for, and actual use of data for decision-making in national program and sub-national planning and implementation.[2] The evaluation looked at how these investments were used to support data systems and data users in countries, at both the national and sub-national levels, exploring *what* data is used, *who* uses it, and *how* it is used to drive *which* decisions within country health programs.

The four objectives of this evaluation were:

1. To **map the Global Fund data investments since 2017** and to document the progress that has been made in data use for country programs at the country level as a result of all data-related investments.
2. To identify, using a health system strengthening perspective, **gaps and the areas of weaknesses/challenges** that need to be overcome to improve the use of data for decision-making at the country level for country programs as well as country-level factors (e.g., data quality issues, program, and national reporting systems alignment) hindering and enhancing DDM.
3. To identify **potential scalable activities in DDM at country level** and document the areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community-based data collection, in decision-making at the country level.
4. To build on these findings, enriched by a desk review of published literature findings and partner case studies, and to **provide recommendations** on how the Global Fund model can effectively support DDM at country level.

[1] The Global Fund 2023-2028 strategy "Fighting Pandemics and Building a Healthier and More Equitable World," available here.
[2] As per the RFP, the use of data for decision-making by the Global Fund Secretariat about grants and/or investments are not included in the scope of this evaluation.

The core of this evaluation[3] was supported by eight countries[4] case studies, -three in-country and five remotely undertaken-, looking at their country portfolio in terms of HMIS/M&E/DDM investments to better understand how these investments have been operationalized to support decision-making in-country, and what the challenges and successes have been. Key findings from the country case studies, and other Global Fund sources,[5]) and other documents, interviews with partners, stakeholders, and the Global Fund Secretariat stakeholders, have been taken into consideration. Regular meetings to prevent any duplication or overlap in scopes were held with the Office of Inspector General (OIG), which is undertaking a similarly focused audit. This final report builds on the discussion and feedback provided in response to the earlier drafts from the TERG focal points and the Secretariat during a recommendation's co-creation workshop, the TERG evaluation meeting, and an additional review meeting with the TERG focal points and Secretariat.[6]

Findings

Over the last two decades, and especially during the new funding model (NFM) 2 and NFM3[7] allocation periods, the Global Fund has invested significantly in M&E of disease programs, as well as supporting national HMIS. Under NFM2 and NFM3, the investments in resilient and sustainable systems for health (RSSH) for HMIS and community-generated data (particularly community health workers, or CHWs) were USD 461 million and USD 578 million, respectively.[8] These investments were primarily made through direct investment in HMIS and community system strengthening (CSS) sub-elements under RSSH grants, or RSSH activities under the disease grants, as well as catalytic funding such as the Data and Community-Led Monitoring Strategic Initiatives (SI). These investments supported areas such as: i) developing routine reporting systems; ii) undertaking analysis, evaluations, reviews; iii) ensuring the quality and transparency of the data captured; iv) developing capacities for and undertaking program and other data quality audits; v) undertaking disease, health facility, and household surveys; vi) analyzing financial, human resources, and supply chain data; and vi) supporting community-generated information systems (captured by GF under RSSH/CSS/CLM and will be referred to as community-based monitoring,

[3] HMST was contracted, and a team of seven consultants supported by a cross-cutting support team, undertook the evaluation assignment over a two-and-a-half-month period, utilizing document reviews and key informant interviews at the global and country level.
[4] Benin, Cambodia, Rwanda (on site) Cameroon, Ethiopia, Ghana, Senegal and Zambia (remote).
[5] TERG reviews: Improving use of M&E investments to strengthen country data systems RSSH, Strategic review 2020 (SR2020), Private Sector Engagement (PSE), Multi-country grant (MCG), and the Prospective Country Evaluation (PCE) and Technical Review Panel (TRP) reports (RSSH 2018, 2021 and NFM2 and 3 Windows lesson learned reports), MECA SI/DDM progress reports, among others.
[6] 1, 6 and 23 September 2022, respectively.
[7] NFM2 refers to the funding period 2017-2019, and NFM 3 refers to the funding period 2020-2022.
[8] Source: Table of all NFM2 and NFM3 investments (from FRs and awards) as well as NFM2 expenditures, provided by TAP through TERG

or CBM, throughout this document)[9]. Over 90%[10] of investments was programmed into four HMIS sub-elements: routine reporting, data analysis, data quality, and surveys – all areas that potentially contribute to DDM at national and sub-national levels.

The evaluation found that there has been positive progress in the development of approaches and systems that are improving DDM, through significant investments in the development and integration of information systems. This was particularly evident through the implementation of open-source, web-based District Health Information System version 2 (DHIS2) platforms with the establishment of multi-indicator and system performance dashboards. This system is now used in 84% of High Impact (HI) and Core countries. DDM has also been supported by regular reviews of the performance of grant activities, the national health sector plan, and individual disease programs at national and sub-national levels. DDM was also evident as a result of the Global Fund's requirement that data be used for developing national plans and funding requests, and in reporting. Another important investment contributing to DDM has been support for data quality audits, and other quality assurance measures. Catalytic investments through the Data SI since 2017 and the CLM SI from 2021, have started addressing data quality and utilization issues; including the alignment of strengthening HMIS investments with other partners.

Global Fund investments in HMIS and CBM have emphasized information system development and support for their operationalization, and less on supporting the change management process, including building (sub)national capacities in HMIS and a culture of data use, as advocated by the *Strategic Framework for Data Use for Action and Improvement at Country level*. In reviewing the intended budgets for investments under RSSH/HMIS/CSS, it was generally found that investments were primarily (on average 50% of the investments) covering salaries, travel, and per diem costs for supervision. While these investments are necessary, it does raise sustainability concerns, if it is expected that investments for these operational activities of ministries of health will continue to be supported by the Global Fund in future funding cycles. Furthermore, while this has significantly contributed to increased supervision of HMIS activities at the national and sub-national level, it was still found that data use remains limited and uneven across and within countries – particularly at the sub-national level, i.e., district and health facility levels – with an emphasis on compliance and national monitoring, rather than program adjustment and improvement.

[9] Support for community-generated Information systems is regularly referred to as CBM. While also the former name of community-led monitoring (CLM, the term now extensively used in the new Global Fund strategy), CBM is used during this evaluation as an all-encompassing term and refers to the Global Fund (Technical Advice and Partnerships [TAP] and Finance) classification of all information activities at the community level that are captured under CBM in the investment categorization, as reported in the investment table provided by TAP. In practice, data captured by CHWs is usually found as an activity under the RSSH/HMIS/routine reporting sub-element, while data captured by CBOs on key populations, for example, is categorized under the RSSH/CSS/CBM sub-element. However, there is not a consistent classification among countries and country teams.

[10] The same result was observed at the global level as well as in the eight country case studies.

At the Global Fund Secretariat level, data may be used for regular program review or course correction (although cumbersome reprogramming process were reported), updating of technical and implementation guidance, and even for outbreak response. During the pandemic, for example, the Global Fund supported the set-up of new information systems. Within countries, data appear to be primarily used for program reviews, developing disease specific national strategic plans, funding requests, and reporting. This was reinforced by another finding showing that technical M&E staff in the countries are often more experienced in working with data than their managers – the decision makers. M&E staff select, prioritize, illustrate or analyze data to help their managers make appropriate decisions, and they are often therefore more familiar with the data than decision-makers themselves.

There has been significant progress with the aggregate reporting of the three diseases into national HMIS, in line with the expansion of the DHIS2 platform to many countries. However, siloed information systems covering health areas other than AIDS, tuberculosis and malaria (ATM) are still present in many countries; as well between the three diseases in some countries. This is often due to limited national leadership of the HMIS, or a lack of coordination across different donor investments to integrate Global Fund investments with other disease and public health programs. This constrains effective DDM for overall health service delivery. At sub-national levels, data use is largely insufficient in terms of its regular and systematic employment to inform programming. This is a result of the limited number and capacity of human resources, limited sense of data ownership, the lack of clear processes or opportunities to use data at local levels, and the rapid introduction of donor-driven digital solutions without the necessary support for transitioning away from existing paper-based systems. Staff at sub-national levels often see data as something to collect and enter to pass on to higher levels, rather than to use themselves, and the culture is more one of compliance than use. Other partners, such as US government-supported implementing partners under PEPFAR and PMI, work with both national and sub-national staff to provide direct support to capture, interpret, and use data. This longer-term hands-on approach may be more effective in supporting system transitions and the necessary changes in behavior. Current approaches under the latest iteration of the Data SI are a step in that direction, however they still lack pro-active scopes of work for in-country staff that are engaged as partners. All donors, however, have supported the disaggregation of data by sex and age, which is collected in most countries – although evidence suggests that the data is not used optimally.

It was observed, especially over the last two allocation periods that data from CHWs is increasingly integrated into national systems, particularly where CHWs are linked to a health facility. The integration of other community data, i.e., generated by community-based (CBOs) or other civil society organizations, however, is less consistent. There are usually separate, mostly infrequent, information flows of CBOs feeding their community (often client) data to the national principal recipient. As routine health data collection does not capture the possible key population status of the clients for privacy and stigma reasons, there continues to be a need to undertake national surveys, such as IBBS and other focused surveys, on a regular basis. Efforts to

integrate CBM data remains nascent; the latest Data SI is addressing this, but it is early days.

Similarly, unless mandated, facilitated, and enforced by national authorities, there is still minimal data from the private health sector integrated into the national HMIS, which is required to complete the picture. While examples of data integration exist, efforts are often constrained by the lack of synchronization processes or protocols to enable private sector information to flow into national information systems, and by the mixed willingness of the public and private sectors to engage. In addition, health data is rarely accessible to people outside of the health system, which prohibits validation and use of the data by other stakeholders, such as journalists, development partners, and researchers, as well as non-health CCM members. An exception to this was an increase in data sharing during the COVID-19 pandemic. Due to the attention on COVID-19 by governments and the public, more governments quickly made more data available to keep the public informed. With support from the Global Fund and other partners, most countries added a COVID-19 surveillance and management module to their DHIS2 platform at the national level, which was primarily used to identify cases and monitor the progress of the pandemic in their countries. Also during the disruptions created by the pandemic, the Global Fund initiated a spot check strategy in selected facilities to monitor certain ATM program data. This approach proved more or less as accurate as waiting for the data from quarterly updates, indicating that this simplified approach – though reportedly more cumbersome for country-level partners on top of other reporting obligations, could potentially lead to faster availability of indicative data and significant cost savings.

The last significant finding is that HMIS development and strengthening require time, attention, and continued investment beyond the three-year allocation periods. Indeed, case studies demonstrate that transitioning systems to an electronic platform and integrating different systems can take at least ten years. While investments often focus on the "hard" elements that need to be in place to support decision-making – systems, equipment, training courses, dashboard development etc. – many of the "soft" elements were deprioritized or neglected in budgets. This includes the support and mentoring necessary not only to strengthen skills and capacity, but to facilitate a change management process, and to nurture a culture where the use of data is valued, and where people throughout the health system feel empowered and entitled to use it. The current iteration of the Data SI has started to address this, but final results may not be there until a few years from now. Furthermore, the new Strategy appears to require the Global Fund to be more ambitious in its DDM plans, with the increased focus on integrated, people-centered, quality services, and equity.

Conclusions & Recommendations

Even before the initiation of the New Funding Model (NFM) in 2014, the Global Fund placed the generation and utilization of data at the core of its operations. Supported by the recent Global Fund strategies, subsequent NFM cycles have seen the Global Fund secretariat and countries demonstrate significant willingness to use available data to drive key phases of the grant cycle, i.e., during funding requests, grant making, performance monitoring, program reviews, and reprogramming exercises. This was supported simultaneously through embedding investments in information systems, M&E, and DDM in country grants, and catalytic investments such as the Data Strategic Initiative (Data SI).

While the Global Fund has been instrumental within the landscape of partners to create a better understanding of sound decision-making based on data, its use at different levels of the decision-making chain at country level remains uneven.

The latest Global Fund strategy for 2023-28 'Fighting Pandemics and Building a Healthier and More Equitable World,' re-emphasizes "… the imperative to maximize health equity, gender equality, and human rights by deepening the integration of these dimensions into our HTM interventions, including through expanding the use of data to identify and respond to inequities. Each disease area and contributory objective have data-specific strategies that focus on effective data use. The Global Fund foresees that it "will maximize the impact of its investments to eliminate the three diseases through effective use of good quality, granular data to target affected people and address inequitable service provision." The new strategy pays particular attention to building data utilization capacities at sub-national level, supported by CLM efforts.

In addition, the COVID-19 pandemic has further underlined the urgent need for robust and timely evidence to promote health equity. Concerted efforts among partners are needed to ensure stronger political commitment for DDM at country level, not just by creating capacities but also by enhancing a culture for using "evidence in decision making." Working through partnerships must go hand in hand with mutual accountability centered on country outcomes. Equally important, stronger alignment and harmonization to build on and strengthen existing in-country processes rather than donor-driven reporting requirements (compliance) is necessary to continue to learn and adapt and ultimately get stronger outcomes.

This evaluation has captured significant findings, summarized in 14 conclusions that underpin 8 recommendations.

Conclusion	Recommendations
Policy & Strategy	
C1. Global Fund has invested significant financial and technical resources to strengthen data systems for many years, refining approaches to move from data availability to data use. However, investments and results to date are more evident at the national than the sub-national level.	**R1. Ensure that the "Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level" is updated based on lessons learned and best practices in line with the new M&E Framework for the 2023-2028 strategy, with a focus on supporting data use for programming decisions at the sub-national level.** This framework provides structure and technical guidance to country stakeholders to operationalize DDM approaches, including the effective use of appropriately disaggregated data. An updated version has the opportunity to place greater emphasis on DDM at sub-national levels, including practical examples of where this is working well. **Who:** Global Fund Secretariat. **When:** Developed in time to guide the planning and implementation of NFM4 and use during program reviews.
C2. The countries that have demonstrated the most progress have also received support for the longest period of time. The track record reveals that long-term efforts in system and capacity strengthening are necessary to build a culture of data use.	**R2. Ensure that GF's strategic engagement in HMIS is phased over multiple allocation periods to reflect each country's long-term HMIS strategy and/or plans. Existing** national strategic plans can inform individual allocation period funding requests, to ensure a long-term approach to system strengthening, change management, and capacity and culture shifts towards effective data use – with intermediate milestones in each funding cycle. The Global Fund can also provide technical and financial assistance to countries to either develop or strengthen HMIS strategic plans where necessary. **Who:** Global Fund Secretariat.
C3. Many countries have national strategies to strengthen their HMIS and data use, but three-year funding cycles promote short-term thinking and can create unrealistic expectations about what can or should be achieved in three years,	

resulting in significant recurrent cost investment and sub-optimal progress on long-term HMIS strategies.	**When:** During preparation and implementation planning of NFM4 and subsequent allocation periods.
C4. Long-term investments in building data systems and improving the availability and quality of data are necessary, but not sufficient to address the change management and behavior change challenges of creating a culture of data use.	
Investments	
C5. Global Fund investments to date have focused on HMIS strengthening, with less DDM-specific investment, particularly at the sub-national level. While this is being addressed by the Data SI, current investment is insufficient without further investment through country grants (and analysis remains challenging due to inconsistent cost classification).	**R3. Using the revised modular framework, shift and increase investments in the specific RSSH/HMIS elements explicitly focused on DDM**, such as data analysis and interpretation, improvement of data quality and capacity building for use, **especially at sub-national levels**. This can include providing guidance to ensure the consistent classification of HMIS-related costs by country and finance teams, to support analysis. **Who:** Global Fund Secretariat. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.
C6. Global Fund requirements to use data for funding requests, NSPs, and reports have created an incentive to use data in the absence of a culture of data use at the country level. Requirements can therefore be used to build habits and change behavior towards a culture of data use, particularly at the sub-national level.	**R4. In collaboration with in-country partners, use country grants and the Data SI to further support country leadership to strengthen a culture of data use by ensuring that national policies, protocols, incentives and coordination mechanisms require and support data use - including at the sub-national level.** This includes ensuring that investments support not only technical and capacity aspects of data systems, but also provide support for change management

	and enabling the necessary behavior change. **Who:** Global Fund Secretariat, partners (service providers) engaged by the GF, technical partners, and other development partners, as well as the TRP when reviewing proposals. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.
C7. The support, skills, and incentive to use data effectively remains limited among decision makers in most countries, particularly at the sub-national level.	**R5. Global Fund investments can strengthen the capacity of policy-makers, program, and facility managers through multi-year mentoring approaches for data analysis, interpretation and use.** Mentors can empower national and sub-national cadres through pre- and in-service training in data analysis and use, including through providing on-the-job support to use analysis tools, design and customize dashboards and other digital tools, which are currently being developed through the Data SI and by partners. **Who:** The Global Fund secretariat via principal recipients and country governments, in collaboration with other lead donors, partners and implementers at the country level. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.
C8. Long-term and individualized approaches – such as mentoring and on-the-job technical assistance – to supporting data use have proven effective at building a culture of data use for program development, implementation and monitoring, rather than promoting a culture of data compliance that only requires submission and forwarding.	
C9. The Global Fund's investments in HMIS have been critical to improving the availability and quality of data for decision making. However, these gains require ongoing investment in maintenance and support to be sustained and built upon.	**R6. Retain investment in the digital HMIS platform**, including DHIS2, for both its continued development and ongoing capacity strengthening to ensure continual maintenance and evolution of digital health information systems, while continuing to work with local institutions to strengthen country-

C10. Strengthening and maintaining the capacity for effective data use requires long-term support - particularly in the face of high turnover of staff in Ministries of Health, especially at the sub-national level.	level capacity, and move towards sustainability. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers **When:** Continue making allocations in country grants and catalytic investments in HMIS, and advocating during engagement with partners and service providers.
Guidelines and Technical Assistance	
C11. Despite having long-term and detailed HMIS strategies in place, many countries still struggle to operationalize them, particularly instilling a habit of consistently using data to inform decisions throughout the health system. Countries with institutionalized dashboards and data review meetings have made more progress.	**R7. Share a suite of tools and templates based on best practices from the Data SI and country grants, and support countries to learn from each other and adapt tools to facilitate data analysis, interpretation and use by sub-national and national managerial and operational staff**. Tools may include standard operating procedures, self-assessments, checklists, visualization tools/dashboards, algorithms, meeting protocols, and feedback mechanisms, based on good practices observed across the Global Fund portfolio. Minimum standards could be considered for the sub-national level. Implementation and adaptation of the tools and templates may be built into the technical assistance scopes of work of partners, as well as linkages to existing communities of practice. **Who:** Secretariat to develop tools and templates based on best practices from the Data SI and lessons learned from country grants. Secretariat to update terms of reference of Data SI implementers and partners to adapt tools and provide focused TA for different contexts. **When:** Provide a sample to countries and partners to guide strategic information investments, in time for NFM4 grant-making.
C12. Good DDM practices exist in a number of countries with the use of appropriate tools, templates and practices (SOPs) that are working well at the national and sub-national levels. Other countries are still struggling to develop, adopt or adapt appropriate tools.	

C13. Investments in data systems are not always well coordinated across donors, which can result in parallel systems that are not integrated or interoperable, resulting in inefficiencies in data availability and analysis for decision making. Coordination of HMIS investments and new initiatives works most effectively when the government (MOH) plays a leadership role, and has a clear strategy, standards, and structures to hold partners accountable.	**R8. Directly fund and provide technical support to the unit in the MOH responsible for HMIS governance and strategy to lead and coordinate the interoperability of all health information systems, linking all data to user-friendly dashboards to support decision making.** These systems will include different health programs, human resources, laboratory, procurement and logistics, and require cooperation among different development partners to streamline indicators - including across the public, private and community sectors. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers and development partners. **When:** Begin discussions and support during NFM4 for full strategic roll-out in future allocation periods.
C14. Access to private sector data is critical to ensure that decision makers have access to the full picture of health data. However, this data is not consistently integrated into national HMIS, due to different country-level approaches, and less investment and guidance.	

ABBREVIATIONS AND ACRONYMS

A2F	Access to Funding Department
AGYW	adolescent girls and young women
API	annual parasite incidence
ART	anti-retroviral treatment
ATM	AIDS, tuberculosis, and malaria
BMGF	The Bill & Melinda Gates Foundation
C19RM	COVID-19 Response Mechanism
CBM	community-based monitoring
CBO	community-based organization
CCM	country coordinating mechanism
CDC	Centers for Disease Control
CEO	Chief Executive Officer
CHAI	Clinton Health Access Initiative
CHIS	community health information system
CHW	community health worker
CLM	community-led monitoring
CRG	Community, Rights and Gender Department
CSC	case study country
CSO	civil society organization
CSS	community system strengthening
CT	country team
CTE	core team of experts
D4I	Data for Impact (USAID program)
DAC	Development Assistance Committee
DDM	data-driven decision-making
DHIS2	district health information system version 2
DTL	deputy team leader
EC	exposed children (to HIV)
EMR	electronic medical record
EQ	evaluation question
FPM	Fund Portfolio Manager
FR	funding request
Gavi	the Global Vaccine Alliance
GFF	Global Financing Facility (World Bank)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GKPUIC	Ghana Key Population Unique Identifier Concept
GMD	Grant Management Division
GMS	Greater Mekong Sub-region
HISP	global movement to support DHIS2, linked with the University of Oslo[11]
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome
HMIS	health management information system

[11] https://www.mn.uio.no/hisp/english/about/index.html

HMST	Health Management Support Team
HRD	human resource development
HRH	human resources for health
IBBS	integrated biological and behavioral surveys
IP	implementing partner
IPTp	intermittent preventative treatment (of malaria) in pregnancy
IR	inception report
KI	key informant
KII	key informant interview
KP	key populations
KPI	key performance indicator
KVP	key and vulnerable populations
LFA	Local Fund Agent
LMIS	logistics management information system
LOE	level of effort
MACEPA	Malaria Control and Elimination Partnership in Africa (PATH project)
MECA	Monitoring and Evaluation and Country Analysis Team
M&E	monitoring and evaluation
MICS	multiple indicator cluster survey
MME	Malaria Mekong Elimination initiative
MOH	Ministry of Health
MRR	Malaria Rapid Reporting tool (Zambia)
MSM	men who have sex with men
NFM	new funding mechanism
NGO	non-governmental organization
NORAD	Norwegian Agency for Development Cooperation
NSP	national strategic plan
OIG	Office of the Inspector General
PBF	performance-based financing
PCE	prospective country evaluation
PEPFAR	the United States President's Emergency Plan for AIDS Relief
PMI	the United States President's Malaria Initiative
PR	principal recipient
RBM	Roll-Back Malaria Partnership to End Malaria
RFP	request for proposals
RSSH	resilient and sustainable systems for health
PAHO	Pan-American Health Organization
QA	quality assurance
SARF	stakeholder activity reporting form (Zambia)
SC	Strategy Committee
SOE	strength of evidence
SOP	standard operating procedures
SI	strategic initiative
STC	Sustainability, Transition, Co-Financing
SR	sub-recipient
SW	sex worker

TA	technical assistance
TAP	Technical Advice and Partnerships Department
TB	tuberculosis
TERG	Technical Evaluation Reference Group
TORs	terms of reference
TL	team leader
TRP	Technical Review Panel
UHC	universal health coverage
UiO	University of Oslo
UNAIDS	Joint United Nations Program on HIV/AIDS
UNICEF	United Nations Children's Fund
USAID	United States Government Agency for International Development
USG	United States government
VMW	village malaria worker
WHO	World Health Organization

1. Background and Introduction

1.1 Introduction

The Global Fund 2023-2028 strategy, "Fighting Pandemics and Building a Healthier and More Equitable World," places "much greater emphasis on data-driven decision-making, by investing in systems and capabilities to enable the rapid generation, analysis and use of high quality, timely, context-relevant, disaggregated data".[12] Data-driven decision-making (DDM) has been identified as one of the ten "aspects of the Global Fund partnership's Strategy that will change the Global Fund work to accelerate the pace of implementation". This focus builds on the work done in response to the Global Fund Strategic Framework for Data Use for Action and Improvement at Country level (2017-2022),[13] which recognizes that effective DDM relies on several prerequisites, including a robust information system, good quality data, and adequate capability to analyze and translate the data into operational recommendations. For the effective implementation of the new Global Fund strategy, good quality, disaggregated data from the public, private and community sectors, and appropriate capacity will therefore be critical to better target interventions to make progress in HIV, TB, malaria, and evolving pandemics, in an inclusive and equitable manner.

Common data sources used by health systems include routine data from health delivery services, including from health facilities and community data systems, population-based surveys, and civil registers. Other data is generated through administrative, management, and logistical processes of the institutions that support the delivery of health services (e.g., human resources, finances, and commodities). Different data sources have varying levels of importance to each health system building block, and to different decision makers. For example, human resources data inform health workforce decision-making, commodity data inform logistics and supply chain decisions, facility data support service delivery decision-making, while client data allows for optimal treatment and compliance monitoring, among others. Epidemiological disease data are the basis of all disease programs, informing the decisions that need to be made to ensure services are being provided at the right time, for the right people, at the right location. Often, different disease and health service delivery datasets are required to make geography-specific resource allocation decisions, and additional data beyond health systems can be necessary to find solutions to more complex problems, or to review the overall strategy.

Over the past decades, there have been substantial global investments in the establishment of HMIS, information dashboards, and data warehouses. With considerable investment by the Global Fund in information systems, monitoring and evaluation (M&E), and increasingly in data use, these efforts aim to ensure that data and information are used to inform appropriate decisions that guide actions to improve equitable service delivery, and bring epidemics under control and towards elimination. The Global Fund has supported countries' data systems primarily through

[12] The Global Fund 2023-2028 strategy "Fighting Pandemics and Building a Healthier and More Equitable World" available here.
[13] The Global Fund Global Fund Strategic Framework for Data use for Action and Improvement at Country level (2017-2022) available here.

country grants under HMIS and community-generated data (for which this evaluation adopts the Technical Assistance and Partnership classification of community-based monitoring, or CBM)[14] elements under resilient and sustainable systems for health (RSSH). In addition, following recommendations from the Technical Evaluation Reference Group (TERG), specific funding for information systems was provided through catalytic investments such as the Data (since 2018) and Service Delivery Innovations/Community-led Monitoring (CLM) (since 2021) Strategic Initiatives (SI). The former aims to "Improve availability, quality and use of data including focus on coverage, quality and efficiency," while the latter intends to "Support the uptake and use of the community-led mechanisms by strengthening the capacity of communities to gather, analyze and use granular data on availability, accessibility, acceptability, affordability and quality of HIV, TB and malaria prevention and treatment services."

The Global Fund's Strategy Committee (SC) requested and approved, as part of the TERG workplan, an evaluation to understand how Global Fund investments currently support DDM in Global Fund programs, in order to identify gaps and lessons learned to inform implementation of the 2023-2028 strategy. In response to this request, **this evaluation was commissioned by the TERG to focus on DDM at the country level for country programs**. It considers to what extent the Global Fund's investments, technical support, and guidance, have contributed to an increase in sustainable capacity for, and actual use of data for decision-making in national program and sub-national planning and implementation.[15] This evaluation looks at how these investments have been used to support data sources and data users in countries, at both national and sub-national levels in eight country case studies. It explores *what* data is used, and *how* it is used to drive *which* decisions within country[16] health programs.

1.2 Definition of Data-Driven Decision-Making (DDM)

Various definitions of DDM suggest that it is a process comprised of interrelated processes. The definition used by the Global Fund according to the Data Use for Action and Improvement Framework, is "data use comprises a series of linked but discrete activities including: the assessment of data needs and investments in data systems, collection of data, synthesis, analysis and interpretation of data, and translation and communication of data for decision-making".[17]

[14] Support for community-generated Information systems is regularly referred to as CBM. While also the former name of community-led monitoring (CLM, the term now extensively used in the new Global Fund strategy), CBM is used during this evaluation as an all-encompassing term and refers to the Global Fund (Technical Advice and Partnerships [TAP] and Finance) classification of all information activities at the community level that are captured under CBM in the investment categorization, as reported in the investment table provided by TAP. In practice, data captured by CHWs is usually found as an activity under the RSSH/HMIS/routine reporting sub-element, while data captured by CBOs on key populations, for example, is categorized under the RSSH/CSS/CBM sub-element. However, there is not a consistent classification among countries and country teams.

[15] As per the RFP: The Global Fund Internal Secretariat level data-driven decisions about grants and/or investments are not included in the scope of this evaluation.

[16] Case study countries are Benin, Cambodia, Cameroon, Ethiopia, Ghana, Rwanda, Senegal and Zambia.

[17] The Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level, 2017-2022.

Other interpretations of DDM extracted by the evaluation team from global key informant interviews (KIIs) and a literature review provides similar but nuanced insights into the definition of DDM.

- uses facts, metrics, and data to guide strategic business decisions that align with goals, objectives, and initiatives.[18]
- is a process that involves analyzing collected data, and drawing insights, to benefit a business or organization.[19]
- allows for a better understanding of business needs by leveraging real, verified data, instead of just making assumptions.[20]
- emphasizes making decisions based on the analysis of data rather than purely on intuition.[21]
- is the process of using evidence and insights derived from data to guide the decision-making process and to verify a plan of action before it is committed.[22]
- is a concept of leveraging data or findings from analyses of a set of indicators to improve health system performance.[23]
- is the practice where data is collected, analyzed, and decisions are made based on the insights derived from the collected information.[24]
- enables an organization to utilize data, and information in a series of coordinated decision-making processes in order to support, inform, or make decisions.[25]

In practice, the Global Fund's approach to supporting DDM has consisted primarily of investing in the interrelated processes of strengthening manual and electronic data/information[26] systems (DHIS2 and others), strengthening human resource capacity, increasing data availability, improving quality of data (i.e., accurate, complete, and timely), and increasing technical capacity to interpret and use data. Based on these inputs and observations, the evaluation team's working definition of DDM is: "*The use of timely, accurate, complete, and appropriately disaggregated data, presented in a tailored way to facilitate easy analysis and interpretation by different decision- makers to inform actions, corrective measures, resource allocation decisions, plans, and policies.*"

[18] Odhiambo, T: How Data Driven Decision Making Affects the Bottom-Line. February, 2022.
[19] Grant, D: What is Data-Driven Decision Making, Devan Grant. May 2021.
[20] Grant, D: What is Data-Driven Decision Making, Devan Grant. May 2021.
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[23] Wagenaar, B.H., Hirschhorn, L.R., Henley, C. *et al.* Data-driven quality improvement in low-and middle-income country health systems: lessons from seven years of implementation experience across Mozambique, Rwanda, and Zambia. *BMC Health Serv Res* 17 (Suppl 3), 830 (2017). https://doi.org/10.1186/s12913-017-2661-x
[24] *ibid*
[25] Tingling, P. M., and Brydon, M. J. 2010. "Is Decision-Based Evidence Making Necessarily Bad?" MIT Sloan Management Review (51:4), pp. 71-76.
[26] Information is processed data (raw numbers). Data becomes information when it's presented in a context so that it can answer a question or support decision making. And it's when this information can be combined with a manager's knowledge—their insight from experience and expertise—that stronger decisions can be made. Source: https://open.lib.umn.edu/informationsystems/chapter/11-2-data-information-and-knowledge/

1.3 DDM in the Global Fund Context

Even before the initiation of the New Funding Model (NFM) in 2014, the Global Fund placed the generation and utilization of data at the core of its country operations. The NFM approach further emphasized the need for evidence-based funding applications and program implementation. Annex 1 provides a detailed overview of the evolution of this 'increased' need as reflected in subsequent Global Fund strategies, M&E frameworks, catalytic and grant investments, and implementation guidance.

The 2017-2022 Global Fund Strategy,[27] 'Investing to end epidemics' outlined a series of strategic objectives and operational objectives that refer to the need for data and information systems as key elements of the Global Fund's contribution for a world free of the burden of AIDS, tuberculosis, and malaria (ATM) for all. This included a commitment to "invest in epidemiologically appropriate, rights and evidence-based interventions amongst key and vulnerable populations that are disproportionally affected by the three diseases." The latest Global Fund strategy for 2023-28 'Fighting Pandemics and Building a Healthier and More Equitable World', re-emphasizes "… the imperative to maximize health equity, gender equality and human rights by deepening the integration of these dimensions into our HTM interventions, including through expanding the use of data to identify and respond to inequities." Each disease area and contributory objective have data-specific strategies that focus on effective data use. The Global Fund will maximize the impact of its investments to eliminate the three diseases through effective use of good quality, granular data to target affected people and address inequitable service provision.

The 2017-2022 strategy's emphasis on data utilization was further elaborated in the Global Fund's **Strategic Framework for Data Use for Action and Improvement at Country Level 2017-2022,** which emphasizes the need for enhanced focus on and investment in analytical capacity and data use at the country level. It also promotes the use of high-quality data and analysis for decision-making during all stages of the program cycle. As part of this framework, it describes the need for an M&E system country profile with the key data related to the status and functioning of the M&E systems that are able to accurately inform effective disease program and health systems monitoring in countries supported by Global Fund grants.

The key indicators for these M&E systems profiles were updated in May 2022[28] to guide the updating of the M&E framework for the latest Global Fund strategy.[29] It now contains: six indicators for data governance, 27 indicators for data generation, availability and quality, 16 indicators for data utilization, and four for the monitoring of health inequalities and inequities. This shows considerable emphasis on data for decision-making. The indicators not only generate country specific data but also feed

[27] The Global Fund 2017-2022 strategy "Investing to end Epidemics" available here https://www.theglobalfund.org/media/2531/core_globalfundstrategy2017-2022_strategy_en.pdf

[28] This requires that the current (2017-22) version of the 'Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level', may have to be updated for use by the countries and the secretariat during NFM4 preparation and implementation, and beyond.

[29] This paragraph refers to the information available at the time of the evaluation. The new M&E framework has been approved by the Board in November 2022, after the finalization of this evaluation.

into two of the Strategy's core key performance indicators (KPIs). As per the new ME framework approved by the Board in November 2022[30]:

- KPI S6a: Secure, maintained and interoperable HMIS;
- KPI S6b: Data Driven Decision Making, based on progress in maturity score for data usage at country level and
- KPI S7: Use of disaggregated data for planning or decision making.

In addition to this enhanced focus on data systems and utilization through the implementation of RSSH (and disease) investments in information systems, and in-country grants, a special investment modality was established in 2017. The **Strategic Initiative for Data Systems, Data Generation and Use** (Data-SI), as part of catalytic investments of funding for Global Fund-supported programs to provide strategic investments that are not adequately accommodated through country allocations, but that the board found are essential for greater impact of its investments. Two iterations of the Data -SI have ensured that much better data is available at country level, e.g., to inform national strategic plans (NSPs) and funding requests, but also addressing the fact that there continues to be a need to improve the use of good quality data from district to national levels by different stakeholders.

With the above strategies, frameworks, indicator profiles and other guidance in place, there is therefore considerable scope to implement a comprehensive program of health information systems development and implementation as well as improve the use of data generated in the country programs. At the country level, the National Health Strategy and the disease NSPs include a series of reviews, such as regular program reviews, annual reviews, mid-term review, and evaluations. The NSP reviews take place once every three-years, and either a mid- or end-of-term review informs the NSP, and consequently the development of the funding request to the Global Fund. Other reviews that take place include annual program reviews at a national level, and quarterly reviews at the sub-national levels.

Program reviews typically use the logical framework as a basis for reflection, considering the program from inputs to impact, using information from regular M&E and surveillance systems. In addition, program managers use data from other sources, such as surveys, operational research, and special studies. Program reviews are owned by countries and are usually aligned with national strategic planning cycles. For example, the review of TB Treatment outcomes between 2013 and 2018 in Zambia was able to demonstrate improvements in the cure rate, completion rate, and loss to follow-up.[31] To monitor program performance and progress, the Global Fund facilitates[32] regular and frequent analysis of available data (including epidemiological analysis), consideration of disaggregation by age, sex, and key/priority population groups to identify areas and opportunities for accelerating efforts and/or reprogramming, where needed.

Findings from such reviews inform both program improvement and grant management. In addition, the approach empowers and increases ownership of the

[30] This information about KPi S6b was added after the approval of the new M&E framework by the Board (November 2022).

[31] Program Review: TB Treatment Outcomes, Zambia for the period 2013-2018

[32] https://www.theglobalfund.org/media/5211/me_programreviewsepidemiologicalandimpactanalysis_guidancenote_en.pdf

data by implementers and can also serve to strengthen capacity through "learning by doing". Periodic reviews of available data also provide opportunities for stakeholder feedback, promoting partnership, mutual accountability, and harmonization and alignment among stakeholders. Moreover, data analysis serves as an important input for national strategic plans.

1.4 Review of GF efforts in DDM

Over the years, numerous reviews of the Global Fund's overall strategies and implementation have taken place, as well as reviews specifically focused on data and information systems.[33] Recommendations have been accumulated with regards to data generation, data utilization, and data for decision-making. Annex 2 provides an overview of the different recommendations and their status. Both the latter and the consulted documents reveal a number of critical observations that continue to need to be addressed:

1. To improve the reliability, quality, utilization and ownership of routine data, especially at sub-national level;
2. To discourage the use of parallel systems;
3. To increase the governance supporting data and information use at national and sub-national level; and
4. To build capacities for the use of simplified information systems and data use tools.

These are mostly being addressed by the new Data SI 2021-23, however they will need further emphasis during the next NFM4 cycle (and beyond) especially through country grants as they provide larger and longer-term investment opportunities. Additional practical suggestions are provided as part of the recommendations of this evaluation.

1.5 Capacity Building for DDM

There has been an underlying assumption that the availability of more and higher quality data will result in greater data use and the emergence of a data use culture. This is turn would lead to better decisions, an improved health system, and improved health outcomes.[34] It is also recognized that access to data is necessary but not sufficient, and that there needs to be capacity built or strengthened to use it effectively. Furthermore, it is also understood that when data is used, it can also lead to better quality of the data and improvements in the data capturing process. Indeed, the TERG made explicit recommendations to the Global Fund Board to that effect during the 41st Board Meeting in 2019, promoting investments in capacity building to strengthen data analysis and data use.[35] However, it is not a given that

[33] Documents consulted for this review include: SR2020, TRP RSSH reviews 2018&2021, as well as lessons learned from different review windows, SI review 2021, PCE 2020, OIG report on WCA, MECA's consultative review on Data SI 2017-19, as well as the PERSUADE final review at end of Data SI1 and the AEDES Inception review for Data SI 2021-23. Furthermore, country case specifics reviews were consulted where available, including from other partners. Lastly formal and grey literature on data use and information systems in LDCs were reviewed; see also the list of documents consulted in Annex 2.
[34] PATH and Vital Wave. 2016. *Theory of Change: The Data Use Partnership.* (https://path.azureedge.net/media/documents/DHS_DUP_Theory_of_Change_rpt.pdf)
[35] Global Fund. 2019. *Report of the Technical Evaluation Reference Group (TERG) – 41st Board Meeting*. (https://www.theglobalfund.org/media/8529/bm41_11-terg_report_en.pdf)

investing in better data systems, ensuring data availability, and capacity strengthening automatically leads to improved data use. These processes require thoughtful investments that understand not only what skills are needed by who, but of how the introduction of new systems, tools to people, expectations of their use, and people's engagement in data/information processes will lead to a necessary shift in organizational culture that promotes data use at the different levels of the health system.

A review of the literature[36,37,38,39,40,41] that could potentially address some of the observations of the section above reveals that human resource capacity is critical for improving data use. Having the right (simplified) tools, whether digital or manual, and knowing how to use them at the right time (through [on-the-job] training and mentoring) were key interventions, followed by engagement in decision-making, task shifting, and receiving supervision; preferably all at sub-national levels of focus and analysis. The Data SI has established a significant pool of M&E consultants that have/will provide short-term technical assistance to countries, whose implementation has been overall well reviewed. In addition, the establishment of regional M&E support networks through academic and other institutions has been expanded to eight country hubs. However, such assistance (both presence in-country as the limited timeframe of the SIs) is limited in duration. Moreover, the overall business model of the Global Fund without a permanent in-country presence at the (sub)national level may not be conducive to developing or enhancing a long-term shift in data use culture, and thus improve data utilization. The Global Fund works through in-country or regional partners, where it is assumed there will be a regular introduction and training of tools, data review and follow-up, and engagement in or contribution to decision-making. These efforts requires a more proactive, performance-based, and long-term scope of work for the partners that the Global Fund engages, as well as phased investments for such support over a number of allocation periods.

[36] Seblewengel Lemma, et al, 2020, Improving quality and use of routine health information system data in low- and middle-income countries; A scoping review, https://doi.org/10.1371/journal.pone.0239683
[37] Lee J, Lynch CA, Hashiguchi LO, et al. Interventions to improve district-level routine health data in low-income and middle- income countries: a systematic review. BMJ Global Health 2021;6:e004223. doi:10.1136/ bmjgh-2020-004223.
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[40] Klesta Hoxha, et al, 2020, Understanding the challenges associated with the use of data from routine health information systems in low- and middle-income countries: A systematic review, Health Information Management Journal Volume 51, Issue 3, September 2022, Pages 135-148 https://doi.org/10.1177/1833358320928729
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2. OVERVIEW OF THE EVALUATION

2.1 Aim, purpose and scope of the evaluation

This evaluation aims to generate an understanding of how Global Fund investments currently support DDM, and to identify gaps and lessons learned, in order to inform the implementation of the 2023-2028 strategy. It assesses the operationalization and implementation of the Global Fund's investments in HMIS, M&E and DDM, guided by the Global Fund Strategic Framework for Data use for Action and Improvement at Country level (2017-2022). Specifically, it focuses on **DDM at the national and sub-national level for country programs.** It also considers how the Global Fund's investments, technical support and guidance have contributed to increased sustainable capacity to use data for decision-making in national program planning and implementation.

2.2 Objectives of the evaluation

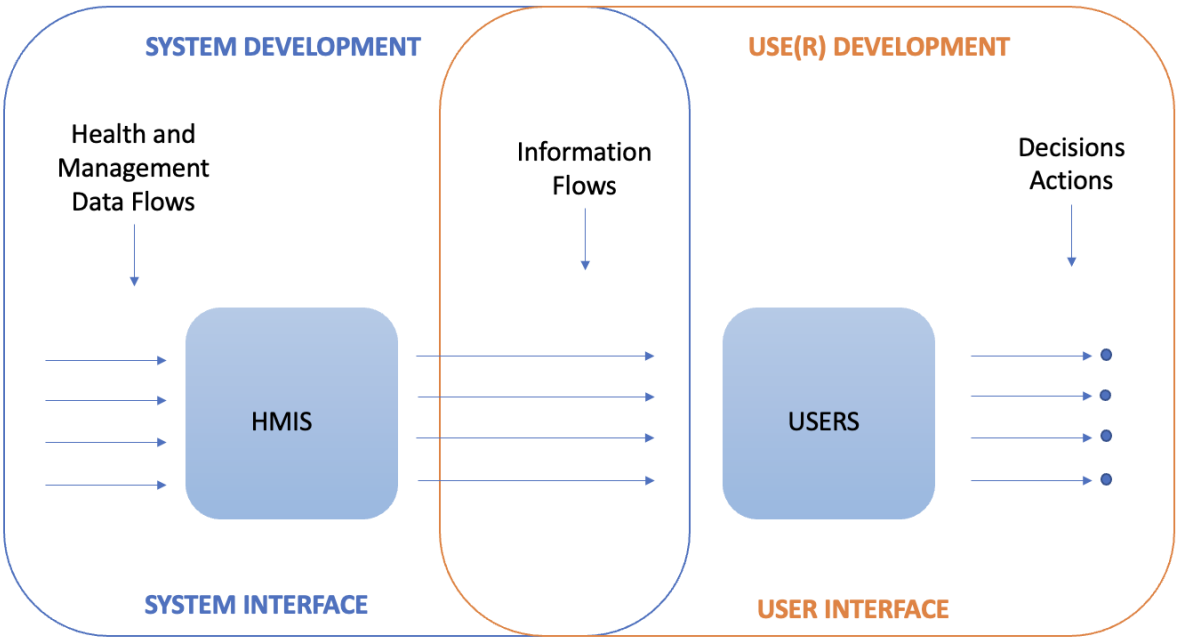
1. To map the Global Fund data investments since 2017 and to document the progress that has been made in data use for country programs at the country level as a result of all data-related investments.
2. To identify, using a health system strengthening perspective, gaps and areas of weaknesses/challenges that need to be overcome to improve the use of data for decision-making at the country level for country programs, as well as country-level factors (e.g., data quality issues, program, and national reporting systems alignment) hindering and enhancing DDM.
3. To identify potential scalable activities in DDM at country level and document areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community-based data collection, in decision-making at the country level.
4. To build on these findings, enriched by a desk review of published literature findings and partner case studies, and to provide recommendations on how the Global Fund model can effectively support DDM at country level.

2.3 Conceptual Framework

The evaluation's strategic approach used two conceptual frameworks to respond to objectives. The first relates to the decision focus of an HMIS, which describes the use of information by users for different purposes, such as decision-making, action planning, program monitoring, success story development, epidemiological analysis, and reporting. Data needs to be transformed into information before it can be used. This is demonstrated at the left side of the model (Figure 1), where investments in information systems development ensure that data is described, captured, analyzed and transformed into useful 'data' or information. This also includes the development of indicators, and registers/tally sheets for collecting data, as well as training of staff to fill it in and make simple calculations and interpretations.

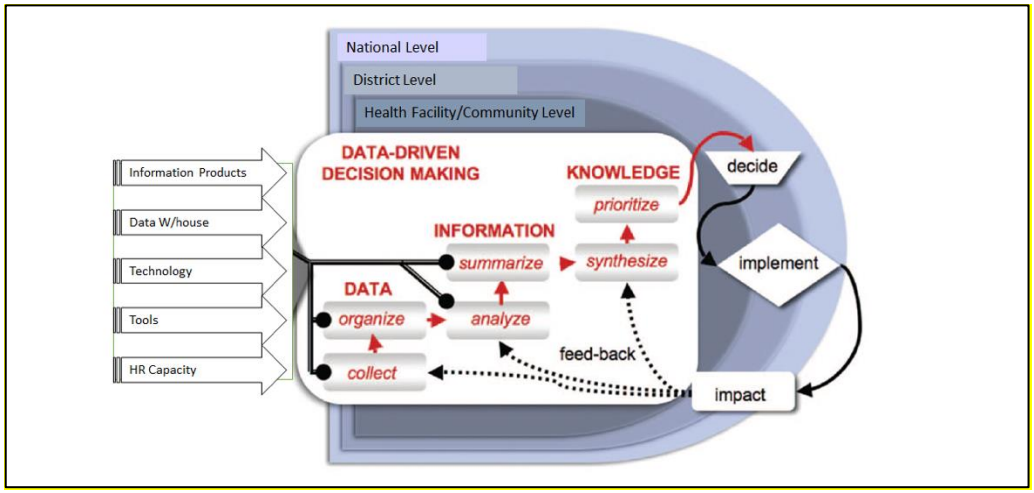
Once information is generated, this needs to interpreted before it can be used by decision makers, managers, and epidemiologists (and potentially journalists, researchers or even the general public), to review and inform decisions, plan actions, and communicate externally, which requires development of capacities to review, interpret, untangle, own and use the data/information, that is, use(r) development. The focus of this evaluation was primarily the "user" side on the right side of the model (Figure 1).

Figure 1: Decision focus of an HMIS



The second conceptual framework (Figure 2) demonstrates the cyclical process for using data for decision-making. The process requires that inputs need to be cleaned and verified in order to generate data, how that data moves to become information, and results in the knowledge used to inform decisions. It highlights that this process occurs within and across different levels of the health system. This framework enabled the team to generate core findings and recommend feasible and strategic actions. Figure 2 was used as an organizing framework for the country case studies where the consultants assessed data use across the different levels and mapped the data pathway from collecting, to data-to-data integration, to generating information (analysis) to determining the decision-making value of the information (knowledge). Using Figure 2 enabled the team to determine the strengths and the gaps/challenges across the data levels and data pathways.

Figure 2: Conceptual framework for DDM[42]



3. METHODOLOGY

3.1 Country Case Studies

As this evaluation focuses on DDM at the country level, country case studies were undertaken to inform the recommendations. Eight countries[43] were selected for deeper analysis, which attempted to represent diverse regions, contexts, and types of investments, allowing different aspects to come to light and be compared. The case studies include a desk review of country-specific documentation – including Global Fund and external papers and data; interviews at the national and sub-national level with a variety of country-level stakeholders; and analysis. Between June and early August 2022, a total of 155 people were interviewed at the country level, including 27 people at sub-national level.

3.2 Desk Review

To complement and contextualize the country case studies, the Evaluation Team Leader (TL) and Strategic Advisor (SA) reviewed 104 documents, including previous TERG, Office of the Inspector General (OIG) and Technical Review Panel (TRP) reviews, evaluations, advisories and lessons learned, reports produced by the Global Fund Secretariat (e.g., background and guidance documents on Global Fund Strategic Initiatives and processes, board meeting notes and related reports, and internal presentations). External reports, including from other partners, evaluations, articles, grey literature and case studies were also reviewed. In some cases, additional data was requested and received, including documents from the Monitoring, and Evaluation and Country Analysis (MECA) team and the OIG. Documents were

[42] Adapted from *A Conceptual Framework for Data-Driven Decision Making* by E. B. Mandinach, M. Honey, D. Light, and C. Brunner.
[43] The selected countries were Benin, Cambodia, Cameroon, Ghana, Rwanda, Senegal, Tanzania, and Zambia.

reviewed against thematic pillars for triangulation. A complete list of the documents reviewed is presented in Annex 3.

3.3 Global Interviews

To further nest the country case studies in an understanding of the global and organizational context, the TL and DTL conducted interviews at the global level with a total of 57 people. These included 46 people within the Global Fund, and 11 partner representatives. All global interviews were held remotely between June and August 2022. A complete list of the people interviewed at the global level is presented in Annex 4. Consultations were also held with the OIG, which was beginning an audit in a similar area, and with AEDES, the lead organization for the Global Fund-supported partnership to improve capacity for analysis and use data in West and Central Africa, which is in its preparatory phase, and covers some countries that overlap with case study countries.[44]

3.4 Analysis and Triangulation

Data analysis was performed throughout the evaluation process through regular team meetings and culminating in an evaluation team workshop (1-2 August), during which country and global research were brought together. It was during this workshop that findings were matched to each evaluation question, and recommendations were developed and assessed against the strength of evidence available. This exercise was repeated (19-20 September) once data from all the case studies were available and following feedback from reviewers. Subsequent analysis consisted of consideration of each evaluation question (EQ), as well as an in-depth review of case studies and literature to identify and map emerging findings, which culminated in the final development of draft conclusions and recommendations that were shared with the secretariat and the TERG focal points for discussion prior to finalization.

3.5 Quality Assurance

Quality assurance consisted of the provision of standardized templates to all team members and a review of the use of the tools, and regular check-ins within the evaluation team. Close communication was maintained with the TERG Secretariat, with opportunities for course correction provided by the TERG focal points. The Chief Executive Officer of HMST further supported quality assurance at later stages.

3.6 Limitations

There were several limitations in conducting this evaluation. Firstly, this evaluation was planned as one of the last to be undertaken under the current TERG's mandate, which resulted in a short timeframe. This was exacerbated by the fact that the evaluation period fell over the summer holidays with limited availability of staff at both

[44] Benin, Cameroon, and Senegal.

the Global Fund level and country levels. The timing for this evaluation was also not appropriate for other reasons: a) at a time when most of the NFM4 guidance notes were already being prepared and updated, meaning that the evaluation findings would be available too late to influence them, and b) during the initial period of the Data SI, which did not have many results to review as yet.

Secondly, another main constraint experienced by this evaluation was the delay in finalizing the countries in which to conduct case studies, and launching these quickly. While some countries were confirmed early, others only began relatively late in the process. Even after confirmation, the process to set up interviews in specific instances was time consuming as specific diplomatic channels or protocols needed to be followed (again, during the holiday period). This resulted in case study data for many countries only becoming available late in the process and limiting the information available for timely analysis prior to the preparation of the draft report. In retrospect, the team should have waited until all case study data was available before conducting the analysis workshop and preparing the first draft report, as much of this work needed to be repeated once the remaining case studies were complete.

Thirdly, the team is aware that the selected countries may not necessarily represent the global situation or the diversity of the Global Fund portfolio, but the scope did not allow for detailed study of all countries, and had to rely on secondary sources, when available. While criteria were proposed to ensure diverse selection, not all countries were willing to participate in the evaluation due to other commitments.

Fourthly, the subject, DDM, typically warrants more detailed face-to-face discussions with in-country stakeholders. Conducting five case studies virtually with relatively limited connection time, being unable to look at systems directly, and with access to documentation limited to what others decided to provide, proved to be sub-optimal.

Lastly, there seemed to be wide and diverse (and sometimes opposite) interpretations of the scope of work of this evaluation, which already covered wide-ranging topics that were not possible to explore in equal depth. The evaluation team was therefore tasked with a larger assignment than what was reasonably possible within the timeframe and level of effort (LOE) initially allocated. The latter was addressed by the TERG with additional time and LOE provided to finalize the report, for which the team is most grateful. However, this also opened up the conversation further and created additional expectations, and it was not possible to elicit the necessary detail and verification of multiple sub-topics in the time available. The Evaluation Team appreciates all the comments received on the different iterations of the report. The many and varied, opinions demonstrate that the issue of 'Data for Decision-making' is a lively and charged subject of significant interest within the Global Fund and beyond. Unfortunately, it was not always possible to respond to or reflect each comment due to their number and diversity, while keeping the report manageable and in-scope.

4. FINDINGS

This section presents findings against each evaluation question (EQ), mapped against the evaluation objectives. Findings have been assessed for the strength of supportive evidence using the rating system presented in Table 1. Each finding, presented in Table 2, is linked with an evaluation objective and evaluation question.[45] Following the summary table of findings, an overview of the evidence and reflection leading to each finding is presented in more detail.

Table 1: Ratings for robustness of key findings

Rating	Assessment of the findings by strength of evidence (SoE)
Strong (1)	• Supported by data and/or documentation categorized as being of good quality by the evaluators; and • Supported by majority of consultations, with relevant consultee base for specific issues at hand
Moderate (2)	• Supported by majority of the data and /or documentation with a mix of good and poor quality; and/or • Supported by majority of the consultation responses
Limited (3)	• Supported by some data and/or documentation which is categorized as being of poor quality; or • Supported by some consultations and a few sources being used for comparison (i.e., documentation)
Poor (4)	• Supported by various data and/or documents of poor quality; or • Supported by some/few reports only with no data/or documents for comparison; or • Supported only by a few consultations or contradictory consultations

Table 2: Findings by evaluation question and strength of evidence[46](SoE)

Evaluation Question	Finding	SoE
Objective 1: To map the Global Fund data investments since 2017 and to document the progress that has been made in data use for country programs at the country level as a result of all data-related investments.		
1. What have been the elements of the HMIS/M&E/DDM investments in the global portfolio/country level?	1. GF investments - both grants and catalytic funding - cover: i) developing routine reporting systems; ii) undertaking analysis, evaluations, reviews, and establishing transparency of the data captured; iii) developing capacities for and undertaking program and other data quality audits; iv) undertaking disease, health facility, and	

[45] For example, the finding for the second evaluation question objective 3 is marked as EQ3.2.
[46] The strength of evidence comes from both global and country documents and interviews as appropriately

Evaluation Question	Finding	SoE
	household surveys; v) analyzing financial, human resources and supply chain data; and vi) CBM[47].	
	2. Global Fund investments in HMIS and CBM emphasize HMIS, with consideration of capacity strengthening for the system's use, while less specifically for data analysis, interpretation, and use.	
	3. HMIS, including CBM development and strengthening, are long-term processes, requiring ongoing and continuous, yet iterative investment that is not always sufficiently or appropriately supported within individual funding cycles. This can be due to competing priorities for limited resources, and the extent of prioritization by the CCM or national leadership in general.	
2. What have been the most significant outputs of the HMIS/M&E/DDM investments in global portfolio/country level (from paper-based or blackboard data systems to integrated back-end databases with front-end dashboards in comprehensive data warehouse or training programs)?	4. Global Fund investment has resulted in several outputs, the most significant of which have been support for establishing increasingly interoperable HMIS and M&E systems, and COVID-19 surveillance – including equipment and capacity strengthening, with additional examples demonstrated in country case studies.	

[47] Support for community-generated Information systems is regularly referred to as CBM. While also the former name of community-led monitoring (CLM), CBM is used in this context as an all-encompassing term and refers to the GF (TAP and Finance) classification of all information activities at the community level that are captured under CBM in the investment categorization, as reported in the investment table provided by GF/TAP. In practice, data captured by CHWs is usually found as an activity under the RSSH/HMIS/routine reporting sub-element, while data captured by CBOs on KPs, for example, is categorized under RSSH/CSS/CBM sub-element. However, there is not a consistent classification among countries and country teams.

Evaluation Question	Finding	SoE
3. What have been the most significant data use systems or approaches established through GF investments?	5. Global Fund investments have supported the development of multi-indicator and system performance dashboards, which are used in most countries to monitor programs, revise NSPs, and formulate funding requests.	
4. To what extent have the Global Fund investments to date contributed to an increase in programmatic level DDM, and how?	6. Establishing and strengthening the application of electronic systems (DHIS2 or other e-HMIS) increased the availability of data; it organizes the information in a manner that is more easily consumable thereby more likely to be used.	
	7. The Global Fund's investment and support for data use is different to that provided by other donors such as PEPFAR and PMI; the Global Fund grants can support capacity building of national and sub-national teams through supervision and coaching in some grants. Other donor's support includes support for implementing partners to provide longer-term coaching and mentoring to support data use.	
5. To what extent is data used to inform CCM and PR decisions during the grant design and implementation?	8. Since the introduction of the NFM, funding requests and NSPs have been much more data-driven because of application requirements and a more-evidence based grant-making process. This is supported by investments in information systems, different surveys, country dialogues, and program reviews.	
6. What have been the achievements to date to integrate community-based data and private sector data in the national decision-making?	9. There has been increased investment in developing community-based information systems (CBIS), allowing for the integration of this (routine, service delivery, [gender and age] disaggregated) data into national systems. Apart from (phone based and simple) e-trackers to follow up on individual clients in some countries, data entry remains mostly manual.	

Evaluation Question	Finding	SoE
	Overall, investments in community-generated data remain nascent – particularly for CBOs and providing separate data on KVPs and enhancing CLM.	
	10. Limited initiatives or investments in capturing or sharing data from the private health sector were identified. It is more likely to occur if reporting is linked to accreditation requirements – and enforced – and where synchronization is technically feasible.	
7. To what extent does the Global Fund provide support to improve the quality and use of disaggregated data to support inclusive programs?	11. The Global Fund's requirement of and support to sex and age disaggregated data has contributed to an increase in availability in routine data, but this has not consistently translated into improved use.	
	12. Approaches to key population data collection varies based on the socio-cultural context, and national priorities. Many countries increasingly rely on surveys, program reviews, or civil society to collect KP data, while some embed it in routine data collection, with different strategies for protecting patient privacy.	
8. What are the categories or domains of data requested at global and in-country level and by whom and what is the data used for?	13. All countries report that data captured is used for the following main domains, both in-country and internationally: Diseases epidemiology, programmatic health and management indicators, planning and use of resources, absorption of donor subsidies, and feeding regional and global reports. Data are being used by program managers, health planners and CCMs in-country, while at the global level it is used by the GF, particularly the country team and partners such as WHO, UNAIDS, Stop TB, RBM, and bilateral development partners.	
Objective 2: To identify, using a health system strengthening perspective, gaps and the areas of weaknesses/challenges that need to be overcome to improve the use of data for decision-making at the country level for country programs as well as country-level factors (e.g., data quality issues, program, and national reporting systems alignment) hindering and enhancing DDM.		
9. What is the hindering and enhancing	14. Government-led coordination of donors and HMIS investments enhances the likelihood of data system integration, interoperability, and	

Evaluation Question	Finding	SoE
factors, gaps and challenges to be overcome to improve the use of data for decision-making at country level? This should include specifically looking at disaggregated data for the disease program, community-related data and private sector data?	shared approaches to indicators, interpretation, and data use. However, coordination is not government-led in all countries.	
	15. Investments in DHIS2 to integrate different data sources have led to an increase in data availability and accessibility.	
	16. Data from CHWs is increasingly integrated into national information systems, however it remains nascent for other community-based data, such as KVP data collected by CBOs that are forwarded to the national level through other channels.	
	17. Data quality is necessary to ensure that data is trusted to inform decisions yet ensuring data quality is a resource-intensive process.	
	18. Strengthening and supporting human resource capacity to use data is correlated with increased data use, but support remains inadequate overall, particularly at the sub-national level.	
	19. DHIS2 has enabled improved access to health data throughout the health system, although it remains limited to prospective data users outside it.	
10. What are the examples (and reasons) for weak DDM, and what are the key issues/risks to the country programs and the Global Fund of not having country level robust DDM?	20. Human resource capacity to use data for decision-making varies by country and within countries, with the greatest gaps being the lack of ownership over data, and lack of empowerment among data entry and decision-making personnel at the sub-national level.	
	21. Limited electricity, internet connectivity, and tools remain constraints to the effective uptake of HMIS at the sub-national level.	
	22. High turnover of (trained) staff was cited as an issue affecting DDM, particularly at sub-national levels.	
11. What are some examples of robust DDM, systems and approaches at country level and	23. Countries with experience with customized and user-friendly data visualizations, such as dashboards, report that it facilitates better understanding and interpreting data, and increases the likelihood that data availability will translate into data use.	

Evaluation Question	Finding	SoE
how have these been achieved and are these sustainable?	24. Countries that require routine regular data sharing, review, and interpretation meetings demonstrate increased data use, and greater demand for quality data by regular review meeting participants.	
	25. Countries that have data users who have an interest in extracting insights from data, use data more effectively than those who only use data for compliance purposes. This tendency is more likely to occur at the national, rather than at the sub-national level.	
12. Is age and gender disaggregated data being used to inform a more targeted and inclusive approach?	26. Sex and age-disaggregated data are largely collected, but use for developing and inclusive approaches vary by country. Good examples of using age, sex, key population, and location disaggregated data were found that resulted in improved targeting, however the consistency of this is unknown, and the literature review suggests that this practice is not yet entrenched in the culture.	
Objective 3: To identify potential scalable activities in DDM at country level and document the areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community- based data collection, in decision-making at the country level.		
13. How have recommendations of the recent Global Fund reviews and evaluation on data use contributed or (not contributed) to data used in country level decision-making?	27. While progress has been made against some previous recommendations, many – particularly regarding system strengthening and human resource capacity development – recur over several evaluations, and there remain gaps in longer-term phased investments and rigorous support for the application of tools and data utilization processes.	
14. How have Covid-19 data initiatives at country-level contributed (or	28. COVID-19 created opportunities for improving data availability, real-time use, and generated creative solutions, and sharing data with the public. For example, simplified (bi) weekly ATM data monitoring	

Evaluation Question	Finding	SoE
not contributed to data use in country-level decision-making?	systems in a selected number of health facilities provided as good a performance check as quarterly monitoring reports. But as this involved creating (a) separate system(s) it also led to increased burden on the staff involved.	
15. Are the resources for program M&E and the available incentives (guidance, strategic initiatives) in the countries sufficient to allow DDM and did they contribute to data used for decision-making?	29. Investments and resources provided to date have focused primarily on ensuring data availability, and data quality, and to a certain extent, to program reviews, epidemiological and impact analysis – particularly for Core and High Impact countries, and while preparing NSPs and funding applications. While these are essential fundamental elements for DDM, investment and technical resources to support developing a culture of data use have not yet ensured consistent DDM.	
16. What are the underlying conditions to ensure the scaling up of successful DDM approaches?	30. County case studies point to national leadership that provides appropriate governance, systems and incentives have contributed to ensuring successful DDM approaches to improve health service delivery. Moreover, incentives for data collection and analysis and regular review contributed to greater data use. The increasing application of digital systems, whether at national level through electronic platforms or at community level through phone-based trackers has also led to an improvement of data availability.	
17. Are data for vulnerable populations collected and used routinely? What other systems are used to inform programming for vulnerable population? To what extent is data	31. Apart from targeted KVP surveys, there is limited routine collection, integration, or use of key population data, which limits the opportunity to strengthen equitable programming. Routine collection of KVP data is sensitive and done through separate surveys or separated channels supported by CBOs. They are not necessarily part of a national information system to allow for regular monitoring and adequate or instant action-planning or decision-making.	

Evaluation Question	Finding	SoE
collection and use institutionalized?		
Objective 4: To build on these findings, enriched by a desk review of published literature findings and partner case studies, and to provide recommendations on how the Global Fund model can effectively support DDM at country level.		
18. What can the Global Fund do differently, based on this review and globally available evidence to increase use of data for decision-making?	32. While there is growing evidence that data is being used particularly for funding request development and national strategic plans, data use remains uneven across and within countries, with an emphasis on compliance and national monitoring rather than programming improvements.	
	33. The Global Fund should continue its support for the data system development and data quality, while focusing investments on elements specific to data use, particularly at the sub-national level.	
	34. HMIS and CBM development and strengthening require time, attention, and continued investment beyond the current allocation period.	
19. What are the priority areas of technical assistance to support DDM going forward?	35. Sub-national program staff have not received the same investment in capacity strengthening to build data use skills and habits, and - with few exceptions - the health and performance management system and culture does not empower the sub-national level to use data beyond compliance and reporting. Priority areas are to strengthen the capacity of the people entering data and local decision-makers, support pro-active use of appropriate tools, and empower them to use data for local decision-making - including the development of suitable analytical and decision-making tools and dashboards where necessary. Further technical assistance is required to ensure that public, private and community data systems are interoperable, and integrated in dashboards. These include	

Evaluation Question	Finding	SoE
	routine disease data, health products, logistics, finance, and human resources.	
20. How can the Global Fund work together with other partners to increase DDM and with whom?	36. Investments have proven to be more effective in supporting government-led coordination of all technical and other development partners, where they are made directly into the MOH unit responsible for HMIS governance and strategy. Going forward, this should be done with an increased focus on interoperable systems and DDM.	
21. What can the Global Fund do to encourage better use of disaggregated data for more inclusive health programs?	37. The Global Fund could work with governments and partners to enable better use of disaggregated data - particularly for KVPs - by supporting the development or synchronization of electronic medical record systems with the national HMIS, while protecting patient privacy.	

4.1 Objective 1: To map Global Fund data investments and progress since 2017

To map the Global Fund data investments since 2017 and to document the progress that has been made in data use for country programs at the country level as a result of all data-related investments.

EQ1. What have been the elements of the HMIS/M&E/DDM investments in the global portfolio/country level?

Finding 1. GF investments - both grants and catalytic funding - cover: i) developing routine reporting systems; ii) undertaking analysis, evaluations, reviews, and establishing transparency of the data captured; iii) developing capacities for and undertaking program and other data quality audits; iv) undertaking disease, health facility, and household surveys; v) analyzing financial, human resources and supply chain data; and vi) CBM.

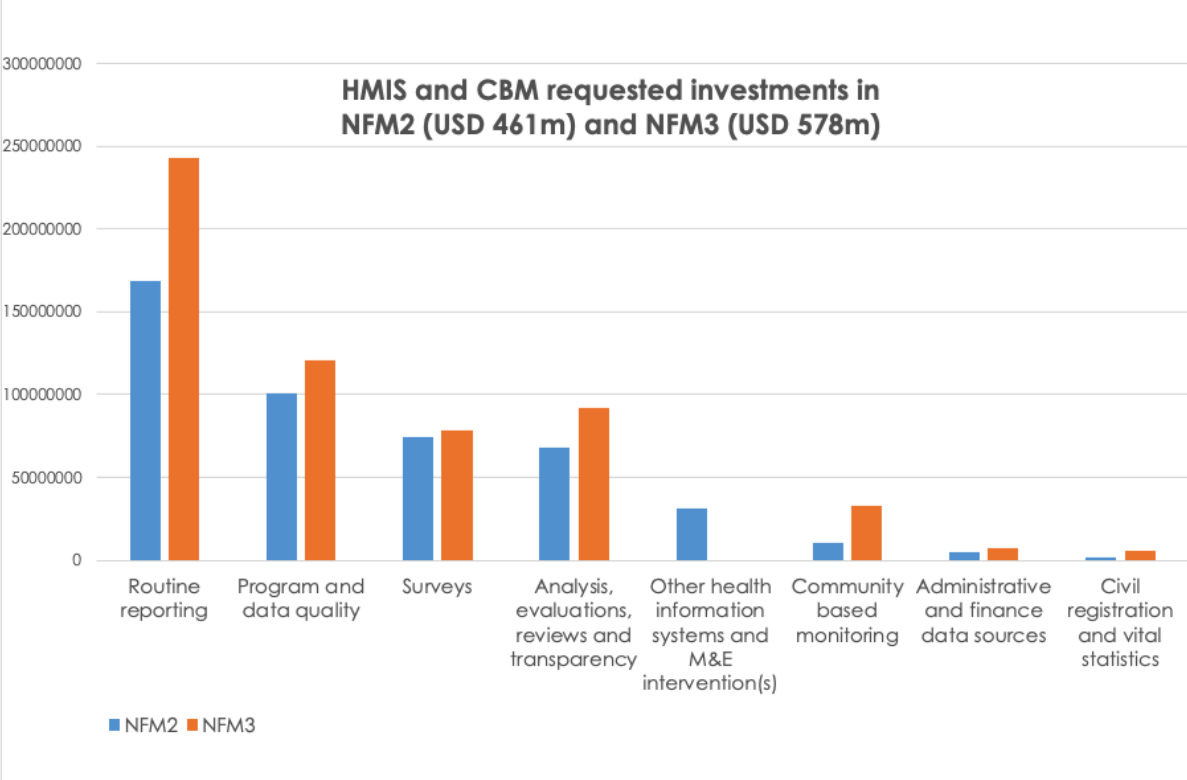
Global Investments

Over the last two decades, the Global Fund has invested significantly in monitoring and evaluating disease programs, and supporting national health information systems. This is particularly evident in its support for establishing and strengthening electronic information systems, notably the District Health Information System version 2 (DHIS2) being used, adopted/adapted as the main HMIS platform in many

countries.[48] This was done through direct investment in HMIS and community system strengthening (CSS) elements under resilient and sustainable systems for health (RSSH) grants, or RSSH activities under the disease grants, and through the catalytic investments such as the Data Strategic Initiative (Data-SI) and the Community-led Monitoring SI (CLM-SI).

These investments covered areas such as: i) developing routine reporting systems; ii) undertaking analysis, evaluations, reviews, and establishing transparency of the data captured; iii) developing the necessary capacities for and undertaking program and other data quality audits; iv) undertaking disease, health facility, and household surveys; v) analyzing financial, human resources and supply chain data; and vi) CBM, which covers different community-generated data, including from CHWs, CBOs, and CLM. Under NFM2 and NFM3, investments under RSSH for HMIS and CBM totaled USD 461 million and USD 578 million, respectively; an overall increase of 25%, but less than the 40% increase in the total funding available for NFM3. Figure 3 shows the areas of investment across the two NFMs.

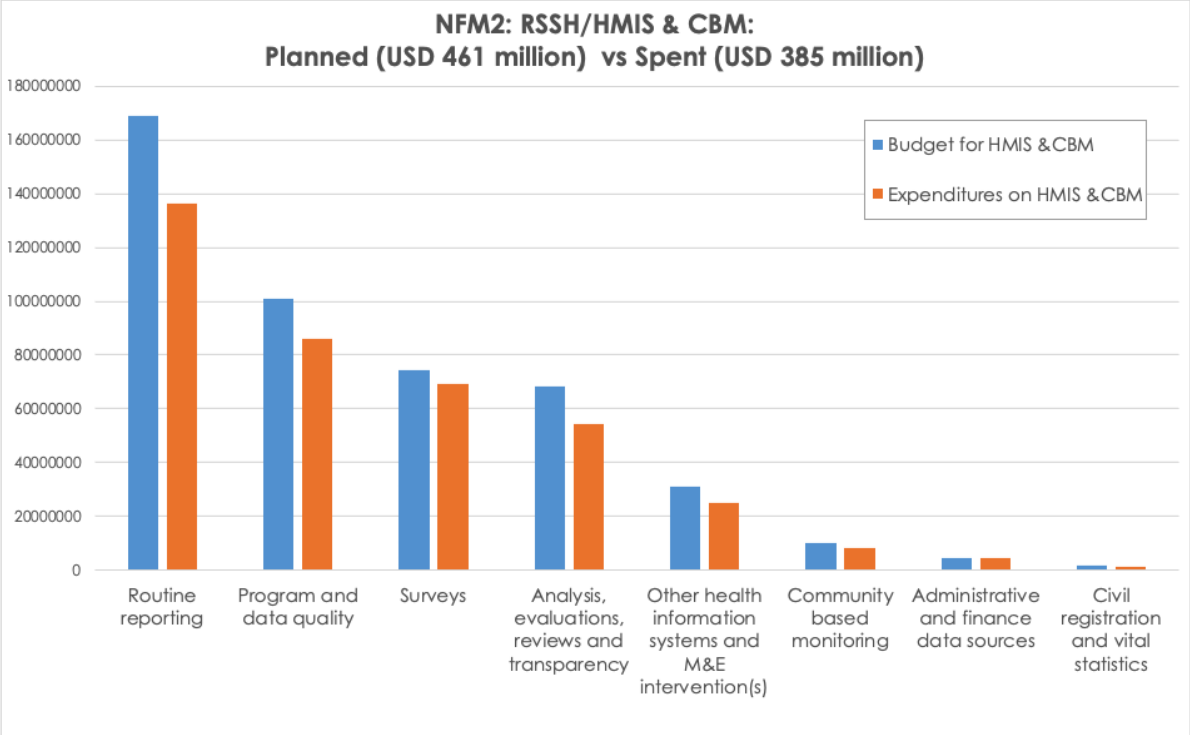
Figure 3: NFM2 and NFM3 Requested HMIS &CBM Investments



Over 90% (90% in NFM2, 92% in NFM3) of Global Fund resources was programmed into four HMIS sub-elements: routine reporting, data analysis, data quality, and surveys. These are all areas that potentially contribute to ensuring sufficient access to data for decision-making at (sub)national and local levels. The NFM2 expenditure review on the HMIS confirms that more or less the same percentage was spent on those four sub-elements (see Figure 4).

[48] There are some notable exceptions such as Cambodia, a case study country, where they long resisted the adoption of DHIS2, but of late decided to adopt it for their national HIV program.

Figure 4: NFM2 HMIS and CBM investments, planned versus spent



Country investments[49]

Similar investment patterns were found across case study countries, NFM2: 97%: and NFM3; 93%; see Figures 5 and 6 below.

Figure 6: HMIS/CBM investments in NFM2

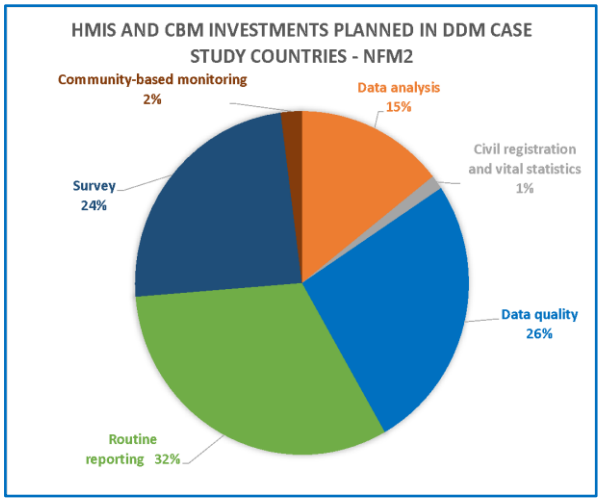
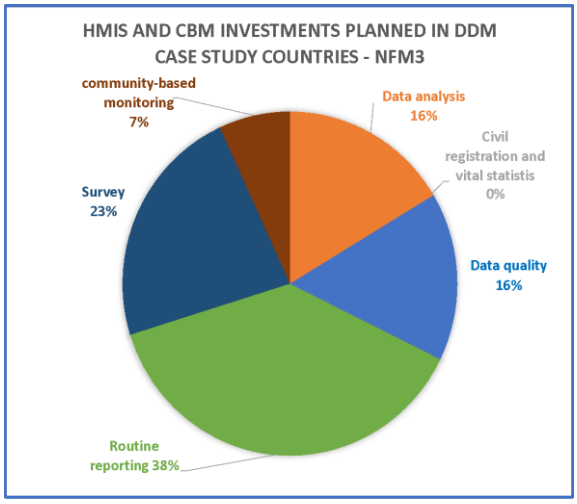


Figure 5: HMIS/CBM investments in NFM3



[49] GF/Finance extract of the RSSH/HMIS and CSS modules - this relies on the correct classification of budgets and that routine reporting including CBM (under CSS) may be under-estimated.

Finding 2. Global Fund investments in HMIS and CBM emphasize HMIS development, with consideration of capacity strengthening for the system's use, while less specifically for data analysis, interpretation, and use.

The global RSSH reviews of 2018[50] and 2021[51] noted that investments in HMIS and CBM systems are primarily funding the development and operations of HMIS, routine data collection and verification, and do not necessarily address capacities or actions that lead to better use of the collected data. Considerable investments were made under the RSSH/HMIS element of 'Routine reporting' for 'hardware' components, e.g., equipment, transport, and travel costs to ensure data capture and verification.

Figure 7 below shows a listing of activities under either systems' support (usually HMIS systems development activities, hardware investments) or strengthening (where there is a greater emphasis on the use of data and building an organizational culture of appreciating data), for which financing was requested. As can be seen, while many activities are necessary for system support, very few address the act of data utilization or, more specifically DDM directly.

[50] https://www.theglobalfund.org/en/updates/2018/2018-12-06-technical-review-panel-report-on-investments-in-resilient-and-sustainable-systems-for-health/
[51] https://www.theglobalfund.org/media/11447/trp_2021rssh_advisory_en.pdf

Figure 7: Sample listing of RSSH/HMIS activities requested in funding requests 2017-2019[52]

RSSH Modules Support vs Strengthening: HMIS

Systems Support

- Consumables and equipment for failure detection of ART treatment (HIV Genotyping)
- Draft procedures manual, buy ERP software; Produce STI/AIDS midterm report; Development of software system for monitoring of prevention services
- Finance and admin support for OVC cash transfer program
- Produce and disseminate procedures manual, hold evaluation workshop
- TRC, Salaries M&E officers, supervision; Vital registration system staff salaries
- Annual program review, project staff CB, stakeholder coordination meeting
- Create a repository for reports
- HMIS data collection tools printing and system maintenance
- Salaries of M&E unit/project associates, supervision , TA, internet, lease-line, audit, computers, joint program review (67% on salaries)
- buy computers, laptops and phone; buy server, GIS software, phone charges, supervision update malaria risks
- cash incentives, TA, printing, travel and equipment
- Payments for data entering, DHIS implementation/Supervision, printing of forms, national/regional data review workshops, cost for internet and communication, TA for installation and implementation of different software, equipment purchase,

Systems Strengthening

- Analysis of expenditure on HIV prevention and care
- Develop protocols for monitoring of quality based on data
- Develop strategies to address cascade issues; improvement patient master index
- AEM, impact model and Spectrum training for M/E unit of NCASC
- DHIS2 scale up with workshops at every level, Technical support for field epi training
- Develop cascade analysis for routine data and develop dashboards and implement DQA; HW training on DDU
- Development of HIV dashboards an tracking systems; Establishing Sentinel surveillance system
- Establishing a systems for monitoring of human rights and quality of services; establish routine DQA
- upgrading web-based system, training on Tubis,
- Digitization and establishment of DHIS2 compatible hospital register; implementation of SMS data entry into DHIS2; and development of interface between other data collection systems and DHIS2
- Drug-resistance prevalence study for 2020:– Develop a HIV drug-resistance plan– Develop an ARV drug-resistance protocol – Analyze acquired resistance profiles in second-line regimen (ART)
- Surveys on: Socio-cultural determinants limiting access to services; mini-DRS in provinces that are high prevalence for anti-tuberculosis drug resistance; tuberculosis prevalence survey in 2019; Intensive Case Finding (ICF) among vulnerable groups; catastrophic costs of TB in households; TB-HIV co-infection, determinants of early diagnosis, comorbidities and Pharmaco-resistance. Update Profile Provinces; early warning indicators; Compartmental Survey.

[52] Review of RSSH PPT for the Global Fund's Strategic Review 2020, SEJ Postma, April 2020.

The detailed budgets accompanying funding requests do not only show which of the RSSH/HMIS and CSS elements are planned (routine reporting, data quality, surveys, etc.) but also how these elements' investments are costed. Cost categories include equipment costs, costs for travel and per diems, cost for technical assistance (TA), down to specific costs, such as cost for printing. For example, a review the intended budgets for investments under RSSH/HMIS in two sample country case studies (Cameroon and Ethiopia, see Table 3 below) found that: i) the level of investment did not necessarily comply with the guidance note on the amounts for essential data systems investments, both in relative and absolute terms (in Cameroon, half of the RSSH grant for information systems under CBM was for payment of CHW salaries, a clear mis-classification); ii) a substantial amount of HMIS investments in Ethiopia (67%) was covering salaries, travel, and per diem costs for training, supervision and meetings; and iii) while the latter can all be contributing to the improvement of data utilization, is not automatically a given.

Similarly, it was reported in one of the case study countries that less than USD 200,000 was allocated to routine reporting. A key informant (KI), who was part of the funding request writing team explained that indeed, everything was classified under 'grant management' instead of 'HMIS'. While this is normally corrected by the CT, the key informant pointed out that finance staff are not always sufficiently aware of the modular framework terminology and may therefore not correct this. These examples point to a number of issues with the mis-classification of either the investment intentions (i.e., the HMIS/CSS sub elements) and/or the use of the funding (i.e., a significant input to the operational costs of the MoH).

Table 3: HMIS/CBM investment in NFM3 Funding Requests of Cameroon & Ethiopia

Ethiopia - RSSH grant - FR: US$ 30 Mio, HMIS/CBM: US$ 8.4 Mio							
Purpose: Strengthening health information system with continued investments on digitization of the health data repository systems, data science, data quality, use of data for decision making and use of community-based data including vital events registration systems to inform health planning and decision							
	Costs Categories						
HMIS Elements	*Salaries*	*Training*	*Supervision*	*Meeting*	*IT equipment*	*Printed material*	**Total**
Routine reporting	$ 119,617	$ 2,838,870	$ 64,470	$ 60,731	$ 1,128,431	$ 134,640	$ 4,346,759
Program and data quality					$ 135,276		$ 135,276
Community based monitoring		$ 407,812	$ 85,128	$ 671,436		$ 1,228,191	$ 2,392,567
Civil registration & vital statistics		$ 1,000,509		$ 40,392			$ 1,040,901
Analyses, evaluation, reviews and transparency		$ 477,064					$ 477,064
	$ 119,617	$ 4,724,255	$ 149,598	$ 772,559	$ 1,263,707	$ 1,362,831	$ 8,392,567
Note: Training, Supervision and Meeting related costs are transport, per diems and other costs.		*$ 5,646,412*	*Or*	*67%*			

Cameroon- TB/HIV grant - FR: US$ 148.8 Mio, RSSH/HMIS&CBM: US$ 16.9 Mio							
Purpose: Strengthening health information system with continued investments in DHIS2; major part of the grant is for payment of CHW salaries under CBM!							
	Costs Categories						
HMIS Elements	*Salaries*	*Training*	*Supervision*	*Meeting*	*TA/other costs*	*Printed material*	**Total**
Routine reporting	$ 2,787,531	$ 253,350	$ 394,499	$ 391,242	$ 716,555	$ 147,836	$ 4,691,013
Program and data quality		$ 124,743	$ 611,714	$ 1,830,092	$ 114,994	$ 534	$ 2,682,077
Community based monitoring	$ 8,003,664	36187	$ 56,232	$ 78,997	$ 13,332		$ 8,188,412
Analyses, evaluation, reviews and transparency		$ 62,316	$ 27,990	$ 475,043	$ 119,495	$ 2,058	$ 686,902
surveys		$ 8,889	$ 95,132	$ 99,687	$ 494,586	$ 403	$ 698,697
	$ 10,791,195	$ 485,485	$ 1,185,567	$ 2,875,061	$ 1,458,962	$ 150,831	$ 16,947,101
Note: Training, Supervision and Meeting related costs are transport, per diems and other costs.		*$ 4,546,113*	*Or*	*27%*			

Finding 3. HMIS, including CBM development and strengthening, are long-term processes, requiring ongoing and continuous yet iterative investment that is not always sufficiently or appropriately supported within individual funding cycles[53]. This can be due to competing priorities for limited resources, and the extent of prioritization by the CCM or national leadership in general.

Countries that were supported to install DHIS2 systems as their national information system platform reported that the required investments were furnished over several allocation periods. This is a perfect example that the transition from data capturing information system development to a more comprehensive information systems that provides useful information that can be used – for example, for in-depth service delivery performance monitoring, resource allocation, and other necessary decision-making to ensure people are provided with appropriate and timely health services – requires time. On the other hand, countries reported competing priorities between disease and RSSH investments at the time of funding request development, or at times of medicine shortages, such that with limited RSSH representation, including M&E managers, there is limited reference to the available long-term plans for HMIS development in the country.

The TRP working group on RSSH developed the 4Ss model identifying key investment requirements and major activities along the health systems development continuum. This would ensure that a country's long-term HMIS development, strengthening and sustainability efforts are being supported. Figure 8 provides a generic overview that countries could consider for a phased HMIS investment and implementation approach.

EQ2. What have been the most significant outputs of the HMIS/M&E/DDM investments in global portfolio/country level (from paper-based or blackboard data systems to integrated back-end databases with front-end dashboards in comprehensive data warehouse or training programs)?

Finding 4: Global Fund investment has resulted in several outputs, the most significant of which have been support to establishing increasingly integrated DHIS2, M&E systems, COVID-19 surveillance – including equipment and capacity strengthening, with additional examples demonstrated in country case studies.

In line with the overarching focus of the review, i.e., the decision focus of an HMIS (see Figure 1 above), Global Fund HMIS investments[54] in previous NFM allocation periods have contributed significantly to 'system development,' i.e., the establishment, upgrading and synchronization of (disease and, at times, other health) information systems. This includes the development of such systems – both paper and electronic versions – the development of capturing templates/forms/URLs, the establishment of HIV, TB, malaria and other health indicators. It also includes the capacity development of staff that work in collecting, compiling, analyzing, reporting, and using data, often centralized in data warehouses with front-end dashboards at the (sub)national levels.

[53] Discussed under objective 4

[54] 'HMIS investments' is used as shorthand for all investments under the RSSH/HMIS module, the RSSH/CSS/Community based monitoring module, and all HMIS, M&E, and CBM investments under the disease programs.

Figure 8: HMIS Phases along the Health Systems Evolution Continuum[55]

HMIS Phases along the Health Systems Evolution Continuum				
	Systems Start (Establishment)	**Systems Support**	**Systems Strengthening**	**Systems Sustainability**
Key features of HMIS evolution phases	Initial development of a carefully chosen set of essential data items needed for key decisions and monitoring of progress.	Gradual improvement in quality of data, its use in the facilities by worker teams, graphically displayed to show progress on chosen key indicators designed to show progress in each program area. Initial attention to essential data for each program evolves towards combined integrated data selection assuring common data definitions (data dictionary), elimination of duplication and extension to the needs of all PHC program managers.	Integrated computerised disease information systems expanded with other essential support functions: (LMIS, finance, personnel, transport, labs, emergency…).	Information systems regularly maintained including upgrading of HR capacities
	Design of paper recording and reporting tools that impose the least possible burden upon front line health workers.	A smoothly running paper disease (and other) information systems can then be gradually transitioned towards an integrated computerised system (best based on DHIS2 as a platform).	Disease information systems moving towards direct (web-based) data entry systems	Outputs of information systems part of regular publications, decision-making processes and outcome monitoring processes
	Regular and timely submission of these data to higher levels for analysis and feedback of sensitive indicators to the field as part of supportive supervision.		Data timeliness and quality assured and dashboards made to enable users at all levels to access key indicators which are used by all to make decisions on resource allocations, service needs and health outcomes. Research undertaken to validate outputs from information systems.	Information system resources requirements standardized in and covered as part of the national health sector and facility budgets.
	Data/information used for service utilization and supplies monitoring.	Data/information used as per previous column and to make decisions on integration of services and resource allocation	Data/information used as per previous column and for instant overview of service utilization, resource use and outcomes to inform strategic directions as well as for regular international reporting.	Data/information used as per previous column and for routine sector monitoring, program evaluation, and to inform policy and strategy development.

[55] TRP working groups on RSSH 2018, HMIS sample for the 4Ss model.

More specifically, through the support from the Global Fund (and WHO, the Gates Foundation, and others), the open-source, web-based platform, DHIS2, is now the most common HMIS platform, used by 73 low- and middle-income countries.[56] Approximately 2.4 billion people live in countries where DHIS2 is used. When including non-governmental organization (NGO) -based programs, DHIS2 is in use in more than 100 countries.[57] The DHIS2 platform boasts (aggregated) data capturing modules, data warehousing, visualization features, integration and interoperability functions, and the possibility for data users and policymakers to generate analysis from live data in real-time.[58]

From the evaluation case study countries (CSC),[59] significant HMIS investment outputs were:

- Establishment and localization of the DHIS2 platform with accompanying dashboards (in all eight CSCs);
- Integration of different HIV databases (voluntary testing and counseling, endogenous reverse transcription, prevention of mother to child transmission, etc.) into one HIV information system (recent development in Ethiopia, Cambodia, Senegal);
- Development of an android-based malaria information system (Cambodia);
- Establishment and linking of laboratory, supply chain, and testing data (e.g., GeneXpert) to the HMIS (Zambia, Ghana, Cameroon, Cambodia);
- Development of CBIS (Ethiopia, Benin and Cameroon);
- Development of e-trackers for individual patients under the different disease programs with a linkage to the DHIS2 (Ghana, Cameroon, Rwanda and Senegal);
- Development of a COVID-19 surveillance and management module (all countries);
- Capacity development of staff in information systems and M&E (all countries);
- Availability of equipment: computers, servers, telephones, and tablets (all countries).

EQ3. What have been the most significant data use systems or approaches established through GF investments?

Finding 5. Global Fund investments have supported the development of multi-indicator and system performance dashboards, which are used in most countries to monitor programs, revise NSPs, and formulate funding requests.

The main focus of this evaluation is on the user side of the decision focus of an HMIS (see Figure 1 above). This describes the use of information by the users for different purposes, such as decision-making, action planning, program monitoring, success story development, epidemiological and statistical reporting, articles for general consumption, and other information, education and communication purposes. While there was substantial investment in systems development, with the intention to increase the use of timely, accurate, and synchronized data for decision-making in all

[56] Not all necessarily financed by the GF.
[57] Ditto
[58] https://dhis2.org/about/
[59] Benin, Cambodia, Cameroon, Ethiopia, Ghana, Rwanda, Senegal, and Zambia.

aspects of health sector or disease program management, the evaluation has observed mixed experiences with direct investment to establish data use systems. While there are various examples of where data is generated to inform decision-making (see EQ4), there was an overall observation reported by both global and country KIs that data was primarily used for monitoring and reporting of (inter)national indicators and Global Fund grant performance monitoring, with an emphasis on compliance for the latter.

According to the evaluation case studies, the significant data use systems or approaches established through Global Fund investments were the following:

- Establishment of multi-indicator and system performance dashboards (all countries; at times on different devices for decision makers, e.g., Rwanda), including for the Country Coordinating Mechanism (CCM) (Senegal Cameroon, Ethiopia and Ghana);
- Country owned data quality verification mechanisms operational at health centers, districts, and national levels (different from the Local Fund Agent [LFA] validation processes; in Benin, Rwanda, Senegal, Cameroon, and Zambia);
- Regular review of the performance of each of the grant activities (all countries);
- Regular review of the performance of the national health sector plan and individual disease programs implementation plans at (sub) national levels (all countries);
- Community data are monthly recorded, verified and validated as the data for the health posts and health centers (Senegal);
- Formulation of national strategic plans and programs (all countries);
- Formulation of funding requests (all countries).

EQ4. To what extent have the Global Fund investments to date contributed to an increase in programmatic level DDM, and how?

Finding 6. Establishing and strengthening the application of electronic systems (DHIS2 or other e-HMIS) increased the availability of data; it organizes the information in a manner that is more easily consumable thereby more likely to be used.

As mentioned above, having access to dashboards in the countries, undertaking regular reviews of the data at (sub)national levels, and sharing with stakeholders, have been the main impetuses to increase programmatic level DDM. Besides the periodic review of the data at sub-national and local levels (in all countries), other examples include the strategic placement of staff in high-risk places (for both HIV and malaria in Cambodia), a reduction in order processes using data from an integrated LMIS (Ghana), targeted case investigations and patient-centered follow-up (see Box 1 on Cambodia, but also evident in Ghana), and commodity planning (Cambodia). In addition, being able to share data with stakeholders, such as the CCM and CSOs, has improved engagement and ownership of both data and the programs.

More specifically:

- All countries assessed indicated that the establishment and strengthening of electronic systems increased the availability of data. National (programs, ministry) and regional levels get data from sub-national levels as soon as it is registered in the platforms (Ethiopia, Cameroon, Senegal, Ghana, Cambodia, Ghana, Rwanda). The review of data at the national level enables programs to monitor trends on key indicators and engage with the region and/or the district level to understand, analyze, and readjust;
- For malaria in Cambodia, patient data entered at the source, and software algorithms allow classification of cases by malaria species, and location, prompting health staff to take targeted specific action based on elimination guidelines;
- Zambia has implemented an online 'Stakeholder Activity Reporting Form' (SARF) tool that automatically generates graphs that compare the SARF data at district, provincial and national levels;
- Dashboards in Rwanda have been created at the national level in a participatory manner; i.e., including the health managers at sub-national levels. The dashboards are automated and available to everyone for data review and analysis. Data managers have been trained to create tailored dashboards as needed;
- The availability of dashboards with thresholds (limits to trigger action) is presented as an enhancing factor for data use in all case studies. It helps to transform the data into information that is accessible to managers.
- Some countries have established or are experimenting with e-Trackers that follow individual patients (on compliance, adverse drug reactions, etc.):
  - Installed in Rwanda and Cambodia for the three diseases;
  - Installed in Senegal for malaria, in process for TB and HIV;
  - Installed in Cameroon, Benin, Ghana for TB.
- Client/patient records (electronic medical records, EMRs) were installed in Ethiopia, Cambodia, Rwanda, Cameroon and Ghana (but not always covering the entire country). In Ghana, they are using Key Population Unique Identifier Concept (GKPUIC), to collect data on key populations; and finally,
- In Rwanda, a significant finding was the establishment of a data use culture among managers and health staff at each of the levels.

Box 1: Case-based data use in Cambodia

In Cambodia, there is a movement toward case-based surveillance using electronic databases for both malaria and HIV down to the facility level, and for TB at the district level but slowly moving towards facility level. As a result, DDM is occurring more at the local level than previously. At the sub-national level, facility and community staff (and NGO partners) for TB, HIV, and malaria can now use case data for patient follow-up and case investigation contact tracing, outreach, among others.

Finding 7. The Global Fund's investment and support for data use is different to that provided by other donors such as PEPFAR and PMI; the latter includes support for implementing partners to provide longer-term coaching and mentoring to support data use.

It was observed that the implementation of HMIS activities, such as the capturing, analysis and use of routine information under Global Fund investments, especially at sub-national levels, is more hands-off compared to other donors. In countries where

PEPFAR and PMI operate, for example, they have implementing partners that provide capacity strengthening support and ensure close monitoring of data, including having at times databases that are specific to their sites of operation and that therefore ensure a more direct data-driven approach to program implementation. The Global Fund, on the other hand, relies on the review of national-level data captured quarterly, with exceptions. For example, in Ghana, the country team (CT) reviews the national data monthly with the PR. While it is acknowledged that the different CTs do regular data reviews and look at EPI and service coverage trends, there does not seem to be a standard to do this regularly and systematically, nor is it clear whether sub-national data gets reviewed. However, Secretariat use of data is beyond the scope of this evaluation.

In all case studies, Global Fund funding is supporting the HMIS strategic plan, or the M&E/strategic information section of the disease specific strategic plan. Funding requests show in most cases the complementarity and the different inputs by the between donors. Examples of collaborations include:

- In Rwanda, the government, Global Fund and Centers for Disease Control (CDC) invest in data systems. They each support the systems in different districts and finance the collection, quality assurance, analysis and use in the district area assigned to them;
- In Cameroon and Senegal, PMI and Global Fund funding complement each other's inputs. The PMI model uses implementing partners (IPs); while the Global Fund model supports the national system – although the IP and PMI also support the national system (strengthening DHIS2 and the data flow). In both countries the IPs are present in-country (recruited locally) to work hand-in-hand with the national counterparts.
- Also in both Cameroon and Senegal, the United States government (USG) pushes HIV/AIDS and TB data utilization agendas by reviewing indicators, epi data, and rewarding data-driven program designs. The USG selects IPs, who work with national programs daily to support, and, co-develop plans across IPs (especially in-country) and funding sources.
- In addition to the development partners, the role of technical partners was also mentioned by all countries, by providing normative guidance and support on strategic information and data use (WHO; RBM; Stop TB; UNAIDS); supporting data production, analysis and use (CDC, UNAIDS, PATH-MACEPA for instance), and providing capacity building through dedicated staff and trainings (WHO, UNAIDS).

Overall, the experience from Cameroon (see Box 2) covers the sentiment and the broad aspects of the Global Fund's investments in information systems, including its use for DDM, including complementing other partners' DDM efforts.

Box 2: DDM in Cameroon

Global Fund investments contributed to an increase in programmatic DDM. Overall, the review of funding requests, program reviews and mid-term evaluations are used to feed into the NSPs, and the prioritization of interventions presented for funding. The Global Fund cycle remains an important driver for data use and analysis of programs: all KIs engaged on Global Fund grants at the central level (programs, CCM) listed the surveys, analysis and evaluations currently undertaken to prepare for the next cycle. However, the examples

shared during the interviews have demonstrated that programs (particularly HIV and malaria programs) and regions are using their data during the cycle to reorientate specific strategies or amplify their efforts to improve the performance of certain indicators. In general, KIs agree that there is an increased use of data for decision-making at the national level in Cameroon, but insufficient DDM at the lowest levels of the health system. KIs agree that with the availability of DHIS2, there is an opportunity for engaging with the lower levels on analysis and decision-making. The Global Fund culture towards data and evidence (allocations, evidence and data-based prioritization in the funding request, availability of up-to-date NSPs to support funding requests, etc.) was also reported as a driver that pushed the country to go further. Similarly, PEPFAR and PMI are data-driven donors, going to a very granular level, and linking all decisions to data. Together this is creating a practice that has increased the programmatic DDM.

The current iteration of the Data SI has engaged providers and partners that will establish and support regional networks of academic and other institutions, who in turn will support countries. From the initial inception reports it is unclear if there will be regular support to sub-national levels. The timeframe of the SI, until December 2023, may also be too short to have significant and sustainable outcomes achieved by its end. As explained above, catalyzing sustained in-country capacity and system will require ongoing investments of both grants and strategic initiatives over several funding allocation periods.

In particular, longer-term approaches to capacity strengthening may be necessary to help health staff internalize new systems and develop skills and ownership over new practices. Box 3 describes a number of approaches for closer mentoring/coaching of staff, especially those that work at sub-national level, as implemented by USG partners under the PEPFAR and PMI programs, and also funded by the Bill & Melinda Gates Foundation.

Box 3: Mentoring as an effective approach to supporting data use

In Kenya, MEASURE Evaluation, supported by PMI, provided ongoing mentorship to sub-national health care workers to address identified gaps, including limited understanding of indicators, lack of analysis at the facility level, data entry issues, poor documentation, and limited access to DHIS2 due to misperceptions about who could or should be accessing data. Lessons included that short-term training is not sufficient to internalize new skills, and that mentoring allows for practical use of skills, supporting customization and adaptation at the facility level.[1]

USAID's Data for Impact (D4I) project recognizes the importance of investing in both individuals as well as institutions. D4I includes mentoring for leaders, so that they can in turn guide, mentor, and coach team members as part of his or her regular duties to improve data use – recognizing the importance of not only strengthening institutions, but key individuals within them.[2] PEPFAR has also seen the value of working side-by-side in facilities to understand and address bottlenecks to data systems, and not only build skills but change attitudes to the value of using data. It was observed "I think a lot of the shift in providers' confidence in the EMR system was thanks to us working side by side with them and providing a helping hand on how to use these new systems."[3]

The Gates Foundation has funded CHAI to work directly with national malaria programs in the Mekong region to develop their national strategic plans, by embedding staff to accompany government officials as they use data to make decisions. "We have already begun to see the difference that this approach has made. National programs are continually referencing their national strategies and using their documents to train peripheral health staff at the sub-national level on their roles in the national elimination campaigns."[4] CHAI took a similar approach in Honduras, working side-by-side with the MOH to update platforms, visualizations, and deploy new tools. This resulted in measurable improvements in malaria case classification and investigation rates – critical to support decisions for malaria elimination.[5]

Sources:

[1] MEASURE Evaluation PMI (2017), *Malaria Surveillance: Report on Continuous Medical Education of Health Workers*. President's Malaria Initiative. https://www.measuremalaria.org/wp-content/uploads/2019/11/tr-17-152-1.pdf

[2] Data for Impact (2019), *Data for Impact – D4I Approach to Individual and Institutional Capacity Strengthening*. USAID. https://www.data4impactproject.org/publications/data-for-impact-approach-to-institutional-strengthening/

[3] DATA.FI (2020), "A walk in my shoes: Developing trust in the electronic medical records system through capacity building at the health facility level." PEPFARhttps://datafi.thepalladiumgroup.com/wp-content/uploads/2020/12/Data.FI_A-Walk-in-My-Shoes_Malawi_IS-20-7-1.pdf

[4] CHAI (2017, "Strategic Planning for Malaria Elimination: The Crucial First Step". https://www.clintonhealthaccess.org/blog/strategic-planning-malaria-elimination-crucial-first-step/

[5] CHAI (2021), "Stronger surveillance systems propelling Mesoamerican countries to malaria elimination", https://www.clintonhealthaccess.org/blog/stronger-surveillance-systems-propelling-mesoamerican-countries-to-malaria-elimination/

EQ5. To what extent is data used to inform CCM and PR decisions during the grant design and implementation?

Finding 8. Since the introduction of the NFM, funding requests and NSPs have been much more data-driven because of application requirements and a more-evidence based grant-making process. This is supported by investments in information systems, different surveys, country dialogues, and program reviews.

All countries reported that since NFM1, funding requests and NSPs have been much more data-driven than before. Several countries (Cambodia, Cameroon, Ethiopia, Ghana, and Zambia) confirmed that investments in information systems, including for conducting different surveys, such as integrated biological and behavioral surveys (IBBS) and multiple indicator cluster surveys (MICS), ensured that country dialogues, program reviews, funding requests, and grant-making were based on current evidence representing the state of the epidemics. The TRP confirmed in its different NFM3 window reports that increased modeling and stratification were reflected in the funding requests that had been reviewed.

EQ6. What have been the achievements to date to integrate community-based data and private sector data in the national decision-making?

Finding 9. Increased investment in developing community-generated data systems, and integrating this (routine) data into national systems, although apart from (phone based) e-trackers following up on individual clients in some countries, data entry

remains mostly manual. Overall, investments in community-generated data remain nascent – particularly for CBOs and CLM.

The overall investment in CBM has increased from 2% of all information systems investment in NFM2 to 7% in NFM3; or in absolute terms, an increase of USD 22 million (USD 10 million to USD 32 million). It supports both community data system development and capacity strengthening of community members, peer groups, civil society organizations (CSOs), and case trackers to capture and use the data for their operations. In most countries, these are still separate systems, but there are promising developments whereby the data is fed into the national HMIS in Cambodia, Cameroon, and Senegal.

Despite the increase in investment for CBM and CLM, actual implementation remains limited i.e., only a few countries have community generated data flowing into the national HMIS. The additional concern is that the definition of the investment category, i.e., CBM does not clearly indicate the investments that are being made. These range from the development of CHIS, community-based organization activities, to CLM of health activities, as well as training of CHWs to capture (and pass on) data, so a mix of technical and capacity development activities.

The definition and scope of 'community systems' and thus also their involvement in data systems, differs between countries. In Benin, it primarily includes the condoms and gels distributed by community actors. In Cambodia, community-level data on referral, prevention, care and support, and outreach are captured and fed into the national HIV MIS. TB community workers are involved in screening, referring, and monitoring treatment for TB patients in the community, and these data are included in the TB MIS. In Cameroon, community-level data is still captured separately by the community PR but in an aggregated (summary paper) form at the district level, where it is entered into DHIS2 so that it will make its way to the national level (note that this is a different process from regular client data that are directly entered into DHIS2 at a health center). Similarly, in Zambia, community-level service delivery data on the three diseases is captured manually at the district level in DHIS2. While the original DHIS2 platform in Ghana does not have community-based data integrated, this has been recognized as an issue, and Ghana is currently in the process of introducing new incremental solutions (to strengthen community-level data systems) with NFM3 investment, through CSO principal recipients (PRs). From among the country case studies, Senegal seems to be the furthest developed, where community data are monthly recorded, verified and validated as part of the data for the health posts and health centers.

Finding 10. Limited initiatives or investments in capturing or sharing data from the private health sector were identified. It is more likely to occur if reporting is linked to accreditation requirements – and enforced – and synchronization technically feasible.

In many countries, the private health sector is a significant service provider, not least for HIV, TB and malaria. As much as health data from the private sector in most countries must be reported into the national health information system, this has not led to significant developments (or investments) in capturing or sharing data from the private health sector.

Only Cameroon, Rwanda, and Zambia have reported integrated private sector data in the national HMIS, with this process also beginning in Senegal**. It was found to be feasible due to the enforcement of mandatory reporting requirements, particularly where this is linked to accreditation. Rwanda also has "Standard Operating Procedures for Management of Routine Health Information at Health Centers/Posts/Private Health Facilities**". Malaria staff in Zambia manually enter private provider data into DHIS2, and in Senegal, some hospitals are beginning to enter data into DHIS2 based on simplified reporting forms. **The other case studies show limited or non-existent integration of the private sector and challenges in this area. These challenges included the lack of system compatibility between databases, or the lack of control over/engagement with the private sector – rather than** necessarily **a lack of willingness from the private sector. The latter is also partially due to domestic laws requiring potential HIV, TB, and malaria clients to be referred to government facilities as reported from Cambodia**, **or to be accredited before providing services (Ghana). Other causes are the diversity of the private sector with various levels of IT and M&E capacities, incompatible IT systems that do not allow synchronization with the national HMIS and weak enforcement (Ghana).**

EQ7. To what extent does the Global Fund provide support to improve the quality and use of disaggregated data to support inclusive programs?

Finding 11. The Global Fund's requirement of and support to sex and age disaggregated data has contributed to an increase in availability in routine data, but this has not consistently translated into improved use.

All countries routinely report data disaggregated by sex and age; it also a requirement of the Global Fund. However, the MECA survey cited in this report (see Finding 26) found that disaggregated data are not very often used even though they are available. However, the case studies presented several examples of the use of disaggregated data:

- In Cameroon, a review and analysis of data during the validation exercise conducted in Far North showed that pregnant women and children were not reached with any form of intervention due to difficult access. After discussion with all stakeholders, participants agreed that it was not acceptable, and the Region decided to put in place special local measures to access children and ensure that home-based treatment is provided regardless of the time of year. The decision was taken by the regional level, with technical support from the central level, to mobilize the necessary resources (motorcycles, information, and sensitization of traditional leaders, etc.). As a result, several children were reintegrated into the cohort;
- In Benin, the review of the intermittent preventative treatment of malaria in pregnancy (IPTp) data for programming led to the prioritization of areas where coverage of the third treatment and beyond (IPTp community level) was low. Analysis of pediatric TB data was used to review the strategy: leading to an elaboration of the existing guidelines, as well as the selection of focal points amongst pediatricians to be involved in TB detection; and
- In Ghana, disaggregated data has been combined with geospatial methods and climatic variables to produce stratification of districts.

Finding 12. Approaches to key population data collection varies based on the socio-cultural context, and national priorities. Many countries increasingly rely on surveys, program reviews, or civil society to collect KP data, while some embed it in routine data collection, with different strategies for protecting patient privacy.

However, the situation for priority – which can include key and vulnerable populations (KVPs) is different. The malaria priority populations are clear; TB undertakes the identification of KVPs and countries reported the revision of the capturing tool (Cameroon, Ethiopia, Zambia). HIV data collection, especially regarding more sensitive key populations (KPs) such as men who have sex with men (MSM) and sex workers (SW), is more sensitive, and more likely to be aggregated at national level.

KP-differentiated data is generally established by specific surveys/tools (IBBS, demographic health surveys, knowledge attitude and practice studies, or National AIDS Strategy) and not captured routinely. If it is collected regularly by CBOs at the community/peer-group level it is forwarded through a parallel system to be aggregated for reporting at the national level. Because of the estimation and stratification nature of these tools, size estimates are generally found to be less accurate; see for example data for the first '90': people living with HIV (PLHIV) that know their status, is based on an estimation of the PLHIV, which usually comes from surveys.

Among the case study countries, only Ghana reported a code in the client registration form that specifies the status of the client, which would get forwarded to the national level to support analysis. In Zambia, surveys are undertaken of specific target groups such as adolescents, HIV driver age groups (15 to 29 years), pregnant women, and children under five.

EQ8. What are the categories or domains of data requested at Global and in-country level and by whom and what is the data used for?

Finding 13. All countries report that data captured is used for the following main domains, both in-country and internationally: Diseases epidemiology, programmatic health and management indicators, planning and use of resources, absorption of donor subsidies, and feeding regional and global reports. Data are being used by program managers, health planners and CCMs in-country, while at the global level it is used by the GF, particularly the country team and partners such as WHO, UNAIDS, Stop TB, RBM, and bilateral development partners.

The above data domains are requested by the global and in-country stakeholders for various purposes. All countries reported that routine and non-routine data is being used for programmatic and monitoring purposes by program managers, health planners, M&E specialists, technical working groups, and CCMs in-country for programmatic and monitoring purposes, such as for annual planning, intervention programming, quantification of health products, payments for results (in Rwanda only), monitoring of catchment areas (in Rwanda and Ethiopia) and for case management. At the global level it is used for monitoring of the epidemic and the contributions of their technical and financial investments by the Global Fund, particularly the country team and partners such as WHO, UNAIDS, Stop TB, RBM, and

bilateral development partners, such as USG within their PEPFAR and PMI programs, or foundations such as the Gates Foundation. Box 4 provides a snapshot of the domains for DDM for a patient or the provision of a service at the facility level in Cambodia

Box 4: DDM Domains in Cambodia

In Cambodia, much of the DDM for the patient is done at the facility level, including engaging with community groups to find patients lost to follow up, using the voluntary confidential counseling and testing (VCCT) database to answer critical questions about recency, among whom and where are recent infections occurring; and identifying hotspots and providing appropriate responses. Providers elicit contacts during pre- and post-test counseling to try to reach index partners and provide HIV self-testing kits to index clients to give to partners, in collaboration with CBOs and using social media. At the national level, DDM is more strategic, such as setting thresholds or early warning indicators to alert VCCT officials to investigate. These thresholds are specific according to the types of sites or regions based on the data.

The logistic information system provides data on the quantities to be procured and distributed to the various facilities. A lab information system on the clinical side assists with early infant diagnosis using lab data to show the diagnosis for HIV-positive infants.

For malaria, DDM is done using real-time data from the malaria information system at the facility. CHWs treat and follow up cases in the elimination operational districts, do foci investigations in at-risk villages, and distribute bed nets. Given that the highest malaria risk is among adult men, CHWs and health facility staff use DDM to identify the last pockets of hard-to-reach populations working in remote areas to provide prevention services. At higher levels, DDM is used for village stratification, allocation of bed nets and other commodities to high-risk areas, and management and allocation of health workers to high-risk villages. Regionally, Cambodia and other countries in the Greater Mekong Subregion (GMS) provide monthly data to WHO's Malaria Mekong Elimination (MME) database to be included in their monthly bulletin of the malaria situation in the GMS. The MME database ensures that national malaria programs, donors, and partners from the GMS can track their progress while monitoring the malaria situation in neighboring countries.

DDM for TB at the lower levels is focused on preventative therapy, identifying and providing preventive treatment for at-risk populations such as people living with TB patients, and monitoring adherence to treatment in the community. At the national level, data from prevalence surveys is used for DDM to identify key population groups to plan appropriate activities and responses. A new survey (delayed by COVID) is scheduled for late 2022, giving updated population estimates for key populations. As the surveys do not provide data by province, routine case data is used to plan for the distribution of TB commodities.

Data is also used by the TB, HIV, and malaria M&E staff at all levels to report against the NSP indicators that track progress towards the country targets and for the periodic donor reports that monitor progress against grant targets. In addition, data is used in quality assurance to ensure the quality and accuracy of data from lower levels. The Local Fund Agent also performs independent data quality audits and has reported they are not finding significant problems with data reporting accuracy.

In summary, the Global Fund has over the last decade significantly invested in the establishment of disease information systems; some of them as part of an integrated

national health management information system platform. And while evidence suggests a greater use of the data for the development of national disease strategic plans and the preparation of funding requests, there is still scant evidence that data steers regular/daily decision-making in the disease programs or provides use for a larger group of stakeholders beyond the disease program managers and even less so used for similar purposes at sub-national level.

4.2 Objective 2: Gaps, weaknesses/challenges, and factors that hinder and enhance DDM

To identify, using a health system strengthening perspective, gaps and the areas of weaknesses/challenges, and that need to be overcome to improve the use of data for decision-making at the country level for country programs as well as country-level factors (e.g., data quality issues, program, and national reporting systems alignment) hindering and enhancing DDM.

EQ 9. What is the hindering and enhancing factors, gaps and challenges to be overcome to improve the use of data for decision-making at country level? This should include specifically looking at disaggregated data for the disease program, community-related data and private sector data?

Main factors enhancing data use at the country level include national coordination and leadership, the availability and accessibility of data in an integrated system, data from different sectors, data quality, and human resource capacity. Another issue that emerged related to country-level data use, is data availability beyond the health system. While strong examples of each exist across the case studies, emphasis here is placed on the gaps and challenges that remain. To avoid repetition, private sector data was covered in Finding 10 above, and disaggregated data will be covered in Finding 26 below, under the evaluation question related specifically to this issue.

Finding 14: Government-led coordination of donors and HMIS investments enhances the likelihood of data system integration, interoperability, and shared approaches to indicators, interpretation, and data use. However, coordination is not government-led in all countries.

Given the significant attention and resources invested by various donors to improve HMIS – which often focus on specific diseases or target groups – the need for strong leadership and coordination is clear. Despite efforts to ensure this and the progress made to date, the case studies demonstrated the continued existence of parallel systems (HIV in Ethiopia, TB in Ghana, HIV and TB in Senegal), data collection tools that are not integrated into national systems, or a lack of harmonization of indicators (e.g., Cambodia in general, and Cameroon for data quality indicators). The 2021 Senegal Prospective Country Evaluation (PCE) noted that "stronger political leadership is needed to insist that programs are calibrated with the national indicators".[60] The statement remains valid, and applicable to many countries. This finding is also

[60] Global Fund Prospective Country Evaluation 2021 Synthesis Report

supported by a 2021 assessment into community-level malaria information systems supporting DDM across 27 countries, which also found that "Leadership and political will are strong drivers of digital transformation. A common enabler of implementation is that many countries have established coordinating/governing bodies for digital health that have a scope of work or terms of reference and meet regularly."[61]

Among the case study countries, Rwanda demonstrates the strongest government leadership, and is also the country with the most harmonized HMIS, and the strongest data use, from the national to the district level. The Government of Rwanda's National Digital Health Strategic Plan (2018 – 2023)[62] provides technical guidance, a governance and leadership structure, and ensures that all digital health systems are integrated and interoperable to improve decision making, down to the patient management level. The HMIS Department of the Ministry of Health is the chair of the National HMIS Working Group – the primary HMIS coordination body – to ensure that all donors and partners are aligned. A similar body exists at the district level. These efforts ensured that all parallel systems have been or are in the process of being integrated. Donors contribute directly to supporting and improving the national HMIS.

Coordination mechanisms also exist in other countries, although these tend to be disease-specific, rather than cross-cutting across the HMIS overall, and operate at the national rather than sub-national level. Vertical working groups were identified in Cambodia, Cameroon, Ethiopia, Ghana, and Zambia, but no HMIS-wide coordination. Many of these groups support and facilitate data use, and they can still be effective coordination bodies, even if they are not HMIS-wide. For example, Cameroon's HIV Technical M&E group achieved consensus across donors in 2022 on how to calculate HIV indicators. However, these disease-specific coordination mechanism have not achieved the same success as Rwanda's HMIS-wide approach in coordination, which other countries may learn from. Ethiopia is heading in this direction, where fragmentation and insufficient coordination has been a persistent challenge. The Federal Ministry of Health has now set up a "data use partnership" in collaboration with JSI, led by a Joint Planning Monitoring and Evaluation Directorate at federal and regional levels, with regular meetings now happening. The electronic health (eHealth) structure designed and led by the government now has a plan for interoperability of all systems, and to ensure complementarity of all partner investments.

Finding 15. Investments in DHIS2 to integrate different data sources have led to an increase in data availability and accessibility.

In countries which previously had multiple or fragmented databases and data sources, being able to access more data through one platform has increased the availability of more data to more people. Fragmentation of data was identified as an issue in the 2018 Cambodia PCE report, which found that, "Some of the impeding factors [to DDM] include 1) the use of multiple databases to store datasets at national and local sites, 2) disconnect between data systems prohibiting integration and leading to inability to track individual level data…". Investments in DHIS2 have been

[61] President's Malaria Initiative (2021), PMI Digital Community Health Initiative Cross-Country Landscape Report: Understanding the Use of Digital Technologies in Community Health Programs. USAID.
[62] Rwanda Ministry of Health (2018). *National Digital Health Strategic Plan 2018–2023*. Kigali: Government of Rwanda. Available at this link.

a good example of donors and technical partners agreeing on a common platform to coordinate efforts. Partnerships with the University of Oslo (UiO) and other partners also ensured that the platform could evolve to adapt to country needs, and build in best practices and lessons learned.

As a result, DHIS2 now allows multiple data sets to be integrated, aggregated and presented in different ways that can be relatively easily configured at the country level. However, the countries are at various stages of integration. Most case study countries were found to have integrated datasets that the Global Fund has supported – HIV, TB, and malaria (or are still in the long process of doing so). However, this is not necessarily extended to other disease or health areas. As discussed in findings 11 and 12, CHW data is increasingly integrated, but not necessarily other community-generated data from CBOs or CLM. Very few countries have integrated private sector data (see Finding 10). In addition to health program and epidemiological data, human resources, health product, and financial data can also be integrated into DHIS2, however, this is less advanced across the countries, as demonstrated in Table 4.

Table 4: Status of data integration into DHIS2

Country	HIV	TB	Malaria	Other health	COVID	HR	Health products	Finance
Benin	Y	Y	Y	Y	N	N	Y	Y
Cambodia	Y	N	N	N	N	N	N	N
Cameroon	Y	Y	Y	Y	Y	N	N	N
Ethiopia	Y	Y	Y	?	Y	N	N	N
Ghana	N	N	N	N	N	N	Y	N
Rwanda	Y	Y	Y	Y	Y	N	N	N
Senegal	N	N	Y	Y	Y	N	N	N
Zambia	N	N	N	Y	Y	N	N	N

Being a web-based platform also means that access to data is available to anyone with login credentials. This can mark a significant departure from previous databases, which were often controlled by an individual or team, who often served as gatekeepers to data. A challenge remains, however, in that the administrator can still decide who has access, what data they are able to see, and what they are able to do (e.g., view, edit or enter data). Access to DHIS2 varies between countries, with the most open being Rwanda, where all users have access to all data – although only editing ability for their areas of responsibility. Rwanda is the only country among the case studies that allowed full data access down to the facility level. Further, availability and access are not sufficient to ensure data use – it also requires certain capacities to be able to use data effectively to support decision making (see Finding 18 below).

Finding 16. Data from CHWs is integrated into national information systems, however it remains nascent for other community-generated data.

As discussed, community-generated data includes data from CHWs, CBOs, and CLM. The most consistently integrated into the HMIS is CHW data, which was found to be integrated in all case study countries. This remains paper-based in many instances, with data being entered into DHIS2 at the health facility (e.g., Rwanda) or district level (e.g., Zambia). There are also examples of CHW data being entered into DHIS2 directly through apps, including in Ethiopia (through Rockefeller's Data Science Catalytic Fund), for malaria workers in Cambodia, Ghana's Community Health Planning and Services, and Senegal's home-based care service. E-trackers are also emerging, which allow for direct integration of community-collected data for the three diseases in Zambia, Ghana, Rwanda, and Cambodia, malaria and TB in Senegal, and TB in Cameroon. In priority provinces in Zambia, CHWs report malaria cases by mobile phone through the Malaria Rapid Reporting (MRR) system on a weekly basis. The MRR system allows online access to data in real-time and summarizes case reporting and stock data from all areas, including village- and clinic-level malaria incidence.

There is more variation in how CBO data is integrated, which can depend on whether they are sub-recipients (SR), or sub-sub recipients (SSR) of a Global Fund grant, the sensitivity of the work they do, and the cultural acceptance or stigmatization of the key population they represent. For SRs and SSRs, CBO data is integrated at the national level via the PR. In Rwanda, CBO data is integrated at the lowest level, with the exception of KP data, which is shared in an aggregated format, and is not yet fully integrated into the HMIS. Senegal's malaria program integrates data from both CHWs and CBOs, including from KVPs, and is a good example of how data collection moves to data use at the sub-national level. Data is submitted to the health posts, which enter it into DHIS2. With this data, the health posts map the villages and city neighborhoods in terms of the number of malaria and complicated malaria cases. This mapping is then provided to the CHWs to help them plan their activities, such as malaria prevention awareness raising, supply of drugs, and the appropriate treatment.

Despite positive examples, however, challenges remain. Even for CHWs, paper-based systems remain slow and prone to error, and delays were reported with data entry in some health facilities, particularly where there are no staff dedicated to this task. The case studies tended to focus on what was in place, rather than what was missing, and many case studies did not mention CBO data, and only one mentioned CLM (see example from Cambodia in Box 5). While CLM initiatives are relatively new for the Global Fund to support, they are expected to increase during implementation of the new Strategy. It is not yet clear how this data will be integrated into HMIS, particularly if data collected is more qualitative than quantitative in nature. And critically, integration and use of this data will require the data use skills and culture at the sub-national level where this data is expected to be of direct use (see Finding 18 below).

Box 5: CLM data in Cambodia

The introduction of the OneImpact CLM platform highlights the potential of CLM to support DDM. The mobile app encourages and facilitates the participation of people affected by TB in all aspects of TB programming. The pilot was conducted by Khana, a national CSO, to address the gap in *information on the challenges preventing people being diagnosed, treated or reported for TB, and therefore no way to use information to improve the situation.* As a result of the pilot, both the national TB program and CHWs reported an improvement

in their ability to monitor, understand and respond to challenges faced by people with TB, with a recommendation to expand the program to more areas.

Sources:
Stop TB Cambodia Country Report
Empowering Communities to end TB, OneImpact Case Study, Cambodia

Finding 17. Data quality is necessary to ensure that data is trusted to inform decisions, yet ensuring data quality is a resource-intensive process.

All case studies confirmed the importance of data quality – in terms of accuracy, completeness and timeliness, though less so on the different validation processes (see examples below; hence doubt about the quality by some of the partners). Quality of, and trust in data is therefore an enhancing factor for data use, while the absence of quality is, logically, a hindering factor. As presented in Objective 1, throughout NFM2 and NFM3, a significant proportion of Global Fund investment has been allocated to data quality verification. This can include funding quarterly or semi-annual supervision visits and data quality audits, and often appears in budgets as travel and per diem costs. As a result of these long-term and significant efforts, all case studies report an improvement in data quality over time, which is also confirmed by KPI 6d.

However, despite improvements and large investments, other countries have reported the lack of data quality as a hindering factor. These issues often start at the sub-national level, and therefore impact the quality of the data available at the national level. Even when measures are in place to ensure data quality at the sub-national level, quality can be affected. For example, in Ghana, current periodic data quality audits, supportive supervision and coaching visits are incorporated at the sub-national level, yet quality issues persisted. It was found that the staff responsible for data entry were not necessarily the users of the data and this supposed lack of ownership led to frequent errors in data entry. NFM3 conducts annual reviews of national M&E systems and tools the three diseases. Yet data quality – particularly at the district level is seen as a challenge. Districts are expected to validate their data before locking them the system and sending it to the national level, however this is not consistently done. In Zambia, data completeness issues and data entry backlogs in some districts create delays in transmitting data, with these issues cited as limiting trust in data, and therefore in its use.

In some countries, data quality procedures are documented, but not always adhered to. In Senegal, for example, verification of data entered into DHIS2 by the district management team should be verified semi-annually by the central HMIS unit, however this is not done regularly. While Ethiopia has developed robust data verification and validation processes at the national and district level, it too can also experience delays and backlogs. The most common challenge cited is lack of time, typically due to staff shortages. Insufficient or over-worked staff can increase the chance of human error or omission, and lead to issues of timeliness as the backlog of data for entry grows.

Once again, Rwanda may emerge as a good example of data quality, where positive reinforcement by political and technical leadership has driven data improvements, in addition to the Global Fund implementing a results-based financing

model, known as National Strategy Financing. Results-based financing creates incentives for high-quality data, and a system that supports it. The OIG audit found that Rwanda's systems and controls to safeguard data quality are adequately designed, and that reported results generally aligned health facilities registers.[63] Audit concerns appear to have been addressed, and the case study found high trust in data. The routine data quality assessment includes: (i) data source document review (completeness, accuracy and spot-checking of the data in registers); (ii) monthly report review (completeness of monthly report and accuracy of the monthly report); (iii) error rate; and (iv) action plan to improve the data quality. This process was reported as time and resource intensive, as it requires significant travel, not only at the local level, but also between the national and sub-national levels (refer to the high transaction costs of training, supervision and meetings discussed under objective 1).

In Rwanda, some of these costs are covered by the government, as their incentive to maintain the system extends beyond the Global Fund. However, unless more governments cover more of these costs, data quality can be expected to suffer once the Global Fund or other donors stops covering these costs – which will have a negative impact on DDM. This may already be true for health areas that are not receiving significant donor support or attention. Key informants in Cambodia, for example, noted the differences in data quality (and their use in decision-making) within the vertical programs supported by the Global Fund (especially HIV and malaria) compared to other health data systems – including the HMIS – which have not received the same level of continuous support from Global Fund and other donors.

Finding 18. Strengthening and supporting human resource capacity to use data is correlated with increased data use, but support remains inadequate overall, particularly at the sub-national level.

Human resource capacity is a recurring issue, identified in previous evaluations and throughout the literature, including reports from MECA and Data SI partners. Human resource limitations – both in terms of quantity and skill – were identified in all case studies – particularly at the sub-national level. Significant efforts have been made to strengthen DDM-related knowledge and skills, but results remain mixed, as demonstrated by the case study examples that follow. It should be noted, however, that sub-national interviews were limited to one area per country, and may therefore not be representative. Furthermore, in brief interviews, it is not always clear which aspect of data use "capacity," refers to, nor whether the gap relates to attitudes, knowledge, skill, experience, time, or other general support to enable data use. Yet it appears that Global Fund investments have focused on knowledge and skills, while a gap has been attitudes and culture – which take much longer to change. The gap can also be the actual number of staff available to do the work – which has significant resource implications.

KI in countries such as Cameroon, Ghana and Senegal noted the importance of training for strengthening staff capacity. However, diverse key informants noted that staff – including at the sub-national level – with statistics backgrounds or who had received "field epidemiology training" (supported by USAID), for example, were

[63] Global Fund OIG, Follow Up Audit Report, Rwanda 2019

better equipped to make good use of data. These staff tend to be concentrated at the national level. In Zambia, however, the main challenge facing data was identified at the district and facility levels, which was attributed to the lack of staff "awareness" of data. Even at national level, it was mentioned that "some staff in senior positions may have poor awareness, appreciation and perception of data use". This implies that a cultural shift or change in performance expectations is necessary, in addition to building skills. Similarly in Benin, the lack of data use at sub-national levels was linked not only with a lack of capacity to analyze data, but a lack of culture towards data use and analysis. This was compounded by a lack of tools to support analysis and decision making – although regular use of data with tools and trainings was evident at the national level.

In other countries, the lack of staff was the main issue. Ethiopia, for example, has set itself up well for data use. The HMIS Unit produced an "information use training manual - facilitators guide" to support health workers and managers at all levels, and a DHIS2 academy has been created. M&E and program staff at both the national and sub-national levels are highly trained and there are several examples of data use. However, all key informants and the literature noted that districts are not adequately staffed to meet the data use demands – both in terms of quality and quantity. Many of the staff assigned as responsible for the HMIS or M&E can be more focused on their clinical responsibilities, rather than their data ones. To address this, funding for M&E specialists within programs, including at the sub-national level has been increasing, which has been accompanied by improvements in both data availability and use.

The importance of having enough staff in place was demonstrated by the two outstanding examples of data use among the case study countries, Rwanda and Cambodia. In both cases, local staff have been trained and are actively and consistently using data, and critically, data entry is done by frontline staff who are also collect the data, and this is part of their mandate/function. In Rwanda, for example, Data Managers are assigned at all levels whose only role is to work with data, and to ensure that the decision-makers have the data they need.

The evaluation team observes that providing training is the obvious solution to strengthening knowledge and skills, and more training was called for by some case study countries. However, group trainings – particularly when they are one off, can have mixed effectiveness, depending on who is there, their existing capacity, their role, the support they receive when they return to work, and whether trained staff stay in their roles (see Finding 22 on staff turnover). One example, of overcoming these challenges was observed with USG-funded work that adopted a longer-term mentoring or accompanying approach to capacity strengthening (see Box 3 in Finding 7). In Cameroon, for example, in addition to training, both PEPFAR and PMI ensure close monitoring of data through their implementing partners. Intensive mentorship and supervision ensure implementation and quality service delivery in accordance with national guidelines and policies. Similarly in Cambodia, the Bill & Melinda Gates Foundation funds the Clinton Health Access Initiative (CHAI) to work side-by-side with the national malaria program to anlayse malaria data, and address any issues arising. These approaches ensure that the right people are being supported, in an on-the-job way that allows for skills transfer, and longer-term behavior change.

Finding 19. DHIS2 has enabled improved access to health data throughout the health system, although it remains limited to prospective data users outside it.

While this evaluation focuses on use of data by health programs, the case studies revealed interest in seeing more use of data outside the health sector. This became more prominent during the COVID-19 pandemic when outside demand for health data increased. In particular, the demand for data from the highest levels (and the general public) demonstrated how much could be achieved very quickly. For example, in Senegal (as in many other countries), the UiO quickly produced a COVID-19 module and tracker, which was immediately integrated into Senegal's DHIS2. A public dashboard was made available to decisions makers, including the central and local governments, civil society, and CBOs, that were playing active roles in the COVID-19 response. More data was also shared with the general public to help them make personal decisions on where to go/avoid, and whether to wear a mask. This experience – and in other countries – has raised expectations about how long things should take, and what can or should be shared more widely.

In Benin, quarterly meetings between the health authorities and the mayors/local governments of certain areas allowed health indicators to be reviewed together, to support decisions to be made that respond to the overall situation in the area. Senegal health officials also meet with local leaders to present health indicators, sometimes with the objective of increasing domestic financing or allocations to health. At a larger scale, Rwanda's system of "performance contracts," which are signed annually between the president and district mayors, agree on targets for a range of socio-economic indicators, including health. Making health data accessible to other parts of the government has increased the health sector's incentive to produce and use data, and also contributes directly to government decisions on performance-based financing.[64] Ethiopia has included a section in its HMIS strategic plan on the availability of health data outside the health sector, in order to increase transparency of information flows and promote accountability. Sharing more health data with the public – such as disease prevalence, and health center performance – is intended to help patients make more informed decisions, and to build engagement with the community.

Advantages of wider availability of health data were therefore identified in case studies. The evaluation team also sees more public availability of data as useful for researchers and students to conduct further analysis that may also contribute to decision making. In some countries, data was not even accessible to some partners, such as technical partners, SRs, or CCM members (beyond their designated dashboards), which can be a missed opportunity for greater analysis, engagement, and improved decision-making.

EQ 10. What are the examples (and reasons) for weak DDM, and what are the key issues/risks to the country programs and the Global Fund of not having country level robust DDM?

[64] Despite the potentially perverse incentives that performance-based systems may create, no evidence was found in case studies of falsifying data or data use for controlling staff. It did not come up in any case study, and in the case of Rwanda's "payment for results" system, the data verification measures in place that would make falsification extremely difficult.

Finding 20. Human resource capacity to use data for decision-making varies by country and within countries, with the greatest gaps being the lack of ownership over data, and lack of empowerment among data entry and decision-making personnel at the sub-national level.

In addition to the time, attitudes, knowledge and skills issues discussed under Finding 18, other human resource-related issue that influence DDM was frequently described as a "lack of ownership" over data, or a "lack of empowerment" to use data. Evidence of this tendency was identified in all case study countries, and again, manifested more strongly at sub-national levels. Generally, staff at sub-national levels often see their roles as collecting the data to send it up the hierarchy for use, and therefore the data wasn't seen as "theirs", nor was it their role to do more with it than enter (and potentially verify) it. Even at higher levels, data is sometimes seen as something to report to donors, which again implies a lack of ownership; or to only refer when developing a plan or a funding request indicating a lack of empowerment (or interest) to use data for other purposes.

Data ownership and empowerment to use data was found to be lacking at the sub-national level in Benin (all levels); Cameroon (district level and health facilities), Ethiopia (districts), Ghana (regions, districts), and Zambia (region, district). Data ownership and the empowerment to use data at the health facility level could depend on the type of data available, for instance where health care providers have access to individual patient data, they are more likely to use data for direct case management and clinical decisions. At management levels, however, program staff may not know or understand their data enough to feel ownership over it, and often rely on M&E staff to provide data when they need it (Zambia).

The best examples of data ownership and empowerment to use data were found at all levels in Rwanda and Cambodia. In Cambodia, the increased granularity of the data available on customized dashboards, with data managers at all levels entering and reviewing the data, create more engagement with and ownership over data. Rwanda emerges as the gold standard, however, where the entire national governance system is based on performance contracts and results-based funding, creating a powerful incentive for data use led by the President of the Republic, with MOH stewardship. Mangers at all levels are aware of their indicators, what data they need to be monitoring, and the fact that they will be held accountable for acting upon that data through regular meetings and reviews creates commitment. Decision-makers also have the support of data managers at all levels to ensure that they have the data and dashboards they need to support their decision-making. Managers are constantly demanding data to demonstrate progress, questioning the quality of that data, and working with the data managers to understand the data, creating shared ownership and empowerment.

Finding 21. Limited electricity, internet connectivity, and tools remain constraints to the effective uptake of HMIS at the sub-national level.

While outside the Global Fund's direct control, infrastructure issues – in terms of reliable electricity, internet connectivity, and functional data-entry equipment or devices –

was mentioned as a constraint to data-related activities in most of the case studies (Benin Cambodia, Cameroon, Ethiopia, Ghana, Senegal, and Zambia). It also appeared in some external literature (e.g., PMI/Digital Square's assessment of 27 countries in 2021), and raised as limitations by WHO and HISP). Unsurprisingly, these constraints remain more of a concern in rural areas, i.e., the sub-national level. As this issue is well known, some workarounds have been developed, such as solar panels on health facilities and data collection apps that work offline. It can also contribute to the lingering of some paper-based systems. While there is evident donor fatigue at the need to constantly replace equipment, most governments continue to appear unwilling or unable to cover these ongoing costs.

A basic lack of tools and supplies can also impede HMIS functioning. In Cameroon, a challenge identified by PMI and key informants was the unavailability of physical tools (computers, printers, tablets) in many health facilities to electronically input data. This led facility staff to hand-write data into notebooks, or store data on their personal computer or phone. A global key informant observed that when the Global Fund stopped funding the reproduction of paper forms, procurement delays resulted in a stockout. These constraints have implications for data quality, particularly in areas where data collection is still done on paper, or where support is insufficient to support timely data collection and entry.

Finding 22. High turnover of (trained) staff was cited as an issue affecting DDM, particularly at sub-national levels.

The turnover of (trained) staff was mentioned as a constraint to DDM in Cameroon, Ghana, Senegal and Zambia – particularly at the sub-national level. In Senegal, for instance, few health care workers wish to be posted to rural areas and move out as soon as they have the opportunity. Cameroon key informants noted the additional cost of having to retrain staff as a result of turnover, as well as having skill gaps until positioned are filled. There was also an implication that it is harder to replace and/or train staff to use electronic systems, compared to paper-based – at least at the data collection level. Low motivation of staff working on data was also cited as a factor, particularly in contexts where working with data is undervalued, or on top of other responsibilities.

EQ11. What are some examples of robust DDM, systems and approaches at country level and how have these been achieved and are these sustainable?

Finding 23. Countries with experience with customized and user-friendly data visualizations, such as dashboards, report that it facilitates better understanding and interpretation of data and thus and increases the likelihood that data availability will translate into data use.

All case studies reported that the availability of dashboards has facilitated DDM, or that they would facilitate it if they were available. In Rwanda, the DHIS2 platform includes standard dashboards with the key indicators to support general managers to use the HMIS system. The dashboards were designed in consultation with managers to ensure that they have the information they need to inform decisions, and that this information is presented in a way that does not require deep data analysis skills to

interpret, for example including thresholds for data points that would trigger a certain action. Data managers are able to customize dashboards per the requests of the general managers to ensure that they are constantly adapted to meet needs. As a result of this and Rwanda's constant demand for DDM, the availability of automated dashboards support regular data use to inform operational decisions, and for accountability.

In other countries, dashboard progress and use can vary by disease. In Cambodia, effective data use is observed in malaria where national staff monitor progress at the sub-national level through a range of HMIS-based dashboards that rank districts based on criteria such as case numbers, species, and case investigation rates; and then make strategic and operational decisions based on that data. Strategic decisions may include changing the stratification status of a village, which would determine village malaria worker placement, and bed net distribution. Operational decisions may include moving malaria commodities to respond to shortages or stockouts, and investigating outlying or inconsistent data. In Ethiopia for TB, data is aggregated, synthesized, analyzed and shared through dashboards. The dashboards are presented at monthly meetings to discuss TB treatment uptake, success and cure rate. Key informants confirmed that "With the introduction of DHIS2 and dashboards set up with the Global Fund funding, the use at national, program and regional level is improving".

In Cameroon, national and sub-national level dashboards are produced to identify three types of information: (1) programmatic information (relating to indicators, coverage, etc.); (2) data quality related information (consistency, completeness, and timeliness); and (3) health product information (consumption, stock outs, etc.). These dashboards are presented during the validation and review meetings and are the basis for a discussion of a SWOT analysis and recommendations. In Ghana, HIV and malaria results and trends are displayed on dashboards and discussed by key stakeholders at the national level to recommend programmatic adjustments. For HIV, there is an HIV Situation Room convened at the highest level, and malaria also produces quarterly bulletins. Under the NFM3 RSSH funding request, there are plans to introduce a Malaria Integrated Dashboard, to provide a centralized system for analysis of malaria data by superimposing data from multiple sources, including mass bed net campaigns, epidemiological, entomological, and therapeutic efficacy data, as well as sentinel sites activity data from a medical research institute.

In Zambia, DHIS2 dashboards were reported to be used to informing planning, but they did not emerge as being used for daily operational decisions. Benin key informants noted that the absence of appropriate tools and customized dashboards to support DDM as a gap to address. It should be noted that some countries still use Excel-based dashboards, which were created by programs, or with the support of WHO (for example, malaria threshold dashboards used by the national malaria program and regional malaria coordinators were reported in Cameroon and Ethiopia). In whichever platform they are created in, dashboards can still facilitate data use by presenting data in a visual way, with clear representation of when a decision/action may be necessary. However, as the next finding demonstrates, the existence of dashboards is not always sufficient – they are most effective when there are opportunities or requirements to use them.

Three country case studies heard that the CCM has its own dashboard for monitoring

Global Fund grants. The Cameroon CCM reviews the dashboard quarterly to make recommendations, although decisions need to be balanced with other contextual considerations and may not be purely data-driven. It was reported during the interviews that the availability of objective tools to facilitate DDM for prioritization would be welcome. Ethiopia received support from GIZ to develop its dashboard, which captures program, finance, health product, and governance/management indicators. The dashboards are reviewed on a quarterly basis by the oversight committee, to generate recommendations for PRs. Senegal has a CCM dashboard, which is currently in the process of being transitioned to DHIS2, but as HIV, TB and the LMIS are not yet integrated with DHIS2, it is relying on its former one, which integrates programmatic, logistic and financial data. The dashboard was reported as being used mainly to prioritize interventions during country dialogues and to inform funding requests.

The remaining countries did not mention CCM-specific dashboards, but CCMs still use data – typically provided by the PR (e.g., Ghana) for review. It was not possible to discern to what extent having a CCM dashboard or not contributed to data use. Cameroon appears to have the best practices in place and can be used as an example to improve both the development of integrated dashboards, and to supporting their more regular use in other countries. The CCM in Zambia suggested it would be useful for the oversight team to be trained in data management, data analysis, and data quality control.

Finding 24. Countries that require regular data sharing, review, and interpretation meetings demonstrate increased data use, and greater demand for quality data by regular review meeting participants.

Data verification and validation exercises represent the key opportunity in most countries to engage in the analysis, review, interpretation of data, leading to DDM. Evidence of this was found in Benin, Cameroon, Ethiopia, Ghana, Rwanda, and Zambia, although sometimes only at the national level. Benin and Cameroon have national and sub-national meetings to review data – both for quality and interpretation – such as situation rooms and technical working groups, tend to demonstrate better data use. Rwanda provides the strongest example of the importance of how systematic meetings at different levels facilitate regular data use, with the process that also demands data quality. Firstly, quarterly meetings are held between district health authorities and health centers, during which data is presented and discussed. Where performance is seen to be lagging against targets, the health center is asked to explain the challenges they are facing, and other health centers who are doing well in this area will share their experience in order to agree on recommendations and next steps. This process is repeated biannually between the sub-national and national political leadership. These meetings, and the continuous request for data and the onus to demonstrate the reliability of the data has created a culture of data use. Critically, because these meetings are seen as integral to the governance system, the government prioritizes resources for these events, covered by itself and requested from donors.

These regular meetings also provide opportunities for immediate feedback on data, which is lacking in other countries. In some other countries, the lack of feedback on data from higher levels appeared to be a gap in some countries, particularly in that

it usually comes too late to be of value for decision making. In some countries, such as Ethiopia, however, feedback was more regular during COVID-19, however, where there was an urgent imperative to ensure quality and make decisions. Rather than formal meetings, feedback could be provided over phone calls, resulting in data corrections. Although a ministerial decree, and performance-based financing support feedback, it was still considered inadequate. Feedback on data also creates engagement around data, and can be motivating to the people who collect and enter data, according to the literature[65]. More regular meetings can therefore further contribute to data quality, engagement, and ultimately – the habit of data use.

Finding 25. Countries that have data users who have an interest in extracting insights from data, use data more effectively than those who only use data for compliance purposes. This tendency is more likely to occur at the national, rather than at the sub-national level.

The level of motivation or incentive of decision-makers and data managers to use data can impact the extent to which data is used. A culture of compliance can ensure that data is used to develop national plans, strategies, funding requests, and reports at the national level, which was observed in all countries. However, a recognition of the value of data to inform more regular decisions, to solve problems and answer questions, or a genuine curiosity in what is happening, appears to result in more regular use of data for decision-making. These other uses are annual planning, program planning (including resource allocation decisions), and ongoing program readjustments. Evidence of this more regular use was identified in Cameroon, Ghana, Rwanda, Senegal, and Zambia. This was more evident at the national level, except where sub-national managers are empowered/required to make data-driven decisions – or where particular individuals were simply more curious and pro-active in using data, stemming from a more intrinsic, rather than extrinsic motivation.

Cameroon presents two good examples of how data is used to answer a question or solve a problem at national levels include the following. When Cameroon needed to identify children who did not benefit from early diagnosis of HIV and management, ART coverage data of exposed children (EC) was analyzed at the national level, and a campaign was designed to be carried in the ten regions. As a result, 1,243 EC were brought back to the health facilities. For malaria, entomological monitoring data allowed the national malaria program to develop its insecticide resistance management plan, decide which nets to distribute where – including requesting approval from the Global Fund to revise its bed net campaign and introduce a third type of net in response to insecticide resistance. Cambodia (see example under Finding 23), Ethiopia, and Ghana also use malaria data to make programmatic decisions, including in Ghana to identify areas requiring additional investigation and response, or for stratification in Ethiopia. Benin's use of TB data highlighted the high proportion of deaths among TB patients living with HIV, which resulted in the national contribution to the TB program increasing from 4% to 22% of Global Fund financing.

At the sub-national level, data continues to be used more for reporting compliance, and less for programming, with some key informants reporting that lower levels do not

[65] Lemma S, Janson A, Persson L-k, Wickremasinghe D, Ka˙llestaî C (2020) Improving quality and use of routine health information system data in low- and middle-income countries: A scoping review. PLoS ONE 15(10): e0239683. https://doi.org/10.1371/journal.pone.0239683

understand the purpose of the data reported. Yet where there is specific interest or need, use could be higher even at this level. This could be evident in sub-national annual planning (Cameroon, Rwanda, Ethiopia, Zambia) and health product quantification (all countries). Clinical and medical monitoring also use data where e-trackers or electronic medical records are available (Cambodia, Ethiopia, Ghana, Rwanda, Zambia).

EQ 12. Is age and gender disaggregated data being used to inform a more targeted and inclusive approach?

Finding 26. Sex and age-disaggregated data are largely collected but use for developing and inclusive approaches vary by country. Good examples of using age, sex, key population, and location disaggregated data were found that resulted in improved targeting, however the consistency of this is unknown, and the literature review suggests that this practice is not yet entrenched in the culture.

The Global Fund's significant investment of technical and financial support – in addition to reporting requirements – has contributed to data being disaggregated by sex and age in all countries. However, the use of disaggregated data beyond reporting varies by country and disease, and tends to be strongest for malaria (where disaggregation by location is also used). This finding from the case studies supports the results presented by MECA on KPI 6e, "Number and Percent of countries that have documented evidence of using disaggregated data to inform planning and programmatic decision-making for priority populations in HIV, TB and malaria programs," which show improvements. From a review by MECA of 25 countries looking at (a) the availability of disaggregated data, and (b) use of disaggregated in planning (as demonstrated in NSPs), or for programmatic decision-making (as evidenced in quarterly/ annual progress reports), disaggregated data was available in 88% of the countries, with documentary evidence of use in 66%.

As with the case studies, variation was observed between the diseases, including in the correlation between the availability of sex and age disaggregated data and its use. Consistent with the case studies, malaria showed the best data use – and closest correlation with availability, with 75% countries having availability and 63% demonstrating use, compared to 72% availability and 54% use for HIV, and 76% availability and 61% use for TB.[66] Five of this evaluation's case study countries were included in the cohort countries, and as indicated in Table 5, the countries scored quite high in terms of the availability of the required disaggregated data, with Cameroon achieving more than 50% for all three diseases. However, in terms of use of disaggregated data, more variance is observed. Again, Cameroon scored high across all diseases for use, but other countries, such as Zambia and Cambodia, scored high on availability, but considerably lower on use. From this small sample, it also appears that HIV data is the most used, and malaria the least. Zambia, for example, scored 100% in terms of malaria disaggregated data availability, but 0% for use. This contradicts the evaluation's findings from the case studies, which found use of disaggregated data in NSP development, and other areas – particularly in malaria – which raises questions of whether this use is adequately documented to be captured in MECA's study. This may be the case in Ethiopia, which collects sex-disaggregated

[66] The Global Fund (2021), KPI 6e Results, DRAFT M&E Framework extract, MECA.

data, although it varies across the diseases; yet this data is not reported to the Global Fund.

Table 5: Baseline - Use of Disaggregated Data[67]

Country	Use of required disaggregated data for planning (NSP/disease strategic plan) or for programmatic decision-making (quarterly/ annual progress reports)					Availability of required disaggregated data			
Disease	HIV	TB	Malaria	AVG		HIV	TB	Malaria	AVG
Cambodia	33%	10%	25%	23%		83%	52%	100%	79%
Cameroon	97%	83%	88%	89%		97%	79%	88%	88%
Ethiopia	63%	33%	25%	40%		63%	33%	25%	40%
Ghana	20%	42%	38%	33%		23%	58%	38%	40%
Zambia	81%	86%	0%	56%		81%	86%	100%	89%

Legend: Green - over 50%

In the case study countries, good examples of the use of disaggregated data were found in Benin, where analysis revealed low TB screening among children. This led to mobilizing more pediatric department focal points to address this gap. Also in Benin, analysis of disaggregated HIV data revealed gaps in indicators for children and men. This led the HIV program to review its screening strategies for men, and to strengthen support for the treatment of children. Ghana used disaggregated data to strengthen TB diagnosis among children and fine-tuned its malaria interventions using disaggregated data and stratification. Zambia also disaggregates malaria data by age and sex (including for pregnant women). Cameroon also uses surveys and epidemiological data with the disaggregated data for more targeted approaches, especially for girls, young women, and women in general.

Some countries use other types of disaggregation, such as location and occupation for malaria data in Cambodia, which allows for improved targeting – particularly for populations at risk of malaria in hard-to-reach areas. In addition, some countries are collecting and using information on key population status, which is discussed under Finding 31 below, and where the data picture is less consistent.

The extent to which these efforts are sustainable – that is, still practiced once the Global Fund stops funding DDM efforts – will depend on a variety of factors. These include the extent to which behaviors and habits have actually changed, the level of personal skill and interest in data use by decision-makers, and the extent to which national systems demand data use. National systems that require evidence to be presented to support decisions, organize consultations to discuss data quality and interpretation, and expect the use of disaggregated data, are likely to prioritize maintaining these practices, even with fewer resources.

[67] MECA Dataset

4.3 Objective 3: Potential scalable and good practices in DDM at the country level.

To identify potential scalable activities in DDM at country level and document the areas of good practices and concrete examples, including the lessons learned (positive and negative) from the recommendations and implementation status of recent Global Fund reviews and evaluations on data use, as well as from COVID-19 related data initiatives and from community-based data collection, in decision-making at the country level.

EQ 13. How have recommendations of the recent Global Fund reviews and evaluation on data use contributed or (not contributed) to data used in country level decision-making?

Finding 27. While progress has been made against some previous recommendations, many – particularly regarding system strengthening and human resource capacity development – recur over several evaluations, and remain gaps.

From review of previous evaluations, including the PCEs, RSSH 2018 and 2021, MECA review of 2017-2019, the inception report of AEDES for the current Data SI as well as the Strategic Review 2020, there are a number of recurring recommendations regarding improving data use at the country level. The most common recommendations relate to what needs to be improved, with us a focus on: (1) improving the reliability, quality, utilization and ownership of routine data, especially at sub-national level; (2) discouraging the use of parallel systems; (3) improving governance supporting data and information use at national and sub-national level; and (4) building capacities to use of user-friendly information systems and data use tools. The challenge with such recommendations is that they speak to what needs to happen, without providing sufficiently detailed guidance that allows for easy follow-up, tracking, or application in a wide variety of contexts (challenges that this evaluation is acutely aware of). These recommendations have largely been addressed over the years, including by the new Data SI 2021 – 2023. However, they are likely to require continued emphasis in the next funding cycle, as responding to these recommendations requires not only additional resources, but long-term commitment; the current Data SI that is supposed to catalyze its work into the many country grants, run only until December 2023. Many countries report, for example, that it takes ten years to integrate systems and move away from parallel systems. It can also take longer than a single funding cycle to strengthen skills, change behaviors, and establish the competence and credibility of governance systems.

The other challenge with implementing recommendations is that each requires different application in varying contexts, which in turn depend on the systems, policies, human and other resources in place. Some of these are areas that the Global Fund has little to no control or influence over, particularly as DDM does not only require a change in system or document, but in individual behavior. The repetition of recommendations can also hide the fact that some countries have made significant progress and are now exemplars – while recommendations tend to focus on the countries that require the most improvement. That is, not all recommendations apply equally to all countries.

Of the 16 evaluation documents reviewed and presented in Annex 2, 24 recommendations or areas for improvement were identified. Efforts have been observed to address each of these, which have included new or enhanced partnerships (e.g., for capacity strengthening), new or improved guidance and information notes (e.g., RSSH guidance for NFM3 and NFM4), additional investments (e.g., the Data SI, surveys, and increased resources in some country and multi-country grants), greater attention in technical assistance (particularly for disaggregated data and integrating community data).

The one recommendation that was identified in the 2021 Thematic Review on "The Role of the Private Sector in Program Delivery", for which clear follow up has not been widely observed is the need to better integrate private sector data. This has not received the same level of prioritization, effort and investment as integrating community data, for example.

EQ 14. How have Covid-19 data initiatives at country-level contributed (or not contributed) to data use in country-level decision-making?

Finding 28. COVID-19 created opportunities for improving data availability, real-time use, generating creative solutions, and sharing data with the public. It is not yet possible to know whether some of these developments will translate into improved DDM practices in other areas – particularly in the absence of the same high-level attention.

COVID-19 demonstrated how quickly data systems and dashboards could be created, integrated and used, potentially raising expectations for how data can be used to inform decisions. As mentioned in Finding 19, where public pressure to respond to the pandemic was high, Senegal was able to integrate a COVID-19 module into DHIS2, and share dashboard data with the public in a matter of weeks. Another observation from the case studies is that countries who had experienced previous complex emergencies or outbreaks may have been better prepared to rapidly set up surveillance systems. This was reported by Zambia (cholera outbreaks) and Cameroon (meningitis), which had a preparedness plan in place.[68] Whether these successes can be replicated in other health areas is unknown, as none of the other diseases command the same high-level and public attention as COVID-19 has, nor has there been such availability of global resources to support data collection and sharing.

Case studies confirmed that data was used to inform policy-development and decision-making during the COVID-19 pandemic. Policy makers used data to develop plans to respond to the pressures on the health care system. The most common data points tracked included the number of new cases, hospitalizations, intensive care unit admissions, intubations, and fatalities, as well as test positivity rates. Later, vaccination rates were also tracked. This data helped governments to determine where to focus resources, including communication efforts. There was also an implication that public demand for information and response increased pressure on the government to produce, share, and act on high quality data – which is not the case with the three Global Fund diseases.

[68] Similar effects were heard of in countries that had responded to Ebola in central Africa, and MERS in the Middle East, but this was not verified by the evaluation.

Given the need for more and better information during the pandemic, additional funding to support HMIS was provided through the Global Fund's COVID-19 response mechanism (C19RM). However not all countries received this support and in some cases the investment in data systems and use was minimal (e.g., Zambia). The Cambodia C19RM 2.0 grant (USD 23.9 million) included funding for data systems, which was used to support rapid response teams and contact tracers to carry out multisource surveillance for early detection and contract tracing; and strengthen border capacity to manage returning Cambodians at air, sea, and land points of entry. The data from testing centers was used to support active case detection.

In addition to seeing data being used to respond to COVID-19, examples were also found of how the pandemic affected routine data collection for other diseases – particularly systems that rely on passive case detection. In Cameroon, a preparedness plan led to early adaptation of the programs to minimize impact on health care, and existing sentinel surveillance sites were adapted for COVID-19. When it was observed that people were avoiding health centers to collect their ART, community outreach was used to deliver treatment and collect data in partnership with CBOs. It is unknown whether CBO service delivery and data collection will continue to increase in the aftermath of the pandemic – particularly if it proves popular among patients. This would increase the need to improve integration of CBO data into the national HMIS.

The pandemic also spurred innovation, both by design and by chance. In Ethiopia, for example, the south region observed a drop in TB detection rates during the COVID-19 pandemic. They responded by integrating TB detection with COVID screening, which succeeded in increasing both detection and linking people with TB to treatment. This experience was then replicated in other regions. Furthermore, the data reporting and verification process became more rapid, increasing from a monthly to a weekly basis, reported through WhatsApp, and verification and feedback done over the phone. Another innovation was observed in Cambodia, which turned to virtual HIV-prevention outreach during lockdowns, and subsequently observed that the data showed a dramatic increase in yield, including among previously unknown KPs in younger age groups, with more recent infections. One key informant reported that traditional outreach tested 20,000 people for a 1% yield, yet virtual outreach reached perhaps only 1,000 people but with a yield of 20%. This data led to the decision to continue and increase virtual outreach beyond the pandemic, and the program worked with the Global Fund to reprogram funds to expand this activity.

EQ 15. Are the resources for program monitoring and evaluation and the available incentives (guidance, strategic initiatives) in the countries sufficient to allow DDM and did they contribute to data used for decision-making?

Finding 29. Investments and resources provided to date have primarily focused on ensuring data availability, and data quality, and to a certain extent, to program reviews, epidemiological and impact analysis – particularly for Core and High Impact countries. While these are essential fundamental elements for DDM, investments in technical resources to support a culture of data use have not yet ensured consistent DDM.

In all case studies, Global Fund investments have been identified in epidemiological and program reviews, facility and household surveys, evaluations, IBBSs, and MIS. The availability of these documents, along with the requirement to submit evidence-based funding requests, was reported as an enhancing factor for DDM and building data use habits. A review of NSPs also shows that "strategic use of information" is now integrated as one of the key strategic objectives (WHO guidelines). Some countries have developed normative guidance and training to support a culture of data use (Ethiopia, Rwanda, Cameroon). In Ethiopia, for example, the first pillar of the "information revolution" (HMIS strategic plan) is "enhance the culture of information use for decision-making". However, as most investment has been directed to the national level, and implementation at the sub-national level is not always consistent with national commitments or practices, with the exception of Rwanda, which has prioritized in investing in this level.

Most case study countries say that more resources are needed, yet countries such as Cambodia note that budget prioritization tends to be skewed in favor of health products and commodities, which squeezes out budget allocation for other issues. Some case studies point to the need for additional training and capacity strengthening support – particularly in response to high turnover of trained staff, and others mention the need for more equipment. There is not necessarily a felt need for more technical guidance, but rather support to understand, adapt, and implement it consistently, and over a long-enough period of time to ensure that the habits are ingrained in a well-established system. The only exception, where there appears to be a lack of guidance is in integrating data from the private sector. The TRP RSSH review of 2018 cautioned about the significant investment in country operations (recurrent expenditure), which is particular true in the case for HMIS, and raises concern about future sustainability.

EQ 16. What are the underlying conditions to ensure the scaling up of successful DDM approaches?

Finding 30. National leadership that provides appropriate governance, guidance, systems and incentives, contribute to ensuring successful DDM approaches to improve health service delivery.

The strongest country in terms of DDM holds many lessons for understanding the among the underlying conditions for developing, scaling up, and sustaining successful DDM: Rwanda. What sets the country apart is the clear vision, commitment from the very top of the government, and a clear system that is enforced and resourced from the national to the sub-national level. These resources include supporting the critical Data Manager position, which ensures that there is adequate time and expertise available to support decision-makers. This position also demonstrates the value given to data and the people playing a data function, unlike contexts where data entry or verification is given to health facility staff on top of their other responsibilities. The Rwandan model also builds in regular meetings for data verification and review, and promotes experience sharing to continuously seek solutions and improvements when performance is seen to be lagging.

Performance-based financing also creates the incentive to use data, and the need to ensure data quality. These incentives are not only felt at an institutional level, but

individual managers are personally charged with the responsibility for their results. Incentives are therefore not so much about ticking a box or following a process, but about generating improved results – and this has moved the culture from one of compliance to one of DDM. The fact that the data use imperative is country-driven results in a more intrinsic commitment, giving the governance mechanism the credibility necessary to lead and coordinate donors and partners to support its agenda, rather than being donor-driven. Finally, the Government of Rwanda's own investment in its HMIS system indicates how much it values and prioritizes data, which will help to ensure its sustainability.

EQ 17. Are data for vulnerable populations collected and used routinely? What other systems are used to inform programming for vulnerable population? To what extent is data collection and use institutionalized?

Finding 31. There is limited collection, integration, or use of key population data, which limits the opportunity to strengthen equitable programming.

The collection and use of key and vulnerable population data is much less consistent across the case study countries, with variations noted by disease, and KVP.[69] Because of different understandings of who is a KP or a vulnerable or priority population, data was not always received consistently across the case studies. Overall, however, data is collected for a large spectrum of KVPs, with examples of routine data use identified. Data collection and use appear to be more difficult in relation to KPs – particularly those that are criminalized or heavily stigmatized, such as MSM and SW in some contexts – compared to other vulnerable populations. While malaria is an effective user of sex and age disaggregated data, countries have different approaches to using other types of disaggregation, such as occupation. Cambodia has used it successfully to target the most at-risk, while Zambia sees less of a need for this level of disaggregation.

Many countries rely on surveys to collect data on HIV and TB KPs, and others have additional tools. Cambodia, for example, has an HIV prevention database, which one international partner explained as allowing the country "to track and trace over 80,000 of the estimated 150,000 key population members across the country and if they turn out to be positive, track them into testing, treatment and whether they achieve viral load. It has really been an impressive achievement and my HIV epidemiologist friends in my home country involved in HIV globally say they have never seen anything quite like it in terms of being able to understand what is happening in key populations which are the principal drivers of the epidemic here in Cambodia". In addition, Cambodia uses a Master Patient Index (MPI) that allows a patient to be uniquely identified with their KP status in a way that avoids double counting, enables effective case management, and provides anonymity. This information is used with survey data to develop strategies to effectively target KVPs.

[69] Key populations are specific to diseases. According to the 2023-2028 strategy, "In the context of HIV, KP are gay men and other men who have sex with men, sex workers, transgender people, people who inject drugs, and people in prisons and other closed settings". For TB, KPs can be similar, and include people in contact with TB patients. Malaria KPs are less consistently defined, and can be context specific, often including pregnant women and children under five, or in elimination areas, may be forest goers, cross-border workers etc. Vulnerable populations can include women and girls, or other populations that may be more vulnerable to a specific disease, or face other disadvantages in society.

The 2017 OIG evaluation noted that selected interventions were "strategically focused on relevant key populations that drive or disproportionately contribute to the HIV, TB and malaria epidemic in Cambodia".[70]

The Ghana Key Population Unique Identification System (GKPUIS) was introduced in 2019 to facilitate evidence-based tracking and monitoring KP services through a coding system. The GKPUIS captures, stores and analyzes data on HIV/AIDS services delivered to PLHIV, with codes assigned to different KPs. GKPUIS data will be integrated with data from the Ghana Health Service through the e-tracker to ensure a continuum of care for all KPs living with HIV, and track them through the treatment cascade. The e-tracker allows health workers to send reminders, track missed appointments and generate visit schedules to improve access to services.

Other countries collect KP data in separate systems, such as Cameroon, KP data is collected by SRs and SSRs of the community PR. Aggregated data are reported to the national AIDS program and presented in their annual report. Other tools were reported to exist in order to "following donors' requirements" and report on indicators based on routine data collection. This was done by introducing a unique identifier code, whereby trained service providers use a certain code in the register to indicate a specific KP group. This code is only known to the service provider and the PR to enable them to analyze the data.

While often best-in-class in other aspects of DDM, the management of KVP data is one area that Rwanda can improve on. This data is still collected manually by CBOs in a parallel system, which makes its way up the CBOs' system slowly, making it harder to use for decision-making. Ethiopia also has limitations with KP data, whereby it is only disaggregated in projects supporting KP-related interventions, and is generally only used to report to donors. Due to their criminalized status, there is no mention of MSM or transgender people. This can contrast with less sensitive groups, which can be easier to integrate. For example, Senegal collects, and reports disaggregated data for TB based on certain key populations such as prisoners, students, miners, and people with diabetes. Similarly in Zambia, some TB KP data is collected, but not for MSM, due to legal reasons. It was reported that some donors maintain their own data sets for MSM. Overall, Cambodia and Cameroon offer examples for other countries to learn from, yet much depends on internal legal and cultural constraints for more sensitive KPs.

[70] The Global Fund, Audit Report, Global Fund Grants in the Kingdom of Cambodia, GF-OIG-17-020

4.4 Objective 4: How the Global Fund model can effectively support DDM at country level.

To build on these findings, enriched by a desk review of published literature findings and partner case studies, and to provide recommendations on how the Global Fund model can effectively support DDM at country level.

This evaluation has highlighted the Global Fund's significant investments in establishing and strengthening HMIS over many years. This has resulted in improving interoperability of parallel systems, integration of community-generated data, increased availability of disaggregated data – particularly by sex and age, and to some extent by key populations – and an overall increase in accessibility to quality data. New tools and trackers are making case- or patient-specific data available, in addition to increased data generated from regular surveys to complete the picture. The integration of some data sets is still lagging, particularly for diseases beyond HIV, TB and malaria, for commodities, human resources, and financial information – although most countries do plan to do this. Private sector service delivery data is also not consistently received or collected in most countries, and it is therefore not integrated into the national HMIS. Qualitative data did not emerge as a key data point for decision-making. Yet overall, there are more people trained, and more dashboards available to support decision-makers with user-friendly visualizations. There is also evidence of increased data use – particularly where it is required by donors, such as for reporting against indicators, or the Global Fund's requirement that data is used to develop national strategic plans and funding requests. Some countries have taken data use further and are using it to solve problems and make strategic and operational decisions – yet this is still not happening consistently in all countries, and much less at the sub-national level.

The case studies demonstrated that despite data availability and accessibility, even when the data is trusted, the habit of data use for routine decision making is largely absent. The key exception to this was Rwanda, where the performance-based governance system requires data use and provides appropriate resources to support it (namely data managers at every level, and regular meetings). Otherwise, most countries are struggling to shift towards a more intrinsic culture of data use. The reasons for this can prove elusive as it depends individual behavior change, whereby the policy environment, infrastructure, context, institutional support, and personal incentives that influence people is often beyond the control or influence of development partners.

This section therefore reiterates themes that emerged from the different findings throughout this report and that require further attention, including strengthening the data use culture, taking a long-term approach to supporting a shift in culture, focusing efforts on improving data use at the sub-national level, strengthening partner coordination and country leadership of this process, and taking the use of disaggregated data to the next level to better support the new strategy.

EQ18. What can the Global Fund do differently, based on this review and globally available evidence to increase use of data for decision-making?

Finding 32: While there is growing evidence that data is being used particularly for funding request development and national strategic plans, data use remains uneven across and within countries, with an emphasis on compliance and national monitoring rather than programming improvements.

The evidence for this finding was established in Finding 25 above and is also linked to Finding 35 below. The evaluation team heard in case studies that many government officials and health care workers do not understand the "value" of data that passes through their facility or office, or the opportunity it presents to support their roles, and that decision-makers still revert to "gut feelings" or "experience" to make decisions. Yet, the case studies also presented excellent examples of data being requested, triangulated, and analyzed to solve problems and make decisions. Sharing examples, good practices, or linking decision-makers in different countries may help to shift attitudes regarding how data can be used. Regional forums – such as the Regional Artemisinin Resistance Initiative in the Greater Mekong Sub-region have been used to show-case effective data use, and to create friendly competition, or positive peer pressure to use data more effectively.

Finding 33: The Global Fund should continue its support for data system development and data quality, while focusing investments on elements specific to data use, particularly at the sub-national level.[71]

Objective 1 demonstrated that most of the Global Fund's investments in data have been invested in data systems for data collection and storage, and data quality, particularly at the national level. This is generally in line with global developments as presented in the literature,[72,73,74,75,76] whereby DDM needs different components – particularly technology, human resource, policies and procedures – to support collaborative decision-making processes. In addition to this, as also alluded to in the international literature and from experience, the time required to establish comprehensive information systems and then even further establish a data use culture, takes significantly more time than is provided/supported by development partners, including the Global Fund (see also Finding 34). Yet less has been invested in specific aspects of data use itself, particularly at the sub-national level. This level can be subject to higher levels of staff turnover, poorer infrastructure, and increased travel and communication costs, which all pose disincentives for investment, and they may not always be prioritized by national decision-makers. The diversity of contexts –

[71] Supporting evidence is presented in Findings 2, 18, 20, 22 and 27.
[72] Davenport, T. J. 2006. "Competing on Analytics," Harvard Business Review (84:1), pp. 98-107.
[73] Provost, F., and Fawcett, T. 2013. "Data Science and its Relationship to Big Data and Data-Driven Decision Making," Big Data (1:1), pp. 51–59.
[74] Mandinach, E. B., Honey, M., and Light, D. 20016. "A Robbins, S. P., DeCenzo, D. A. and Moon, H. 2018. Fundamentals of Management: Essential Concepts and Applications, Englewood Cliffs, NJ: Prentice
[75] Grover, P., & Kar, A.K. (2017). Big data analytics: A review on theoretical contributions and tools used in literature. Global Journal of Flexible Systems Management, 18(3), 203–229. https://doi.org/10.1007/s40171-017-0159-3
[76] Gupta, S., Kar, A.K., Baabdullah, A., & Al-Khowaiter, W.A. (2018). Big data with cognitive computing: A review for the future. International Journal of Information Management, 42(2018), 78–89. https://doi.org/10.1016/j.ijinfomgt.2018.06.005

both between and within countries – also does not lend this level to standardized approaches, making it more resource-intensive to demonstrate results. Particularly at the sub-national level, however, unless individual staff already have an intrinsic interest in data use, additional effort is necessary to help staff shift their attitudes from "collecting, verifying and passing/reporting data" to "using data as part of my daily work".

Based on the experiences of countries where data use works well, including at the sub-national level (i.e., Rwanda), moving towards a data use culture requires not only establishing the data system and building skills, but ensuring that there are clear roles and responsibilities regarding data use, guidelines or standard operating protocols for data use, institutional and personal incentives to use data, sufficient time to report and use data, and appropriate rewards or recognition for data management and using data effectively. Some of these elements are being addressed by the current iteration of the Data SI, and its results will be useful for continuing to refine the approach for replication in other countries. Linking data use to individual performance management and overall performance-based financing are areas to explore further in different contexts, given its apparent success in Rwanda, and to a lesser extent, in Cameroon.

Finding 34: HMIS and CBM development and strengthening require time, attention, and continued investment beyond the current allocation period.[77]

The case studies revealed that developing or integrating systems is a long-term venture. Senegal claimed that it took ten years to fully move malaria data systems into DHIS2, despite a committed national program. For other diseases, where attachment due to familiarity to the existing system is strong, the process is ongoing. Even in Rwanda – the best performer among the case study countries with strong political commitment – DHIS2 was introduced in 2010 and it has still not integrated its logistics, financial or EMR data. In countries with less political commitment, or whose priorities do not include strengthening or even maintaining robust data systems, longer-term investment needs to be planned for as part of a longer-term HMIS strategy including sustained funding over time (i.e., multiple allocation periods). The Rwandan government understands the value of data to achieve its objectives and has invested in it – other governments cannot be expected to do the same until they fully recognize its value and feel ownership over the system and the process.

International donors can expect to continue shouldering important proportions of maintaining HMIS – including verification and data quality assurance processes – for the foreseeable future. However, long-term HMIS strategies can and should include sustainability plans, particularly as they relate to the entire health system and beyond the three diseases. Using the Data-SI to engage with the MOH, beyond the national programs, in collaboration with other development and technical partners will be critical to taking a long-term approach to DDM and working towards a transfer of ownership and financial responsibility.

Several countries (Senegal, Ethiopia, Cameroon, Ghana, Rwanda) referred to different stages in terms of having HMIS, electronic, mobile, or tele-health and e-

[77] Supporting evidence is presented in Findings 3, 9, 11, 12, 16, 18, 19, 21, 23, 25, 26, 27, 29, 31.

learning strategies in place. While having initial higher investment costs wider implementation may eventually lead to significant reduction in transaction costs and processes and be less depended on extensive human resource capacities to capture and process data.[78, 79]

EQ 19. What are the priority areas of technical assistance to support DDM going forward?

Finding 35: Sub-national programs have not received the same investment in capacity strengthening to build data skills and habits, and – with few exceptions – the health and performance management system and culture does not empower the sub-national level to use data beyond compliance and reporting.

The country case studies have identified several priority areas to strengthen the capacity of the people entering data and local decision-makers, support pro-active use of appropriate tools, and empower them to use data for local decision-making – including the development of suitable analytical and decision-making tools and dashboards where necessary. Countries that are further along the HMIS development continuum, such as Rwanda and Ghana, can provide experience that could be shared with other countries, through documentation, meetings and sharing of technical assistance. The experts from the Data SI TA pool could be used more strategically, i.e., ensuring cross-fertilization and sharing of experiences as part of their scopes of work. Further technical assistance is required to ensure that public, private and community data systems are interoperable, and integrated in dashboards – particularly to include routine disease data, health products, logistics, finance, and human resources.[80]

The Global Fund is already investing in capacity strengthening in the different disease-specific and health systems technical areas and is shifting its attention to the sub-national level where more assistance is needed. The evaluation observed that sub-national performance can vary by area even within a country, depending on the interest and skills of individuals in each area, as well as whether a particular area is considered a priority, perhaps due to a high concentration of cases, or being close to elimination. With limited resources, the Global Fund is unlikely to be able to support every sub-national area, and some areas may be selected for additional attention, based on country priorities. This will also generate lessons learned from that country that can be used for scale-up or sharing with areas, and then other countries. This additional attention should be based on a capacity assessment using a tool agreed on by Global Fund partners to understand where each sub-national area is in the DDM process, followed by agreement between partners on how to address the gaps. It is likely that long-term capacity support will be required in some areas to bring about a change in habits and culture. In addition to the short-term TA planned under the Data-SI, this may include on-the-job mentoring and coaching[81] to help sub-national staff

[78] Abolade, Toyeeb Olamilekan. (2018). The Benefits and Challenges of E-Health Applications in Developing Nations: A Review.
[79] WHO, 2016, Global diffusion of eHealth: making universal health coverage achievable. Report of the third global survey on eHealth: https://apps.who.int/iris/bitstream/handle/10665/252529/9789241511780-eng.pdf;jsessionid=8C9C28AA7993FDD148BEF136344CB20A?sequence=1
[80] Supporting evidence is presented in Findings 14, 19, 20, and 27.
[81] See also finding 7.

adapt to new systems and procedures, and build confidence and a sense of empowerment in data use.

Another area mentioned in the Data-SI and highlighted in the new Strategy will be the importance of integrating epidemiological and service delivery data from the private sector into national and sub-national data. This area remains challenging, not least because of the diversity of the private sector (including non-formal private providers), the incompatibility of data systems, the motivation of private providers to report data, and the experience and interest of the government to engage with the private sector. Nevertheless, some examples of private sector engagement are emerging, particularly in malaria, which can be adapted into technical guidance, and donors such as USAID and the Bill & Melinda Gates Foundation have also made progress in this area.[82] The Global Fund is well positioned to amplify this learning by recommending private sector data integration in TRP recommendations or allocation letters, as has already occurred (e.g., Liberia, where the MOH also has a private sector engagement strategy).[83]

Information from the case study countries indicated the diverse areas that will need further technical assistance to improve information systems and DDM, as shown in Table 6 below.

Table 6: Country-specific support priorities

Country	Recommendations
Cambodia	• Provide capacity support (mentoring, peer-to-peer learning, refresher training, tools) in M&E and data management particularly, at the lower levels, including on NSPs and indicators.
Cameroon	• Support the inter-operability of programmatic, financial, human resources and supply chain systems; • Strengthen technical skills of M&E staff, and ensure their role in the data chain is valued and recognized; • Strengthen skills in transforming data into strategic information, and how to use strategic information for decision-making.
Ethiopia	• Support sub-national (*woreda*) level capacity to ensure data availability and use; • Strengthen donor cooperation and ensure the interoperability of systems supported by different donors.

[82] See for example, Potter R, Tesfazghi K, Poyer S, Eliades MJ. Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam. Am J Trop Med Hyg. 2022 Aug 1:tpmd220147. doi: 10.4269/ajtmh.22-0147. PMID: 35914687. https://pubmed.ncbi.nlm.nih.gov/35914687/

[83] Ministry of Health, Republic of Liberia (2021). *Private Sector Engagement Strategy (2021–2023)*. Monrovia: Ministry of Health. USAID. PA-00Z-58H

Ghana	• Support community-based data systems and their integration into national system; • Enhance data visualization, data analytics and data interpretation capabilities; • Integrate parallel systems into a single DHIS2 system.
Rwanda	• Seek solutions to better integrate aggregate KP data into the national system, and support improved use of data for equitable access; • Support the government to develop a policy and plan to share more health data with the public.
Senegal	• Support the integration of HIV and TB data into DHIS2, as well as other diseases and health systems (e.g., health products and finances).
Zambia	• Support planning of future information system/HMIS development in terms of further ICT equipment and staff capacity building (especially at community, facility and district levels).

EQ20. How can the Global Fund work together with other partners to increase DDM and with whom?

Finding 36: Investments have proven to be more effective in supporting government-led coordination of all technical and other development partners, where they are made directly into the MOH unit responsible for HMIS governance and strategy. Going forward, this should be done with an increased focus on interoperable systems and DDM.[84]

Government commitment to (leading on) data use has emerged as an important theme to ensuring DDM at the country level. Where the government is able to lead investments in the HMIS and coordinate donors around its own strategy, DDM appears to be more entrenched. This is the case in Rwanda, whereby donors directly support its national strategy, rather than respond to donor requests or funding opportunities. Empowering this unit to work with other partners was observed in Cambodia, which is supported by PEPFAR, CDC, CHAI, and Stop TB. This approach, whereby all donors come together to support the HMIS unit, can also help Global Fund investments have impact beyond the three diseases. It has been observed that data systems are strongest in areas that receive donor support and attention, while others are neglected.

DDM practices can be reinforced by all technical and financial partners agreeing on normative guidance that places emphasis on DDM, and collaborating to better share the technical and financial investments needed by each country (based on a needs or capacity assessment, as proposed in Finding 35, for example) in accordance with each partner's comparative advantage. Partners also need to collaborate to have consistent requirements and expectations with regards to DDM and data systems, including harmonized indicators and indicator definitions, and reporting requirements. This includes ensuring that government focal points have clear lines of

[84] Supporting evidence is presented in Findings 14 and 24.

communication, rather than multiple obligations to different donors. Several countries have reported observing partners supporting national leadership through participation in technical working groups, to discuss data quality, and to support the MOH to review and analyze data from different sources. This should also ensure that partners are aware of each other's work to better leverage other available resources. Where possible, partners can suggest and support similar forums at the sub-national level to bring more attention to this level in terms of responsibility for data quality and the decisions necessary. Closer coordination and harmonization should also result in reduced duplication of effort, costs, and workloads – both for the national programs, and the partners.

Besides the normal HMIS modular investment through the grant, the Data SI leverages the Global Fund's partnerships at the global, regional and country levels to promote DDM, through building analytical capacities, data reviews, diseases specific analyses and promotion the use of specific and overall data available.[85] To achieve this, the Global Fund should continue to engage in consultations with partners on how to improve data availability, quality, and use through the production of global goods, the development of regional platforms and longer-term approaches capacity strengthening and behavior change as identified above. These partner relationships are summarized in Table 7, below. They should also be reflected in the individual countries' FRs for NFM4, to support the alignment of efforts in a country.

Table 7: Illustrative Partners and Interventions (Data SI) [86]

Core areas of Investment	Partners
Develop, update and disseminate policies, tools, software and guidance for the three diseases HMIS and for M&E of thematic and health systems (indicators and reporting package, HMIS standards, data quality, Patient-level reporting, CHIS, and community-based reporting, logistics management information system (LMIS) interoperability, routine dashboards and analytical packages, e-learning).	PEPFAR, Gavi, GFF, BMGF, NORAD, WHO, PMI, UNICEF, Stop TB, UNAIDS, other USG supported agencies, Rockefeller Foundation
Increase regional/national capacity and coordination for strengthening countries' HMIS: HMIS coverage and data quality, Patient-level reporting, CHIS, LMIS interoperability.	Gavi, USG, BMGF, GFF, NORAD, WHO, UNICEF, UNAIDS, UiO, Stop TB
Analytical capacity strengthening: In order to develop and sustain capacity for data analysis and data use at country and local level, it is critical that functional and efficient partnerships are established with relevant regional and national institutions.	WHO (main and regional offices); HISP; MOH; universities; NGOs and CBOs
Evaluations, reviews and learning, including program reviews, program evaluations, and thematic reviews can require partner support, particularly where independent assessments of the entire or specific program areas of national disease program are necessary.	Gavi, PMI, PEPFAR, GFF, WHO, WHO-EURO, PAHO, service providers selected through RFP

[85] The specific objectives of the partnerships to enhance support for analytical capacity and data use are: enhanced national and subnational analytical capacity through institutionalizing regular data reviews and analysis; key disease-specific analyses in the three diseases on a regular basis; use of analytical outputs to drive actions towards improved program coverage, quality, efficiency and impact at national and sub-national levels; and solid national institutional capacity for analysis and use of data from multiple sources – including epidemiological, programmatic, financial, human resources, health products (from the Data SI).

[86] Strategic Initiative Detailed Investment Plan Request for Approval of Funds Allocation Period 2020 - 2022

Core areas of Investment	Partners
M&E can be supported by a pool of pre-qualified technical assistance (TA) providers to assist countries in eight pre-defined M&E areas: Community reporting, and disease surveillance, and data quality and data use (30%); health facility assessments of program and/or data quality (20%), program reviews, HIV service cascade and ART outcome analysis (30%), measurement and analysis for HIV key population programs (20%).	Gavi, USG, WHO, UNAIDS, UNICEF, others

EQ21. What can the Global Fund do to encourage better use of disaggregated data for more inclusive health programs?

Finding 37: The Global Fund could work with governments and partners to enable better use of disaggregated data – particularly for KVPs – by supporting the development or synchronization of electronic medical record systems with the national HMIS, while protecting patient privacy.[87]

As established in Findings 24 and 26 above, the country case studies varied in their use of disaggregated data, with all countries using both sex- and age-disaggregated data. Countries that have developed unique identifier codes provide a good example of integrating KP-related data in a way that protects patient privacy, while supporting analysis. Electronic medical records exist in some countries that contain this information, but they are not necessarily linked with DHIS2, which limits the ability to connect it with dashboards for analysis. Good examples include Ethiopia, Cameroon, Rwanda, and to a lesser extent, Ghana. Cambodia presents a lesson learned in that vertical disease data systems are a limitation to data analysis, and that disaggregated data should be system-wide.

The new strategy's commitment to "leave no one behind" implies that countries must significantly increase their efforts to ensure that marginalized populations achieve equitable health outcomes. Disaggregation of health data by inequality dimensions such as sex, age, economic status, education, place of residence and other context specific population subgroups, is important for the achievement of this objective.[88]

The Global Report on Health Data Systems and Capacity (2020) raised challenges with regards to the value and use of disaggregated data. Similarly, the TRP's Observation Report (July 2022) noted that although some funding requests included solid analyses with disaggregated data based on human rights and gender assessments, and there was an increase compared to previous allocation cycles, but it still not universal and not always prioritized. Hence the TRP recommends that more work is required by applicants to regularly collect, update, analyze and use disaggregated data to identify intersectional gaps. Furthermore, funding requests could be better prioritized when using disaggregated data to prioritize modules and interventions, and to define a tighter strategic focus of programs using robust disaggregated data. This challenge will be greater to respond to the new strategy, which aims for greater equity, and hence a greater understanding of how the intersectionalities of different vulnerabilities will impact access to health care.

[87] Supporting evidence is presented in Findings 4, 11, 12, 14, 24, and 26.
[88] SCORE for health data technical package: global report on health data systems and capacity, 2020. Geneva: World Health Organization; 2021. License: CC BY-NC-SA 3.0 IGO

5. Conclusions

The evaluation team acknowledges that the Global Fund, with GMD and MECA's technical leadership, has continued to evolve its approaches and guidance in response to new learnings and identified gaps. The issues identified in this evaluation are already well known to MECA, and many are being addressed through the Data SI - although the results of the latest iteration were not yet available for consideration by this evaluation. Furthermore, it is also acknowledged that moving DDM forward requires a whole-of-Secretariat approach, to ensure that it receives the prioritized support and attention needed. The progress to date is particularly impressive given that it has been achieved in diverse contexts, facing varied challenges at the country-level, few of which the Global Fund has much or any control over. The purpose of the conclusions was therefore to support actionable recommendations, and hence focus more on what needs to be done, rather than what has been achieved. With this lens, review of the findings across all objectives revealed the following 14 conclusions, supported by the evidence that led to the related findings, as shown in Table 6. The evaluation team recognizes that countries are at different stages, and that conclusions will have varying applicability according to the context. Some countries, in fact are generating the lessons learned and best practices to guide others, which also indicate where the Global Fund's support can make most difference.

Table 8: Conclusions, mapped to findings

Conclusions	Map to Finding
C1. Global Fund has invested significant financial and technical resources to strengthen data systems for many years, refining approaches to move from data availability to data use. However, investments and results to date are more evident at the national than the sub-national level.	F1, F2, F4, F5, F13, F18, F20, F25, F29, F35
C2. The countries that have demonstrated the most progress have also received support for the longest period of time. The track record reveals that long-term efforts in system and capacity strengthening are necessary to build a culture of data use.	F3, F25, F29
C3. Many countries have national strategies to strengthen their HMIS and data use, but three-year funding cycles promote short-term thinking and can create unrealistic expectations about what can or should be achieved in three years, resulting in significant recurrent cost investment and sub-optimal progress on long-term HMIS strategies.	F3, F33, F34
C4. Long-term investments in building data systems and improving the availability and quality of data are necessary, but not sufficient to address the change management and behavior change challenges of creating a culture of data use.	F2, F11, F25, F29, F33, F34

C5. Global Fund investments to date have focused on HMIS strengthening, with less DDM-specific investment, particularly at the sub-national level. While this is being addressed by the Data SI, current investment is insufficient without further investment through country grants (and analysis remains challenging due to inconsistent cost classification).	F2, F4, F6, F15, F16, F27, F29, F31, F33
C6. Global Fund requirements to use data for funding requests, NSPs, and reports have created an incentive to use data in the absence of a culture of data use at the country level. Requirements can therefore be used to build habits and change behavior towards a culture of data use, particularly at the sub-national level.	F8, F11, F31
C7. The support, skills, and incentive to use data effectively remains limited among decision makers in most countries, particularly at the sub-national level.	F18, F20, F22, F25, F35
C8. Long-term and individualized approaches - such as mentoring and on-the-job technical assistance - to supporting data use have proven effective at building a culture of data use for program development, implementation and monitoring, rather than promoting a culture of data compliance that only requires submission and forwarding.	F7, F22, F25, F33, F35
C9. The Global Fund's investments in HMIS have been critical to improving the availability and quality of data for decision making. However, these gains require ongoing investment in maintenance and support to be sustained and built upon.	F17, F26, F27, F31
C10. Strengthening and maintaining the capacity for effective data use requires long-term support - particularly in the face of high turnover of staff in Ministries of Health, especially at the sub-national level.	F18, F20, F21, F22, F24
C11. Despite having long-term and detailed HMIS strategies in place, many countries still struggle to operationalize them, particularly instilling a habit of consistently using data to inform decisions throughout the health system. Countries with institutionalized dashboards and data review meetings have made more progress.	F12, F23, F24, F26, F29, F35, F37
C12. Good DDM practices exist in a number of countries with the use of appropriate tools, templates and practices (SOPs) that are working well at the national and sub-national levels. Other countries are still struggling to develop, adopt or adapt appropriate tools.	F9, F10, F12, F23, F24, F28, F35

C13. Investments in data systems are not always well coordinated across donors, which can result in parallel systems that are not integrated or interoperable, resulting in inefficiencies in data availability and analysis for decision making. Coordination of HMIS investments and new initiatives works most effectively when the government (MOH) plays a leadership role, and has a clear strategy, standards, and structures to hold partners accountable.	F9, F14, F30, F36, F37
C14. Access to private sector data is critical to ensure that decision makers have access to the full picture of health data. However, this data is not consistently integrated into national HMIS, due to different country-level approaches, and less investment and guidance.	F10, F27, F29, F35

6. RECOMMENDATIONS

Given the Global Fund's wealth of experience and ongoing efforts, the recommendations aim to inform prioritization or to nuance existing plans. The evaluation team acknowledges that while the recommendations outlined here are required everywhere to support data use, in reality, prioritization will be required at two levels. Firstly, differentiation may be required among countries – in terms of their High Impact, Core, or Focus designation and their transition status. Secondly, prioritization will be necessary within countries, with an approach required to support countries to select which diseases or districts require greater attention – itself, an important exercise in DDM. The latter is particularly important, given that increased attention needs to be paid to supporting sub-national DDM. This is where decisions based on the effective use of granular data can be the difference between equitable and inequitable service delivery, or eliminating a disease or not. The recommendations were developed to respond to the conclusions, and are presented under sub-headings to indicate their focus, beginning with the high-level policy and strategy recommendations, to investment, and finally, technical tools and guidance to support implementation.

Table 9: Recommendations, mapped to conclusions

Recommendations	Mapped to Conclusion
Policy & Strategy	
R1. Ensure that the "Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level" is updated based on lessons learned and best practices in line with the new M&E Framework for the 2023-2028 strategy, with a focus on supporting data use for programming decisions at the sub-national level. This framework provides structure and technical guidance to country	C1

stakeholders to operationalize DDM approaches, including the effective use of appropriately disaggregated data. An updated version has the opportunity to place greater emphasis on DDM at sub-national levels, including practical examples of where this is working well. **Who:** Global Fund Secretariat. **When:** Developed in time to guide the planning and implementation of NFM4 and use during program reviews.	
R2. Ensure that GF's strategic engagement in HMIS is phased over multiple allocation periods to reflect each country's long-term HMIS strategy and/or plans. Existing national strategic plans can inform individual allocation period funding requests, to ensure a long-term approach to system strengthening, change management, and capacity and culture shifts towards effective data use – with intermediate milestones in each funding cycle. The Global Fund can also provide technical and financial assistance to countries to either develop or strengthen HMIS strategic plans where necessary. **Who:** Global Fund Secretariat. **When:** During preparation and implementation planning of NFM4 and subsequent allocation periods.	C2, C3, C4
Investments	
R3. Using the revised modular framework, shift and increase investments in the specific RSSH/HMIS elements explicitly focused on DDM, such as data analysis and interpretation, improvement of data quality and capacity building for use, **especially at sub-national levels**. This can include providing guidance to ensure the consistent classification of HMIS-related costs by country and finance teams, to support analysis. **Who:** Global Fund Secretariat. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	C5
R4. In collaboration with in-country partners, use country grants and the Data SI to further support country leadership to strengthen a culture of data use by ensuring that national policies, protocols, incentives and coordination mechanisms require and support data use - including at the sub-national level. This includes ensuring that investments support not only technical and capacity aspects of data systems, but also provide support for change management and enabling the necessary behavior change.	C6

Who: Global Fund Secretariat, partners (service providers) engaged by the GF, technical partners, and other development partners, as well as the TRP when reviewing proposals. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	
R5. Global Fund investments can strengthen the capacity of policy-makers, program, and facility managers through multi-year mentoring approaches for data analysis, interpretation and use. Mentors can empower national and sub-national cadres through pre- and in-service training in data analysis and use, including through providing on-the-job support to use analysis tools, design and customize dashboards and other digital tools, which are currently being developed through the Data SI and by partners. **Who:** The Global Fund secretariat via principal recipients and country governments, in collaboration with other lead donors, partners and implementers at the country level. **When:** As part of NFM4 guidance for strategic information investments, for implementation from NFM4 onwards.	C7, C8
R6. Retain investment in the digital HMIS platform, including DHIS2, for both its continued development and ongoing capacity strengthening to ensure continual maintenance and evolution of digital health information systems, while continuing to work with local institutions to strengthen country-level capacity, and move towards sustainability. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers **When:** Continue making allocations in country grants and catalytic investments in HMIS, and advocating during engagement with partners and service providers.	C9, C10
Guidelines and Technical Assistance	
R7. Share a suite of tools and templates based on best practices from the Data SI and country grants, and support countries to learn from each other and adapt tools to facilitate data analysis, interpretation and use by sub-national and national managerial and operational staff. Tools may include standard operating procedures, self-assessments, checklists, visualization tools/dashboards, algorithms, meeting protocols, and feedback mechanisms, based on good practices observed across the Global Fund portfolio. Minimum standards could be considered for the sub-national level. Implementation and adaptation of the tools and templates may be built into the technical assistance scopes of	C11, C12

work of partners, as well as linkages to existing communities of practice. **Who:** Secretariat to develop tools and templates based on best practices from the Data SI and lessons learned from country grants. Secretariat to update terms of reference of Data SI implementers and partners to adapt tools and provide focused TA for different contexts. **When:** Provide a sample to countries and partners to guide strategic information investments, in time for NFM4 grant-making.	
R8. Directly fund and provide technical support to the unit in the MOH responsible for HMIS governance and strategy to lead and coordinate the interoperability of all health information systems, linking all data to user-friendly dashboards to support decision making. These systems will include different health programs, human resources, laboratory, procurement and logistics, and private sector service delivery data, and require cooperation among different development partners to streamline indicators - including across the public, private and community sectors. **Who:** Global Fund Secretariat, with other (digital) HMIS development service providers and development partners. **When:** Begin discussions and support during NFM4 for full strategic roll-out in future allocation periods.	C13, C14

ANNEXES

1) The Evolution of GF support for Data Demand for Decision-making
2) Previous recommendations
3) Documents reviewed (global level)
4) People reviewed (global level)

Annex 1: The Evolution of GF support for Data Demand for Decision-making

Even before the initiation of the New Funding Model (NFM) in 2014, the GF had the generation and utilization of data at the core of its country operations. The NFM approach further emphasized the need for evidence-based funding applications and program implementation. This annex provides a detailed overview of the evolution of this 'increased' need as reflected in subsequent GF strategies, M&E frameworks, catalytic and grant investments, and implementation guidance.

The Global Fund's 2017-2022 Strategy[89], "Investing to End Epidemics" (covering the NFM2 and 3 allocation periods), outlined a series of strategic objectives and operational objectives that refer to the need for data and information systems as key elements of the Global Fund's contribution for a world free of the burden of ATM for all. Under Strategic Objective 1, Maximize Impact against HIV, Tuberculosis, and Malaria, an operational objective states that "…the Global Fund will invest in epidemiologically appropriate, rights and evidence-based interventions amongst key and vulnerable populations that are disproportionally affected by the three diseases. The Global Fund will maximize the impact of these investments by; supporting countries to invest in data systems able to accurately inform effective programs for key and vulnerable populations …".

The second Strategic Objective 2, "Build resilient and sustainable systems for health", includes an operational objective (5) to "Strengthen data systems for health and countries' capacities for analysis and use". This operational objective notes that "good data is essential for good decision-making," and that "systematic efforts and long-term investments in routine data systems are needed to improve the availability and quality of data for analysis and use in strategic decision-making and to provide capacity for better targeting of programs, improving quality and providing for more efficient service delivery". The Global Fund intended to do this through maximizing existing efforts and resources from all global and domestic partners to improve data availability, data quality and data use at the national, local and community level through coordinated investments in national data systems.[90]

Lastly, the third objective of "Promote and Protect Human Rights and Gender Equality" has an operational objective (2) to "Invest to reduce health inequities including gender- and age-related disparities", by continuing to work with partners to develop the systems to appropriately disaggregate data by sex and age to evaluate

[89] The Global Fund 2017-2022 strategy "Investing to end Epidemics" available here https://www.theglobalfund.org/media/2531/core_globalfundstrategy2017-2022_strategy_en.pdf

[90] More specifically, the Global Fund will systematically invest in country-specific M&E plans to inform program design, track program implementation, and measure impact. These investments should help ensure that countries have systems in place to generate the comprehensive data needed to target and manage their health programs.
In addition, Global Fund investment in country data systems and tools for assessing data quality will allow for better policy and decision- making to maximize program efficiency and quality. This targeted effort will also include enabling communities and local providers to access, use, and act upon this data to highlight issues with program quality and barriers to accessing services.

impact in each of these areas. Access to this type of analysis should enable countries to better use their data to support the development and implementation of national health strategies which proactively target gender and age-related barriers to services.

The emphasis on the strategy's data utilization was further elaborated in the Global Fund's **Strategic Framework for Data Use for Action and Improvement at Country Level 2017-2022** which emphasizes the need for enhanced focus on and investment in analytical capacity and data use at the country level. It also promotes the use of high-quality data and analysis for decision-making during all stages of the program cycle.[91] The framework provides a platform for analysis of available evidence from multiple sources and encourages continued learning to drive improvements to program quality, efficiency, and impact of interventions. The framework also outlines how the Global Fund will support countries to strengthen their data collection and analytical capacity. That capacity, in turn, is expected to help countries with effective program design, management, and implementation of programs, and use of resources available for health thereby contributing to the achievement of all four objectives of the Global Fund strategy. The framework outlines the following:

- A data-driven prioritization of investments to maximize program outcomes;
- A focus on improving analytical capacity, management and leadership and at all levels of national health systems;
- Use of data at national, sub-national and community level in order to take better decisions, drive program performance and outcomes and to achieve intended impact.

The document further describes the Global Fund M&E system profile the key data related to the status and functioning of the M&E systems in countries supported by Global Fund grants. It includes the most important M&E system performance measures. This M&E system profile is routinely updated by the responsible Public Health and M&E specialists working in the Global Fund Country Teams with support from the MECA team. The M&E system profile pulls together data from multiple sources in a concise way to easily convey key messages on the performance and needed investments in the M&E systems for the three diseases. The data is used by the Global Fund for the following purposes:

- Reporting on the indicators included in the Data Use for Action and Improvement framework;
- Reporting on Key Performance Indicators (KPIs);
- Progress reporting to Senior Management and other Global Fund teams/departments such as TERG, External Relations, Strategy Committee, and others;
- Reporting on agreed management actions to the Office of Inspector General; and
- Risk Management including completion of the Key Risk Matrix and maintaining and updating of the M&E related risks in the risk register.

[91] The Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level, 2017-2022

The key indicators for these M&E systems profiles were updated in May 2022, to guide the updating of the M&E framework for the new strategy (see below). It now contains: six indicators for data governance, 27 indicators for data generation, availability, and quality, 16 indicators for data utilization, and four for the monitoring of health inequalities and inequities, i.e., showing a considerable emphasis on data for decision-making. This requires that the current (2017-2022) version of the 'Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level', may have to be updated for use by the countries and the secretariat during NMF4 preparation and implementation, and beyond.

Besides this enhanced focus on data systems and utilization through the implementation of RSSH (and disease) investment in information systems, in country grants, a special investment modality was established in 2017, the **Strategic Initiative for Data Systems, Data Generation and Use,** as part of catalytic investments of funding for Global Fund-supported programs, activities and strategic investments that are not adequately accommodated through country allocations, but that are essential. This SI aimed to improve monitoring and evaluation systems in countries, collection, collation, analysis and use of such data for decision making and quality improvement. It is aligned with and supports the achievement of Strategic Objectives 1, 2, and 3 of the Global Fund Strategic 2017-2022. The specific objectives of this Strategic Initiative were as follows:

1. To jointly develop technically sound and harmonized national M&E plans and data systems strengthening investment plans;
2. To strengthen routine health information system (including DHIS) and surveillance; individual patient tracking system; and monitoring of service delivery at community level;
3. To enable country systems to collect and report on disaggregated data and build capacity in data analysis and use;
4. To support program impact and thematic evaluations and epidemiological reviews.

The anticipated impacts of this SI were, among others: i) aligned and interoperable routine data systems for better data generation, data quality, analysis and use; and ii) increased data analysis and use for disease program planning, strategic investments in program quality improvement and more efficient resource allocation. The SI was implemented, through engagement with partners, mainly WHO and the University of Oslo (UiO) facilitating the development and implementation of M&E tools, guidelines and electronic HMIS platforms (e.g., DHIS2) development and implementation. It used an M&E TA pool for the building of local capacities for surveillance, data generation and use and facilitated the implementation of surveys to support the disease programs. A review of the Data SI in 2021[92] reported that data quality and data use remain problematic but also, as confirmed by the TRP in their 2020 lessons[93] learned report, that there is evidence from the funding requests that much better data are available at country level, e.g., for NSPs and that there is

[92] TERG Thematic Evaluation on Strategic Initiatives, August 2021, RFP No. TGF-21-05.
[93] TRP Lessons Learned report, 2020

greater awareness of the need for, and use of good quality data from district to national levels by the stakeholders.

Following the reasonable success of the first Data SI, it was renewed in 2021 for another three years (**RSSH Data SI, 2021-23**), reflecting that it remains a group 1 board priority, i.e., one of the most critical activities that would not occur without additional Global Fund resources. The focus was, inter alia, again on enabling the analytical capacity of countries to use data to improve country-level program and grant management and allocative efficiency, equity, and value for money, while also focusing on key gaps in data analysis and use and institutionalizing the processes for the latter. It was further foreseeing the strengthening of partnerships in data quality and use, including the private and community sectors, particularly for KVPs. The main implementation methods remained the same, the scope was extended to include core countries, while the successful implementation of support to countries by regional network institutions will be extended to other regions. Here, selected service providers will establish medium-term partnerships with leading regional institutions/organizations to leverage their networks with national academic and research institutions, Ministries of Health (MOH), and institutions with relevant experience in managing grant resources in a multicounty context and will help build analytical capacity and data use by working directly with MOHs, disease control programs, and key stakeholders across the country to optimize investments.

The SI only started about a year ago, regional support groups have been established, and preparatory activities have been undertaken. It is too early to say whether this will significantly contribute to an improvement of data for decision-making, especially at sub-national level.

The Global Fund's new strategy 2023-2028: "Fighting Pandemics and Building a Healthier and More Equitable World", re-emphasizes that data not only underpins the organization's mission and vision for the elimination of the three diseases but is also core to being prepared and able to respond to health crises. The primary goal of strategy, the elimination of the three diseases, needs good quality, granular data to target affected people and addressing inequitable service provision. In addition, the first of the four Mutually Reinforcing Contributory Objectives: "Maximizing People-centered Integrated Systems for Health to Deliver Impact, Resilience and Sustainability" lists a number of sub operational objectives supporting the increased emphasis on data use:

- (2) Strengthen and reinforce community systems and community-led programming, integrated within national health and social systems, where comprehensive community health strategies are supported by the scaling up enhanced CLM approaches to generate, utilize and share data to inform strategic, financial and programmatic decision-making at national and sub-national levels, and ensure accountability for results, including by supporting programs to systematically monitor and report on health service availability and quality, and human rights and gender-related barriers to services; [94] and

[94] Particular emphasis will be given to supporting KVP to identify and monitor local barriers and advocate for improved quality, accessibility and affordability of services. Priority will be given to strengthening the use of data for decision-making by community- based and community-led

- (3) Strengthen generation and use of quality, timely, transparent, and disaggregated digital and secure data at all levels, aligned with human rights principles, by:
    - Promoting generation and availability of quality, people-centered and disaggregated data by supporting integrated national data and M&E systems to improve the availability of disaggregated people-centered data to plan and inform equitable responses, to support decision-making, and improve program management and quality at the point of care.
    - Supporting active routine data analysis and use to improve program performance and quality at local, national and global levels by stakeholders across national health, community and private systems.
    - Reinforcing the monitoring of health inequalities and inequities to inform and improve equitable and human rights-based programming and outcomes, in compliance with principles of inclusion of population groups in data planning, data collection, analysis and dissemination.
    - Strengthening data governance, leadership, and management to promote adherence to national health data strategies, standards, and policies; ensure appropriate data protection, interoperability, access, sharing and use; and support rapid program responses.

The last objective of the 2023-2028 strategy, is the so-called Evolving Objective: Contribute to Pandemic Preparedness and Response. This emphasizes the need to strengthen disease surveillance systems, including the use of real-time digital data for program decision-making and detection capacity, specifically by increasing data digitalization and digital mobile health tools at all levels of systems for health

Accompanying the new Strategy, the Global Fund established a new M&E framework that will be "under regular oversight of governance bodies to enable them to monitor strategy performance against targets and trends (for KPIs) and to identify areas of strong and poor performance to provide strategic level steer." The latter are reflections of other GF performance frameworks, such as grant performance, catalytic investment performance, and secretariate management information systems. Grant performance is aligned with indicators proposed in the modular framework[95]. The most significant data use KPI is: "Use of disaggregated data for planning or decision making"; this one will be continued from the earlier KPI framework as it was only approved by the board in December 2021.[96]

The equally new (29 August 2022) Modular framework identifies nine HMIS and one CSS coverage indicator; see table below. The descriptions of the different coverage

organizations. The integration of community-generated data into national routine program monitoring systems, including HMIS, as well the Secretariat's own data systems, will be pursued to enhance understanding of how services are performing for communities.

[95] M&E and KPI Framework and Draft KPI Handbook, 19th Strategy Committee Meeting for Committee Information GF/SC19/17, 6-7 JULY 2022, Geneva, Switzerland.

[96] KPI Handbook presentation, July 2022: 'It is preferred to be continued as it is strategic in its purpose of measuring the "use" of disaggregated data, is based on independent assessment of documented evidence of use of disaggregated data, and already has systems and processes in place for regular reporting.'

indicators, also suggest an increased use of data for decision-making in different settings and for different purposes.

Table 10: HMIS and CSS coverage indicators as per the new Modular Framework Handbook

RSSH: Monitoring and Evaluation Systems	Coverage	RSSH/PP M&E-1	Completeness of reporting: Percentage of expected monthly reports (for the reporting period) that are actually received.	**Type of report** (HIV reports, TB reports, malaria reports, integrated report, notifiable diseases and event surveillance reports); **Type of provider (**public, community, private**).**
	Coverage	RSSH/PP M&E-2	Timeliness of reporting: Percentage of submitted monthly reports (for the reporting period) that are received on time per the national guidelines.	
	Coverage	RSSH/PP M&E-3	Percentage of health facilities which are reporting key programmatic indicator results on at least a monthly basis using a digital, individual level data system.	**Disease/program** (HIV, TB, malaria, notifiable diseases and events); **Health facility (**hospitals, health centers, health posts**).**
	Coverage	RSSH/PP M&E-4	Percentage of reporting units which triangulate programmatic/consumption data and logistics data on at least a quarterly basis.	
	Coverage	RSSH/PP M&E-5	Percentage of labs which are able to return patient lab results electronically to the patient-level programmatic data system.	
	Coverage	RSSH/PP M&E-6	Percentage of private health units that report data into the national HMIS.	**Type of report** (HIV reports, TB reports, malaria reports, integrated reports, notifiable diseases and event surveillance reports).
	Coverage	M&E-4.1	Percentage of service delivery reports from community health units integrated/interoperable with the national HMIS.	
	Coverage	M&E-5.1	Percentage of reporting units which digitally enter and submit data at the reporting unit level using the electronic information system.	
	Coverage	M&E-6.1	Percentage of districts that produce at least semi-annual analytical reports.	**Type of report** (HIV reports, TB reports, malaria reports, integrated reports).
RSSH: Community Systems Stregnthening	Coverage	CSS-3	Percentage of health service delivery sites with a community-led monitoring mechanism in place.	**Type of CLM mechanism** (HIV, TB, malaria, TB/HIV, TB/HIV/malaria)

Annex 2. Previous Recommendations

Evaluation	Recommendations	Follow-up
Strategic Review, 2017	• Improve the effectiveness of partnerships in achieving programmatic goals in the fight against the 3 diseases and strengthening RSSH • Increase visibility and coordination of the partnership landscape to ensure engagement with the right internal and partner focal points. In July 2020 the Secretariat re-assessed the progress in 6 areas and adjusted forward looking workplan to reflect current environment, including covid-19 response circumstances and related partnerships.	• In 2019 the Secretariat enhanced its partnership approach by developing Partners Engagement approach (so-called "6 no-regret moves") with the objectives: Improve internal Secretariat alignment and coordination on partnership engagement for more effective engagement with partners • The GF is working with GIZ BACKUP and Expertise France on developing and delivering capacity building activities for CCMs in selected countries which receive considerable GF support and face RSSH challenges.
Utilization of Global Fund's M&E investments to improve country data systems, 2017	• The TERG reiterates the importance of the Global Fund continuing to play a catalytic role through long-term investments in data system capacity development and data use.	• The Global Fund has invested in data systems during NFM2 and NFM3. The focus was on both strengthening the DHIS2 system and the capacity to manage the system. • Over 90% (90% in NFM2, 92% in NFM3) of Global Fund resources was programmed into four HMIS sub-elements: routine reporting, data analysis, data quality, and surveys. These are all areas that potentially contribute to ensuring sufficient access to data for decision-making at (sub)national and local levels. The NFM2 expenditure review on the HMIS confirms the same percentage was spent on those four sub-elements • The DDM evaluation has not found sufficient evidence to indicate that there is direct investments in DDM, hence there are numerous recommendations in the body of the report to support increased investment in DDM.
Thematic Review of Adolescent Girls and Young Women (AGYW) and	• **Gender-responsive policy-making and programming**: Ensure that countries conduct in-depth analyses of relevant sources of available data to advance understanding of gender-responsive programming and implementation.	• Extensive amount of work was done on supporting data systems for gender responsive policy making and programming systems. This includes the development of the Guidance Framework Document and tools to assist with data analysis • MECA supported countries on collecting disaggregated data. An external assessment process is

Evaluation	Recommendations	Follow-up
HIV, March 2018	• **Strong data systems**: Strengthening the evidence-base necessitates country capacity to collect, analyze and use sex- and age-disaggregated data by disease. Collecting, storing, coding and analyzing national and sub-national data (the TERG also recognizes the significance of data on community-level interventions in this context), would also promote country ownership	conducted by MECA to assess the extent to which countries are collecting disaggregated data and the extent to which they are using disaggregated data. • A key finding of the DDM evaluation was the Global Fund's requirement of and support to sex and gender disaggregated data has contributed to an increase in availability in routine data, but this has not consistently translated into improved use. Besides through surveys and program reviews there is no routine collection of data on KPs, and therefore it remains a critical element for continued investment for population size estimates and programmatic focus.
PCE 2018 Synthesis Report	• **Improve monitoring and measurement of the outcomes of RSSH investments,** e.g.: - Clear articulation of expected RSSH outcomes, which can be translated into investment guidance, the modular framework and grant performance framework where relevant; - Stronger alignment of grant activities to indicators; and - Consideration (and development of) community systems and responses indicator(s) in the modular framework.	• New information notes and modular framework provided more detailed guidance in designing more RSSH funding request • Updated OPN, procedures instructions and other general guidance published in July 2019, including more clarity on the evolved PC modality. Training (incl. also webinars, e-learning, etc.) is ongoing or being produced in time for the beginning of the cycle. • In PCE countries, local technical capacity built through PCE design and implementation has been involved in the grant data analysis and technical discussions during grant implementation.
PCE 2019 Synthesis Report	• Investments to strengthen HMIS have resulted in significant progress toward improving **completeness and timeliness** of DHIS2 reporting. • Improving **use of routine data for decision making** and **improving data accuracy** will be a critical next phase in shifting from "supporting" to "strengthening" investments in HMIS	• Finding: Global Fund investments in HMIS and CBM emphasize system development, support and strengthening with consideration of capacity strengthening for system use, while less specifically for data analysis, interpretation, and use. • Finding: HMIS, including CBM development and strengthening are long-term processes, requiring ongoing and continuous, yet iterative investment, that is not always adequately supported within individual funding cycles.[97] • Finding: Global Fund investment has resulted in several outputs, the most significant of which have been support to establishing increasingly integrated

[97] Discussed under objective 4

Evaluation	Recommendations	Follow-up
		DHIS2, M&E systems, COVID-19 surveillance – including equipment and capacity strengthening, with additional examples demonstrated in country case studies • Work with technical partners to strengthen support for the development of NSPs to ensure that they are evidence-based, highly targeted and prioritized within an anticipated resource envelope (and/or with scenarios).
PCE 2020 Synthesis Report	• **Subnational variance in resource allocation and performance**: increase emphasis in grant implementation plans on subnational data use to address within-country disparities; • The Global Fund has made significant contributions to HMIS scale up, but improving data accuracy and data use for decisions will be the next frontier for HMIS strengthening.	• Over the past decades, there have been substantial global investments in the establishment of HMIS, information dashboards, and data warehouses. With considerable investment by the Global Fund in information systems, monitoring and evaluation (M&E), and increasingly in data use, these efforts aim to ensure that data and information are used to inform appropriate decisions that guide actions to improve equitable service delivery, and bring epidemics under control and towards elimination • Despite the investment made Human resource capacity to support data use is limited – particularly at sub-national levels.
PCE 2021 Synthesis Report	• **Improve grant-specific performance monitoring to inform implementation decisions** • Invest more in data and data use, including up-to-date KVP surveys as well as other data sources that shed light on socio-economic, gender, geographical and ethnic differences in disease burden and access to services that grants are aiming to contribute to. (Country Teams, national stakeholders	• Senegal was the only PCE country included in the evaluation and based on the key informant interviews there was evidence of conducting IBBS for KVPs was helpful in target setting and determining the hotspots for targeting interventions. • Increased use of the RSSH guidance for countries ("RSSH Information Note"). Additionally, the RSSH Modular Tool and Performance Framework were also used. Multiple Technical Notes were used on key RSSH components (e.g. RSSH, CSS etc.). • As the preparation of the new strategy progresses, additional work will be carried out, including consultations with partners, to more clearly articulate the role of RSSH investments for the three diseases and for broader
Technical Evaluation Reference Group, Malaria Elimination in	• **The TERG supports further fostering of improved data collection and a regional data sharing and analysis platform** to enable timely management for	• The evaluation recommended that additional funding be provided. The evaluation on the multi-country grant indicated the following:

Evaluation	Recommendations	Follow-up
Southern Africa, May 2018	regional elimination, which could include emergency responses to epidemics. Investments in data systems and data sharing across countries. The TERG acknowledges the recent improvement in data sharing, but encourages data sharing and use to be clearly established as routine activities.	○ Reduced incidence of Malaria in Eswatini and South Africa resulting from cross border transmission ○ Reduced incidence in the areas in Mozambique bordering South Africa and Eswatini ○ Securing additional funds from the South African government towards the elimination project
Technical Evaluation Reference Group: Thematic Review on Resilient and Sustainable Systems for Health (RSSH), July 2019	• **Focus is on how RSSH needs to be better defined, a clearer articulation of interventions is needed.** • Data Systems: Investments should be strengthened through enhanced partner engagement, improved partner coordination, an emphasis on capacity building around data analysis and use, the promotion of data integration into national health data systems (e.g. from private sector and community) and through the adoption of a longer–term view in particular to data digitization.	• The global RSSH reviews of 2018[98] and 2021[99] noted that investments in HMIS and CBM systems do not necessarily address capacities or actions that lead to better use of the collected data. Figure 7 below shows a listing of activities under either systems' support or strengthening, for which financing was requested. As can be seen, while many activities are necessary for system support, very few address the act of DDM directly. Reviewing the intended budgets for investments under RSSH/HMIS in two country case studies in terms of HMIS investment, it was found that: i) the level of investment did not necessarily comply with the guidance note on the amounts for essential data systems investments, both in relative and absolute terms; ii) the investments were primarily (90% of the HMIS investment) covering salaries, travel, and per diem costs for supervision; and iii) while the latter is usually referred to as supervision of HMIS activities and potentially reviewing the data at (sub) national level, it does not automatically lead to improvement of data utilization. • The process for preparing TGFs new strategy is currently underway. Secretariat has prepared an overview of the RSSH Landscape which has been highlighted to the Board, Strategy Committee and wider GF partnership through the strategy open consultation and GF website. Upcoming meetings of the Strategy Committee and Board will focus on giving steer on key areas of the new

[98] https://www.theglobalfund.org/en/updates/2018/2018-12-06-technical-review-panel-report-on-investments-in-resilient-and-sustainable-systems-for-health/
[99] https://www.theglobalfund.org/media/11447/trp_2021rssh_advisory_en.pdf

Evaluation	Recommendations	Follow-up
		Strategy, including RSSH and UHC, global health security, and strengthening the partnership model. The Secretariat is preparing illustrative options for the future RSSH direction, to kick off Strategy Committee and Board deliberations. On the basis of the direction of the Strategy Committee and Board on the GF's future RSSH direction, subsequent stages of the strategy development process will focus on further distilling how this can be implemented, including through the Partnership Forum discussions in Q1 2021.
Technical Evaluation Reference Group Thematic Review of Partnerships, July 2019	• **Increase investment in building capacity to institutionalize essential health systems processes through technical partnerships -** The Global Fund has perhaps invested most actively in the Health Data Collaborative, a partnership that aims to strengthen the availability and use of data in support of the health-related SDGs. The Health Data Collaborative works alongside the RSSH Data Strategic Initiative and relevant Global Fund grant-funded technical support in target countries to strengthen data collection, quality and use in a way that meets all the participants' needs, and in effect creates a public good.	• From the DDM Evaluation it was established that Cameroon has used the HDC approach to rationalize facility surveys and data quality reviews. The Ministry of Health conducted a joint SDI/SARA health facility survey with coordinated support from The Global Fund, World Bank Group and WHO. • The HDC Secretariat is hosted by WHO (with staffing from WHO and UNICEF) and helps convene and facilitate dialogue between various UN agency and partner technical initiatives to provide support at country, regional and global levels. The HDC plays a knowledge broker role, helping to disseminate information and best practices from different data and digital initiatives
TERG Thematic Review on Sustainability, Transition and Co-financing (STC) Policy, June 2019	• Although the evaluation does not directly refer to DDM, the evaluation does emphasize data availability and data use to inform decisions on sustainability, transition and co-financing options.	• Strengthened Co-Financing Database for Internal and External Reporting – Leveraging partner financing, the Secretariat is working to develop (with significant progress already made) an enhanced co-financing database to strengthen central tracking of domestic commitments and improve internally and external data use and availability. • Synthesis Analysis of Transition Planning – To ensure continued learning and leveraging of lessons learned, the Secretariat commissioned a synthesis analysis of transition and sustainability planning undertaken by the Global Fund in the 2017-2019 allocation cycle, and is using the results of that analysis

Evaluation	Recommendations	Follow-up
		to inform future STC policy implementation and transition / sustainability planning, including the design of Strategic Initiative funding and updating of tools and guidance provided to countries to support transition planning
Strategic Review 2020 Final Report, August 2020	• Launch of the Strategic Framework for Data Use for Action and Improvement initiative to strengthen capacity to collect, analyze and use data at national levels. Refers to data use as a health system enabler	• Start now to strengthen the processes by which geographies, populations and intervention mixes are prioritized in National Strategic Plans (NSPs) and Funding Requests to ensure that Global Fund investments are evidence based and reflect an appropriate balance across the SOs, value for money (VFM) criteria and organizational theory of change.
Technical Evaluation Reference Group: Thematic Review on HIV Primary prevention, May 2021	• **Emphasis is on data use to inform the development of evidence based NSPs,** taking into consideration the influence of community-based data to inform prioritization of key HIV interventions. • **Support will focus on better use of data for program implementation and will rely upon multiple partners alongside support from the Secretariat** The limited availability and quality of data, especially population size estimates for KVPs, is one of the major issues with reporting, monitoring and target-setting for HIV prevention interventions	• At the operational level, the TERG called for the Secretariat to improve their technical guidance, ensure greater prioritization of HIV prevention in national strategic plans (NSPs) and develop well-defined approaches to support funding request development and grant-making for HIV primary prevention. • A worrying piece of evidence highlighted in the position paper is the absence of population size estimates for KVP in many African countries. The absence is a cause for concern considering that discussions on size estimates have been ongoing for more than a decade now. A clear articulation of challenges that countries are facing need to be presented, including what they deem possible solutions. Perhaps is the time now for the Global Fund to work with countries and make a lasting determination on whether establishing population size estimates is an area that requires technical assistance or is still on the agenda.
Technical Evaluation Reference Group: Thematic Review on The Role of the Private Sector in Program	• **There is a strong need to aggregate and share data across the healthcare system to ensure patient continuity of care**. The integration of data systems can, among numerous functions, help monitor supply chains, aggregate case notifications, connect CHWs with laboratories and provide	• **There is no progress update available**

Evaluation	Recommendations	Follow-up
Delivery, May 2021	interpreted diagnostic results to practitioners • **Improve the collection and use of data** (and KP- and gender-disaggregated data) for decision-making, by scaling proven cost-effective IT systems. Furthermore, a comprehensive and accessible data can potentially allow for better targeting of resources.	
Technical Evaluation Reference Group: Thematic Evaluation on Multi-Country Catalytic Investment Grants, December 2021	• **Data use is critical to reduce cross border transmission in particular malaria**: the grant targeted capacity building through the application of new technology, tools and processes, and augmented these efforts with the support of the in-country and regional partners, specifically in the area of improving the quality of surveillance data and strategic information. Thus, the availability of better-quality data enabled the program to track pockets of transmission, and through active targeting was able to drive down regional malaria transmission.	• The recommendations from the multi-country grant were considered in the development of the 2023-2028 strategy and is being considered as part of the development of the MCG Guidance notes that will be issued under NFM4
Technical Evaluation Reference Group: Thematic Evaluation on Strategic Initiatives, December 2021	• **Need to strengthen capacity on data interpretation and use across all levels of the system**: The SI evaluation case study provide a good analysis on the investment in DDM and the emphasis. A key finding was the SI focused on strengthening HMIS/DHIS2 systems, data quality and making data available. The training focused more on getting staff trained on implementing the system and generating the data rather than interpreting and using the data.	• According to the MECA team, the Secretariat is working on the implementation of the recommendations with regards to the SI Data, to this end the following is being implemented: o Strengthening the DHIS2 and building human resource capacity to increase use o Capacity building of MoH officials at the national and subnational levels to analyze and interpret data o Using local and regional institutions to help facilitate sustainability of data interpretation, data analysis and data use skills in the country

Annex 3. Documents Reviewed (global level)

1. The Global Fund 2023-2028 strategy "Fighting Pandemics and Building a Healthier and More Equitable World"
2. TERG reviews: Improving use of M&E investments to strengthen country data systems RSSH, July 2019
3. Technical Evaluation Reference Group: Position Paper - Thematic Review on Resilient and Sustainable Systems for Health (RSSH), July 2019
4. Strategic review 2020 (SR2020): Final Report, August 2020
5. Technical Evaluation Reference Group: Thematic Review on The Role of the Private Sector in Program Delivery, May 2021
6. Technical Evaluation Reference Group: Thematic Evaluation on Multi-Country Catalytic Investment Grants, December 2021
7. Technical Evaluation Reference Group: PCE Report, TERG Position Paper, Management Response and Final Report, March 2018
8. Technical Evaluation Reference Group: PCE Report, TERG Position Paper, Management Response and Final Report, March 2019
9. Technical Evaluation Reference Group: PCE Report, TERG Position Paper, Management Response and Final Report, March 2020
10. Technical Evaluation Reference Group: PCE Report, TERG Position Paper, Management Response and Final Report, 2021
11. Technical Evaluation Reference Group: PCE Extension Synthesis Report, TERG Position Paper, Management Response and Final Report, March 2022
12. The Global Fund Strategic Framework for Data Use for Action and Improvement at Country Level, 2017-2022
13. Odhiambo, T: How Data Driven Decision Making Affects the Bottom-Line. February 2022
14. Grant, D: What is Data-Driven Decision Making, Devan Grant. May 2021
15. Elgendy, Nada & Elragal, Ahmed. (2014). Big Data Analytics: A Literature Review Paper. Lecture Notes in Computer Science. 8557. 214-227. 10.1007/978-3-319-08976-8_16.
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20. Global Fund. 2019. *Report of the Technical Evaluation Reference Group (TERG) – 41st Board Meeting*. (https://www.theglobalfund.org/media/8529/bm41_11-terg_report_en.pdf)
21. Strategic Initiative Detailed Investment Plan Request for Approval of Funds Allocation Period 2020 -2022
22. Conceptual Framework: Adapted from *A Conceptual Framework for Data-Driven Decision Making* by E. B. Mandinach, M. Honey, D. Light, and C. Brunner.
23. https://www.theglobalfund.org/en/updates/2018/2018-12-06-technical-review-panel-report-on-investments-in-resilient-and-sustainable-systems-for-health/
24. https://www.theglobalfund.org/media/11447/trp_2021rssh_advisory_en.pdf
25. Review of RSSH PPT for the Global Fund's Strategic Review 2020, SEJ Postma, April 2020.
26. President's Malaria Initiative (2021), PMI Digital Community Health Initiative Cross-Country Landscape Report: Understanding the Use of Digital Technologies in Community Health Programs. USAID.
27. AEDES (2022), "Preparation phase: Restitution of the evaluations of the 8 countries", presentation.
28. Challenges in the development of digital public health interventions and mapped solutions: Digital Health Volume 8: 1–21, 2022
29. Sida Joint Evaluation, Joint Scandinavian Evaluation Support to Capacity Development. 2016
30. Loureiro, M.I. 2017; Available from: http://www.oxfordbibliographies.com/view/document/obo-9780199756797/obo9780199756797-0051.xml
31. United Nations Economic Development for Africa, Capacity Development Strategy. 2014
32. Fu, H., Supporting data for development: Applications open for a new innovation fund, in World Bank Blog 2017.
33. The Global Fund (2021), KPI 6e Results, DRAFT M&E Framework extract, MECA.
34. Definitions of TB key populations can be found in Stop TB Partnership
35. Utilization of Global Fund's M&E investments to improve country data systems, 2017; PCE 2019 Synthesis Report.
36. Thematic Review of Adolescent Girls and Young Women (AGYW) and HIV, March 2018; Technical Evaluation Reference Group: Thematic Review on The Role of the Private Sector in Program Delivery, May 2021.
37. Global Fund Prospective Country Evaluation, 2021 Synthesis Report
38. Technical Evaluation Reference Group: Thematic Review of Adolescent Girls and Young Women (AGYW) and HIV, March 2018
39. Technical Evaluation Reference Group: Utilization of Global Fund's M&E investments to improve country data systems, 2017 (The TERG reiterates the importance of the Global Fund continuing to play a catalytic role by long-term investments in data system capacity development and data use.

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51. Global strategy on digital health 2020-2025, World health Organisation, 2021
52. Partnership to Enhance Support for Analytical Capacity & Data Use, Update May 2020
53. Strategic Initiative Detailed Investment Plan Request for Approval of Funds Allocation Period 2020 -2022
54. SCORE for health data technical package: global report on health data systems and capacity, 2020. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO
55. TRP Report on RSSH Investments in the 2017-2019 Funding Cycle, Oct 2018
56. Advisory Paper on Resilient and Sustainable Systems for Health Technical Review Panel, October 2021
57. List of Strategic Initiatives 2020-2022
58. List of Strategic Initiatives 2017-2019
59. Office of the Inspector General Operational Progress Report, January – September 2021

60. TERG Position Paper: Improving use of M&E investments to strengthen country data systems –including for measurement of mortality, October 2017
61. A learning review of the utilisation of Global Fund investments to improve country data systems, May 2017
62. M&E activities 2020 and next cycle the Global Fund Secretariat, February 2020
63. Technical Evaluation Reference Group: Thematic Evaluation on Multi-Country Catalytic Investment Grants, TERG Position Paper, Management Response and Final Report, December 2021
64. Technical Evaluation Reference Group: Position Paper - Thematic Review on Resilient and Sustainable Systems for Health (RSSH), July 2019
65. Technical Evaluation Reference Group: Thematic Evaluation on Strategic Initiatives, TERG Position Paper, Management Response and Final Report, December 2021
66. Strategic Review 2020, Final Report, EHG, August 2020
67. The Global Fund (2019) Technical brief: Community systems strengthening
68. The Global Fund (2021) COVID 19 Response Mechanism evaluation
69. Partnership to Enhance Support for Analytical Capacity & Data Use, May 2020
70. TRP review window reports – NFM2 (all windows), NFM3 (up to W5 and SI windows)
71. NFM2 and NFM3 GF funding requests for case study countries: Benin, Cambodia, Cameroon, Ethiopia, Ghana, Rwanda, Senegal and Zambia
72. MECA/TAP data on HMIS investments for NFM2 and NFM3
73. Introduction to RSSH/HMIS for TRP, SEJ Postma, 2018 and 2021
74. Introduction to the 4Ss health systems continuum, SEJ Postma, for TRP/RSSH, ITAD and Public Health England, 2021
75. UiO Central_2021 S2_Programmatic Report final
76. HISP WCA Hub_2021 S2_Narrative Report_ Data Use
77. SI DATA Financial Reporting_NFM3
78. SI Data Use 2017-2019 Results
79. New M&E profile indicators
80. KPI 6d End-2021 Board Slide _2022 03 09
81. M&E Systems Profile MDS Data Extract
82. TRP Report on RSSH Funding for 2017-2019
83. Advisory Paper on RSSH, TRP
84. 2020 TRP Lessons Learned
85. TRPs observations on the 2017-2018 Allocation Cycle
86. TRP Observations and Recommendations on the National Strategy Applications, first wave
87. Surveillance options for KVPs in GF Grants
88. Community based monitoring: An Overview, May 2020
89. Towards a Common Understanding of Community-based Monitoring and Advocacy, February 2020
90. GF Guidance on Community Led monitoring

91. Community Systems Strengthening Framework
92. Technical Evaluation Reference Group Thematic Review of Partnerships Position Paper, July 2019
93. Technical Evaluation Reference Group: Thematic Review on HIV Primary prevention, May 2021
94. Data Generation and Use Working Group
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96. Data-driven quality improvement in low-and middle-income country health systems: lessons from seven years of implementation experience across Mozambique, Rwanda, and Zambia, Dec 2017
97. Increasing firm agility through the use of data analytics: The role of fit. Decision Support Systems, 2017
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Annex 4. People interviewed (global level)

Name	Designation
Institution/ Organization	**Position**
1. The Global Fund	Manager, KPI Reporting
2. The Global Fund	Manager Data and Analytics
3. The Global Fund	Head, Grant Portfolio Solutions and Support
4. The Global Fund	Manager, Strategy Implementation
5. The Global Fund	Senior Policy and Strategy Advisor
6. The Global Fund	TERG Focal Point
7. The Global Fund	TERG Focal Point
8. The Global Fund	Senior Manager, M&E and CA
9. The Global Fund	Specialist, Data Use for Action, Gender
10. The Global Fund	Senior Specialist Monitoring & Evaluation
11. The Global Fund	Senior Specialist, Impact & Evaluation
12. The Global Fund	Working Group – Data Use and Digital Technology
13. The Global Fund	Senior Specialist, M&E Framework
14. The Global Fund	Senior Manager, Strategic Initiatives
15. The Global Fund	Senior Specialist, MECA, Strategic Initiatives Data
16. The Global Fund	Head, Africa and Middle East Department
17. The Global Fund	Senior Advisor, Tuberculosis
18. The Global Fund	Head of CRG Department
19. The Global Fund	Senior Technical Coordinator, Investment Support and Key Populations, CRG
20. The Global Fund	Senior Advisor C19RM
21. The Global Fund	M&E Specialist, SI
22. The Global Fund	Technical Advisor, Community Systems and Responses
23. The Global Fund	Senior Adviser: HIV Prevention
24. The Global Fund	Head of Strategic Information
25. The Global Fund	Manager, Programmatic Results and Impact
26. The Global Fund	Senior Specialist - Strategic Delivery Initiative
27. The Global Fund	Senior Specialist, Health Systems Strengthening
28. The Global Fund	Health Systems Analyst
29. The Global Fund	RSSH
30. The Global Fund	SFPM - Ethiopia
31. The Global Fund	PHME - Ethiopia
32. The Global Fund	SFPM - Cambodia
33. The Global Fund	PHME - Cambodia
34. The Global Fund	SFPM - Zambia
35. The Global Fund	SFPM - Ghana
36. The Global Fund	PHME - Ghana
37. The Global Fund	PHME- Cameroon, Senegal
38. The Global Fund	Former Public Health and Monitoring and Evaluation Specialist

Name	Designation
	Current Senior specialist, PHME WCA
39. The Global Fund	FPM - Benin
40. The Global Fund	PHME - Benin
41. The Global Fund	SFPM - Rwanda
42. The Global Fund	PHME - Rwanda
43. The Global Fund	Margaret Kugonza - Senior Technical Officer, Monitoring and Evaluation
44. The Global Fund	Regional Manager, South East Asia Team
45. The Global Fund	Specialist, Public Health and M&E, South East Asia Team
46. The Global Fund	- Specialist, Public Health and M&E C19RM - Grant Management Division
47. The Global Fund	Specialist, Public Health M&E LAC team
	Specialist, Public Health and M&E Latin America and Caribbean Team
48. The Global Fund	Regional Manager
49. The Global Fund	Fund Portfolio Manager
50. The Global Fund	Fund Portfolio Manager
51. The Global Fund	Sustainability and Transition Specialist
52. The Global Fund	Specialist, Sustainability, Transition,
53. The Global Fund	PHME
51. The Global Fund	PHME
54. The Global Fund	Head, Country Risk Management
External	
1. East-West Center -	Senior Fellow, Research Program
2. WHO	Head of Unit, Strategic Information for Response at Global Malaria Programme, WHO
3. WHO	Technical Officer, SUR Global Malaria Programme,
4. UNAIDS	Senior Advisor - Epidemiology UNAIDS
5. GIZ	Technical Advisor -Digital Health at GIZ
6. Health Information Systems 7. Programme (HISP) West and Central Africa	Coordinator at HISP West and Central Africa
8. HISP	Head Health Information Systems Programme (HISP)
9. Agence Européenne pour le Développement et la Santé (AEDES)	Head of Technical department - AEDES
10. AEDES	Lecturer and Researcher Biostatistics, Epidemiology, Health Information Systems, Computer Science applied to Public Health.
11. AEDES	Independent Public Health Consultant (Monitoring & Evaluation)