

Reaching Every District using Quality Improvement (RED-QI)



Lessons Learned about Implementation and Scalability in Ethiopia and Uganda

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ACKNOWLEDGEMENTS

John Snow, Inc. (JSI) wishes to acknowledge and appreciate the financial and technical support of the Bill & Melinda Gates Foundation towards the development of the *Reaching Every District using Quality Improvement (RED-QI) Approach: Lessons Learned about Scalability in Ethiopia and Uganda* report.

JSI also acknowledges the following people and organizations for the development and completion of this report: Dr. Ssekitto K. Gerald, Dr. Mugenyi Possy, Prossy Nakyanzi, Dalia Khattab, Elena Herrera, Sarah Melendez, Quail Rogers-Bloch, Lisa Oot, Rebecca Fields, Natasha Kanagat, Disha Ali, Kate Bagshaw, Wade Smith, Amy Tran, the Federal Ministry of Health (Ethiopia), and the Uganda National Expanded Program on Immunization.



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ACRONYMS AND ABBREVIATIONS

| | | | |
|-------|-------------------------------------------------|--------|-----------------------------------------------------------------|
| ARISE | African Routine Immunization System Essentials | PCV | Pneumococcal Conjugate Vaccine |
| BMGF | Bill & Melinda Gates Foundation | PDSA | Plan-Do-Study-Act cycles |
| CAO | Chief Administrative Officer | PHC | Primary Health Care |
| CDC | U.S. Centers for Disease Control and Prevention | QI | Quality Improvement |
| CHAI | Clinton Health Access Initiative | QIT | Quality Improvement Team |
| CVD | Center for Vaccine Development | QRMs | Quarterly Review Meetings |
| DHIS2 | District Health Information System Version 2 | QWIT | Quality Work Improvement Team |
| EPI | Expanded Programme on Immunization | REC | Reaching Every Community/Child |
| FMOH | Federal Ministry of Health | REC-QI | Reaching Every Community/Child using Quality Improvement |
| Gavi | The Vaccine Alliance | RED | Reaching Every District |
| HEW | Health Extension Worker | RED-QI | Reaching Every District using Quality Improvement |
| HMIS | Health Management Information System | RI | Routine Immunization |
| HW | Health Worker | SS4RI | Stronger Systems for Routine Immunization |
| IIP | Immunization in Practice | TWG | Technical Working Group |
| JSI | John Snow, Inc. | UI-FHS | Universal Immunization through Improving Family Health Services |
| KII | Key informant interview | UNEPI | Uganda National Expanded Program on Immunization |
| MCH | Maternal and Child Health | UNICEF | United Nations Children's Fund |
| MCHIP | Maternal and Child Health Integrated Program | USAID | United States Agency for International Development |
| MCSP | Maternal and Child Survival Program | VHT | Village Health Team |
| MNCH | Maternal, Newborn, and Child Health | WHO | World Health Organization |
| MOH | Ministry of Health | | |

EXECUTIVE SUMMARY

Although the Reaching Every District (RED) strategy for immunization has been in place for nearly two decades, many districts and health facilities face challenges in implementing it, partially due to inadequate guidance on how to fully and sustainably put RED into practice. The Reaching Every District using Quality Improvement (RED-QI) approach combines the full RED strategy and quality improvement (QI) tools and processes, which provide practical methods that allow EPI stakeholders to examine obstacles to RED implementation, to develop possible solutions, and to share learning for sustainability and scale-up. **RED-QI advances RED from a “what to do” strategy to a “how to” approach for strengthening the routine immunization system.**

RED-QI has several key features:

- It strengthens planned and budgeted routine Expanded Program on Immunization (EPI) activities, such as micro-planning and supportive supervision; it fits within the existing local government health service delivery system.
- It does not have large additional costs, and it enables effective use of the available resources by addressing the most pressing problems and their root causes first.
- It engages stakeholders that have been overlooked in the past, such as local government leaders.
- It helps managers allocate tasks to the appropriate level.
- It generates data for better decision-making at all levels.
- It incorporates continuous learning and sharing so that best practices and feasible solutions can be applied in new settings and to the approach as well.

In 2010, John Snow, Inc. (JSI) first explored applying tools from the field of quality improvement (QI) to the RED strategy in Uganda. Building on promising findings from that experience, JSI adapted this novel approach to better align with the resources typically available in health systems in low-income countries. JSI worked with the governments of Ethiopia from 2011-2021 and Uganda from 2013-2019 to introduce this enhanced approach, called “Reaching Every



District using Quality Improvement” (RED-QI) in Ethiopia and “Reaching Every Community/Child using Quality Improvement” (REC-QI) in Uganda, in a wide range of districts (103 in Ethiopia and 25 in Uganda). For simplicity, we will refer to them both as RED-QI throughout this report.

The overall goal of this report is to document the implementation and scale-up of the RED-QI approach in Ethiopia and Uganda to draw out the lessons learned. These lessons will inform how the approach can be tailored to strengthen routine immunization in other countries. The report documents the steps in moving from pilot projects to scale; identifies RED-QI tools and practices that worked well and were “scalable” and sustainable; and examines the context and conditions that affected implementation and scale-up of the RED-QI components.

This report summarizes findings from a desk review of RED-QI program documents and 28 key informant interviews (KIIs) with project officers, EPI managers, health facility managers, and immunization partners familiar with the approach’s implementation and expansion in Ethiopia

and Uganda. The findings provide both helpful insights and valuable perspectives from those most familiar with putting the approach into practice on the ground.

Selected key findings include:

- **Key informants in Ethiopia and Uganda were unanimous in perceiving that the RED-QI approach added value** to the routine immunization programs in their countries.
- **The approach was widely viewed by those who implemented it in both countries as being effective, inexpensive, compatible** with existing systems, and **sustainable**. Aligning the QI approach to the widely accepted RED strategy and providing methods of operationalizing the components of that strategy contributed toward the effectiveness of the RED-QI approach and its perceived value in both countries.
- **Quantitative findings from both countries indicated that the approach was effective in reaching its objectives** of better planning of immunization sessions, improved quality of services and of data for decision-making, and increased equity of service provision through a greater ability to identify and provide services to underserved communities.
- **Specific RED-QI components** cited most often as **easily scaled and/or sustainable** were participatory community mapping, bottom-up micro-planning, and the fishbone (root cause) analysis tool. Components considered **less sustainable or easily scaled** were data quality analysis (DQA) and the Plan-Do-Study-Act (PDSA) cycle. At the same time, skills and systems were built to allow for problem-solving to continue in both Ethiopia and Uganda.
- **The project leadership's key operating principle of on-going learning, flexibility, and open-mindedness about making changes to the RED-QI approach led to an improved intervention.** Rather than implementing the same approach while it was scaled-up in a phased manner, project managers modified the approach or specific components as results demonstrated what worked well and what did not.



- The **close partnership** between JSI and both the Federal Ministry of Health in Ethiopia and the Uganda National Expanded Programme for Immunization **was appreciated and felt to be effective in helping the MOH feel ownership of the RED-QI approach.**

- **All KII respondents felt that the approach should be expanded further** within these countries, but no specific plans or designated funding for additional scaling-up was identified. The lack of a single agreed-upon approach to strengthening EPI among immunization partners in these countries and the perceived need for evidence of the approach's effectiveness in increasing vaccination coverage by immunization partners were cited as potential barriers to future expansion of RED-QI.



- **Challenges to the sustainability and further scaling of the RED-QI approach were identified.** These include health system issues, such as high staff attrition, intensive workloads of health workers and managers, funding shortfalls, and a perceived lack of accountability at higher levels.
- **For RED-QI practices to be sustained in the face of high staff turnover among both supervisors and health workers, there is a felt need on the ground for continuous capacity-building, follow-up support, and mentoring.** KII respondents from both countries described how some QI practices reduced or stopped after direct project support ended, although solutions to local issues that were developed using QI tools had continued.

An additional and critical lesson was that engaging non-health stakeholders, including civil authorities and political and community leaders, in immunization planning, monitoring, and resource allocation is **perceived as innovative, productive, and central to the effectiveness of the RED-QI approach.** One Uganda respondent, an immunization manager, summarized an important aspect of the value of this engagement, especially with local authorities:

“This approach did not circumvent the local government. Any approach that circumvents the local structures may face resentment and won’t be well-sustained...The elected people want to be relevant. When the technical people run away with the services, the elected people become redundant...When lower local governments appreciate the implications of poor performance and their roles (in addressing it), it empowers them to take strong decisions for improvement...This has been the missing link.”

PURPOSE AND OBJECTIVES

The purpose and overall goal of this learning activity is to document the implementation and scale-up of the Reaching Every District Using Quality Improvement (RED-QI) tools approach in Ethiopia and Uganda to draw out the lessons learned. These lessons will inform how this approach can be packaged and tailored to strengthen routine immunization in other contexts.

The specific objectives include:

1. Document the overall processes and steps of how RED-QI in Ethiopia and Uganda moved from pilot projects (small scale innovation) to scale (broader implementation and institutionalization).
2. Identify components of RED-QI that worked well, have been most highly valued and are “scalable” and sustainable.
3. Examine the contextual factors and conditions that affected the implementation and scale-up of RED-QI components in Uganda and Ethiopia.



BACKGROUND

The World Health Organization (WHO) introduced the Reaching Every District (RED) strategy in 2002 to strengthen routine immunization services with a focus on strengthening district-level service delivery. (1) The RED strategy is composed of five operational components: 1) planning and management of resources; 2) reaching all eligible populations; 3) engaging communities; 4) supportive supervision; and 5) monitoring and use of data for action. In 2010, John Snow, Inc. (JSI) first explored applying tools from the field of quality improvement (QI) to the RED strategy in Uganda, in collaboration with The Dartmouth Institute. Building on promising findings from that experience, JSI adapted this novel hybrid approach to better align with the resources typically available in health systems in low-income countries. JSI worked with the governments of Ethiopia from 2011-2021 and Uganda from 2013-2019 to introduce this enhanced approach, called “Reaching Every District Using Quality Improvement Tools” (RED-QI) in Ethiopia and “Reaching Every Community/Child Using Quality Improvement Tools” (REC-QI) in Uganda, in a wide range of districts (103 in Ethiopia and 25 in Uganda). For simplicity, we will refer to them both as RED-QI throughout this document.

The projects in both countries grew from smaller, focused assistance to work at large scale in low resource settings, applying QI and adult learning methods to improve the quality of immunization program management. More specifically, the RED-QI approach facilitated by JSI applied QI concepts and tools to help increase the uptake of the RED strategy and improve the ability of district and facility health personnel to address challenges in immunization service delivery. This was different from the classic approach of QI methods being applied to quality of clinical care in a limited number of facilities. In addition, the RED-QI approach focused on building health worker capacity to solve problems and address their own challenges based on local context, not using QI as a proscriptive package of immunization interventions in pilot sites. The projects implemented RED-QI as a continuous learning process through which the model evolved over time. Creating a model that could be adapted depending on context was central to the design of the RED-QI approach. It should be noted that all project districts implemented the RED-QI approach in both Ethiopia and Uganda; the project did not implement RED as a stand-alone strategy.



KEY COMPONENTS OF RED-QI

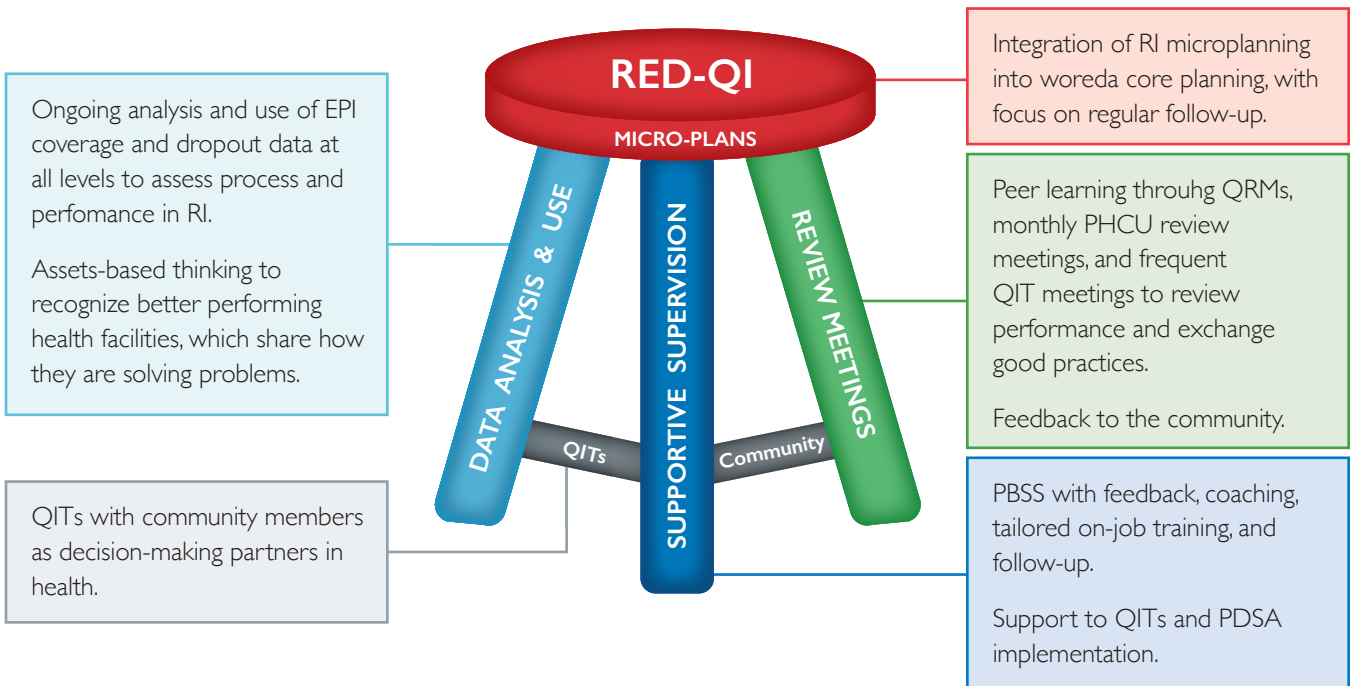
Table 1 below outlines some of the key components and innovations of QI that were introduced into the RED strategies in Uganda and Ethiopia that will be examined in this activity. Figure 1 below provides a visualization of how the components work together:

Table 1. RED-QI components and corresponding RED-QI components in Uganda and Ethiopia

| RED strategy components | RED-QI components in Uganda and Ethiopia (Note: Not all components of RED-QI were used in both countries) |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Planning and management of resources (including micro-planning) | <ul style="list-style-type: none"> • Develop sub-district (e.g., health facility level) EPI micro-plans • Participatory community mapping to accurately identify catchment populations • Root cause and fishbone analyses to identify the underlying causes of problems • Pareto analysis, which prioritizes problems having the highest impact • Plan-Do-Study-Act (PDSA) cycles to test solutions crafted by health workers and community members working together |
| Engaging with communities | <ul style="list-style-type: none"> • Quality Work Improvement Teams (QWITs in Uganda) and Quality Improvement Teams (QITs in Ethiopia): Comprised of health workers and community members, focus on immunization and conduct PDSA cycles, trace defaulters, and obtain community input on immunization program planning, including optimal location and time for vaccination outreach sessions, and problem-solving • Involve civil administration to elevate issues, mobilize local resources |
| Conducting supportive supervision | <ul style="list-style-type: none"> • Engagement of health staff and non-health stakeholders (such as civil administrators) in conducting supportive supervision or reviewing findings from supervisory visits • Increased focus on health worker capacity building and on-site mentorship, particularly for data analysis and problem-solving • Revision of existing supportive supervision tools |
| Monitoring and using data for action | <ul style="list-style-type: none"> • Data quality self-assessment and improvement in data consistency across standard EPI reporting tools • Build health worker capacity to monitor immunization coverage and drop-out rates to inform their own actions • Quarterly Review Meetings (QRMs) with both health personnel and local non-health stakeholders, review performance and encourage participants to “think outside the box” to problem-solve, mobilize local resources, and flag problems needing national level attention |
| Reaching all eligible populations | <ul style="list-style-type: none"> • Participatory community mapping to accurately identify catchment populations • Use of QWITs and QITs to obtain community input on optimal location and time for vaccination outreach sessions |



Figure 1.



RATIONALE FOR LEARNING ACTIVITY

Given the adaptability of the approach and its evolution, it is important to understand how RED-QI moved from pilot projects (small-scale innovation) to larger scale (broad country implementation) in Ethiopia and Uganda. While various program assessments of the RED-QI approach's effects on the immunization systems in the two countries provided insights, more analysis and exploration was needed. RED-QI is a package of interventions. Understanding what components worked well and were most highly valued, as well as which were more difficult to scale-up and the conditions under which components worked or did not, provide insights necessary to tailor RED-QI introduction and scale-up into Expanded Program on Immunization (EPI) in other contexts.

In answering and analyzing these questions, we used the definitions of scale up, scalability, and sustainability in the box below.



Key definitions for examining scale-up of RED-QI

Scale up: Intentional approach to disseminating an activity or intervention to new sites or to more members of a target population within an existing site. Scale functions both horizontally (across geographies) and vertically (from lower to upper levels of a health system). Scale also involves the institutionalization of the intervention within MOH systems.

Scalability: A characteristic of an activity or intervention that encourages or discourages scale. Depending on where an activity/intervention is in the scaling process, scalability may mean demonstrated feasibility, necessary government buy-in (institutionalization), and financial/logistical support.

Sustainability: The ability of an activity or intervention to operate successfully within the existing health system or health infrastructure in the future in the face of commonly anticipated threats.

FRAMEWORK FOR GUIDING LEARNING AGENDA

A large number of frameworks have been used to examine scale-up or scalability. For the purposes of answering our four objectives we have adapted the constructs from the [Consolidated Framework for Implementation Research](#) (CIFR), drawing also from a list of 20 questions for scaling up studies developed by MSI/WHO/ Expandnet (2).

The CIFR framework is particularly appropriate given the nature of this inquiry as it encompasses domains which are critical to the implementation of RED-QI: intervention characteristics, implementation context, individuals involved with the intervention, and implementation process (3). Within these domains, there are more than 30 constructs which were modified to suit the specific questions we sought to answer and the information that would be accessible in doing so. This includes constructs from a comprehensive range of theories and across a broad spectrum of scientific disciplines. This framework was designed to be adapted to tailor implementation research in a systematic and context-specific way. The framework domains and constructs also allow for measurement to be qualitative and quantitative, and both prospective and retrospective – key features of this inquiry.

Answering Objective 1

To document the overall processes and steps of scale-up, we will use the CIFR constructs examining implementation processes, with the following questions in the box below. We also include relevant questions from CDC's Program Sustainability Assessment Tool related to strategic planning and sustainability.

CIFR: Implementation processes

Planning and readiness for change: Explore the planning process used to introduce RED-QI in both countries and to scale it up in both countries. How were decisions made about scaling up? What, if any, data was used to support scaling up decisions? To what extent is RED-QI perceived as addressing (or having the potential to address) an expressed need or gap?

Engagement of opinion leaders and champions: Explore commitment levels from the MOH in each country to continue to scale the RED-QI approach and global stakeholders to support this work. Who are the enablers and gatekeepers for scaling up RED-QI in each country and more broadly as part of the general audience?

Executing: To what extent was the intervention effective in accomplishing its objectives according to the theory of change/logic framework/objectives? How do you capture the value of execution according to the model, but also the need to be responsive to what you are learning along the way?

Reflecting and learning: Explore the process of monitoring and program reviews in each country. What lessons were learned or applied throughout the process of scaling up? How were these captured?

Sustaining: What needs to be in place in order to sustain the RED-QI approach beyond program inputs? Was a sustainability plan included in the original program planning? Are there specific components of the approach that have been sustained whereas others have not? What outside (donor) sources are available? To what extent have RED-QI approaches been incorporated into national or sub-district policies and plans? Were other partners engaged?

In addition to examining the overall processes and steps of scale-up in a qualitative manner, we will examine relevant quantitative data, such as program monitoring data, to assess the extent of implementation in both countries.

Answering Objective 2

To identify components of RED-QI that worked well, have been most highly valued and are more sustainable, we will use the CIFR constructs related to the intervention characteristics of the RED-QI approach and its components, with the following questions shown in the box below.

CIFR: Intervention characteristics

Evidence strength and quality: What are the perspectives of EPI officers and staff and other immunization partners in each country about RED-QI's evidence for achieving desired outputs?

Adaptability: In what ways has the RED-QI approach and/or its various components evolved since its original design? How are these changes likely to affect scalability and sustainability? How is adaptation considered as a part of future scaling?

Complexity: What are the perspectives of immunization program staff about the complexity of implementing RED-QI and its components? What are the perspectives and priorities of other immunization partners in each country for QI to strengthen the RED strategy? Are there options to reduce the complexity?

Value and relative contribution: What components of RED-QI have been most highly valued by MOH officers and EPI staff who implemented the intervention? What is the perceived value about the RED-QI intervention overall? Were there trade-offs in RED-QI implementation when scaling up?

Categories of costs and resources: What are the categories of costs and resources needed to implement the QI approach? Do stakeholders perceive the cost of QI as high or feasible? What factors need to be in place for these funds to be available?

Questions in key informant interviews (KIIs) will be included about the adaptability, complexity, value, and sustainability of the different key components of RED-QI described above.

Answering Objective 3

In order to achieve Objective 3 to examine the contextual factors and conditions that affected the implementation and scale-up, we will use the CIFR constructs shown in the box below. Questions related to organizational capacity and funding stability from CDC's Program Sustainability Assessment Tool are incorporated here also.

CIFR: Contextual characteristics

Beneficiary needs and resources: What management structures, policies, and infrastructures promote successful scale? What needs to be in place in order to sustain the RED-QI approach beyond program inputs? To what extent are the use of components of RED-QI dependent on local circumstances? And, consequently, are some components easier to reliably scale?

External policy and incentives: What is the existing landscape for QI in each country and how does that shape uptake of the RED-QI approach? What engagement/linkages were there with other initiatives?

Compatibility: How does the intervention fit with existing workflows and systems? How does RED-QI fit with existing program resources and priorities?

Readiness for implementation: How did EPI programs in the two countries demonstrate commitment to implementing RED-QI as the intervention began?

Leadership engagement: Explore commitment levels from the MOH in each country to continue to scale the RED-QI approach.

Access to knowledge and information: Is information about the approach and its benefits easy to access, understand, and operationalize?

METHODS

A desk review of project documentation from both Ethiopia and Uganda was conducted from April-August 2020. Documentation included program review findings, operational research, technical briefs, and end-of-project reports. Key information from these documents that was relevant to this assessment's constructs was culled and summarized.

From September-November, 2020, key informant interviews (KIIs) were conducted via Zoom with a total of 28 participants (13 in Ethiopia, 15 in Uganda) familiar with the RED-QI implementation and scale-up in both Ethiopia and Uganda using interview formats relevant to the constructs of this assessment. KII respondents included immunization officers from the Federal Ministry of Health (Ethiopia) and the Uganda National Expanded Program on Immunization (UNEPI); regional and zonal MCH/EPI managers in Ethiopia; district health officers in Uganda; health facility managers in Uganda; technical officers from immunization partners from both countries; and technical officers from the implementing partners from both countries (see Table 2). All interviews were conducted in English; a translator participated in three Ethiopia interviews for participants who were more comfortable speaking in Amharic.

Table 2: Key Informant Interview Respondents by Country and Role (N=28)

| Country | Role (Number of respondents) | |
|----------|--------------------------------------------|--------------------------------------------|
| Ethiopia | EPI Manager (former and current)(3) | Project officer (1) |
| | Regional MCH Coordinator (3) | Zonal MCH Coordinator (1) |
| | Immunization Partner Technical Officer (5) | |
| Uganda | EPI Manager (1) | Project Officer (2) |
| | District Senior Medical Officer (2) | District Health Officer (1) |
| | Assistant District Health Officer (2) | Senior Nursing Officer (3) |
| | Health Facility Manager (1) | Immunization Partner Technical Officer (3) |

KII respondents received an informed consent form in advance of the interview describing the purpose of the interview and ensuring confidentiality. All respondents in both countries verbally agreed to participate in the interviews. A note-taker was present for each interview, and all respondents gave permission for the interviews to be tape recorded. The note-taker provided written notes and the taped recordings to the interviewer, who listened to each recording and revised written notes, as needed. The revised notes and recordings were shared with JSI technical officers, who, together with the interviewer, analyzed the findings. An inductive content and thematic analysis approach identified emerging themes.

The JSI Ethical Review Board determined that this study was exempt from human subjects oversight (IRB reference number: IRB #20-40E).

FINDINGS

Note: All quotes in the Findings section are from key informant interviews unless noted otherwise.

Objective 1: Document the overall processes and steps of how RED-QI moved from pilot projects to scale in Ethiopia and Uganda.

Planning and readiness for change: Explore the planning process used to introduce RED-QI in both countries and to scale it up in both countries. How were decisions made about scaling up? What, if any, data was used to support scaling up decisions? To what extent is RED-QI perceived as addressing (or having the potential to address) an expressed need or gap?

In **Uganda**, the origins of RED-QI were during JSI's Africa Routine Immunization System Essentials (ARISE) Project, funded by a BMGF learning grant from 2009-2012. One component of the ARISE Project was applying QI processes to subnational immunization management. BMGF requested JSI to collaborate with The Dartmouth Institute (TDI) in the application of QI processes; JSI got the go-ahead from Uganda National Expanded Programme on Immunization (UNEPI) to do this work in one district, Masaka. The approach demonstrated promising results, but it was considered to be extremely resource-intensive.

In 2012, as ARISE was winding down, JSI discussed the QI experience with USAID/Kampala and UNEPI, and USAID funded JSI to introduce a streamlined version of the Masaka QI work in five districts for two years, recognizing that the earlier resource-intensive intervention was not sustainable. JSI worked with UNEPI to identify the five districts, which were selected on the basis of: being among USAID/Kampala's 44 priority districts; having large numbers of unvaccinated children, representing diversity in terms of geography and infrastructure; and having interest by the district health team. It was during these two years that the concept of RED-QI was developed and given a name. The partners agreed that the approach should be connected to the RED strategy, a well-recognized and agreed-upon strategy to strengthen immunization services. (Uganda changed its terminology from RED to REC [Reaching Every Child] in 2007, and thus the approach was known as REC-QI in Uganda. For the sake of simplicity, the approach will be referred to as RED-QI throughout this document.) The partners worked to "operationalize" the RED strategy, linking practical activities to each of the five RED strategy components (see Table 1).

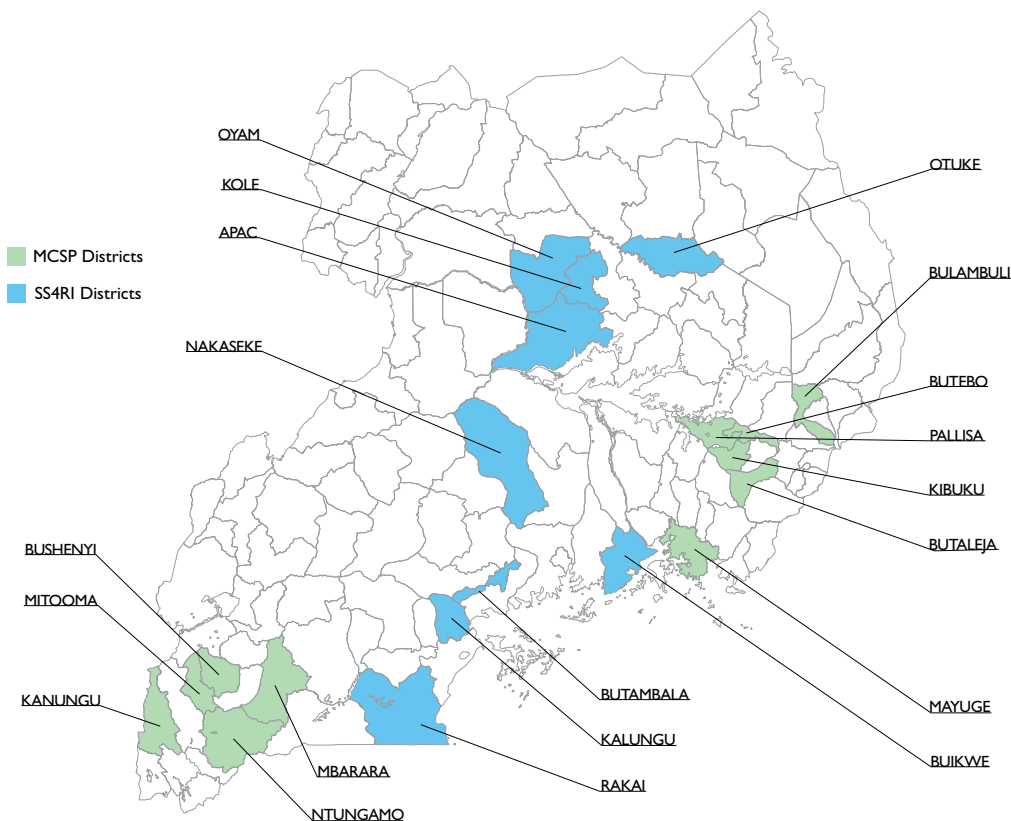
"The RED strategy told us what to do, and RED-QI told us how to do it,"

—project officer from Ethiopia



In 2014, USAID agreed to fund JSI to conduct the RED-QI approach through 2019. UNEPI requested that the approach be continued in the five districts and be expanded to 20 relatively low-performing districts across five regions of the country, but the USAID funding was sufficient to cover only an additional ten districts. JSI submitted a proposal to BMGF for additional funding in 2014 to cover the other ten districts. Funding to support the approach in the 25 districts thus came from both USAID and BMGF for a five-year period. The selection criteria for districts included large numbers of unimmunized children, interest on the part of health authorities, existence of basic health infrastructure, an established health system with settled communities, and districts not supported already by other major immunization partners (WHO and UNICEF). Expansion occurred in a phased approach. By the time the project ended in Uganda in 2019, the RED-QI approach was introduced in a total of approximately 650 health facilities in five regions of the country.

Figure 2. Map of RED-QI intervention districts in Uganda



Scale-up and sustainability of the RED-QI approach were overarching concerns for JSI from the start in Uganda and were the reasons for greatly lightening the original TDI resource-intensive QI approach used in Masaka District. JSI embraced the concept of continuous learning to optimize the model, which was dynamic rather than static, and the model continued being revised and improved throughout the implementation period.

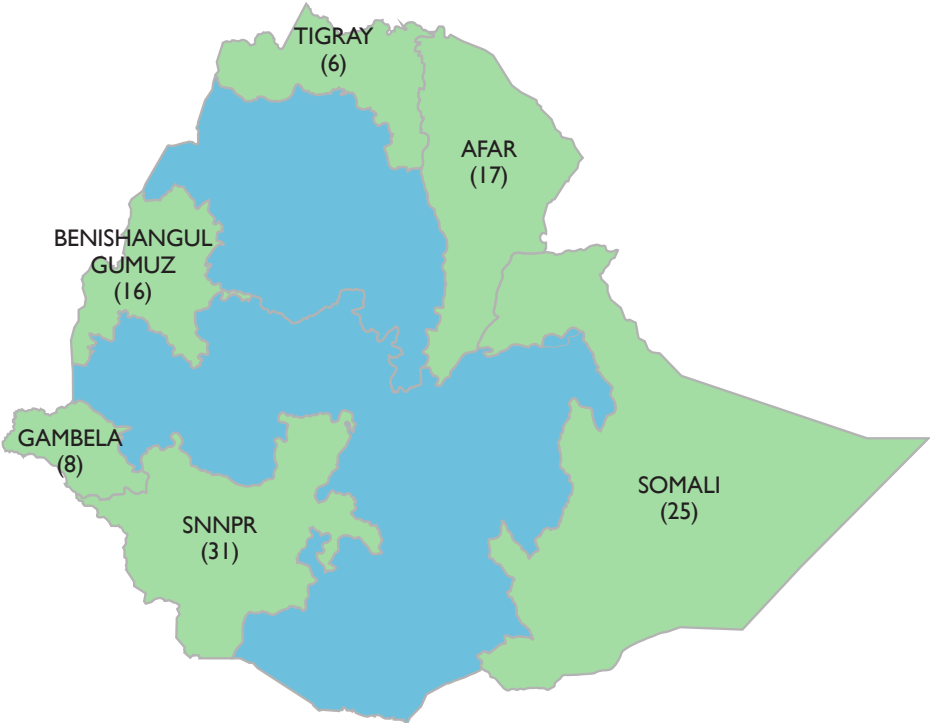
In **Ethiopia**, JSI received funding from the Bill & Melinda Gates Foundation (BMGF) in 2012 to test the use of the QI approach in two woredas (districts), one in a pastoralist region and a second in an agrarian region of the country. The Ethiopia Federal Ministry of Health (FMOH) requested that the project expand to an additional district in the high performing Tigray region. This would allow the project to look at three different scenarios: how do you help achieve

“universal immunization” in a strong health system context, a medium health system context, and a weak health system context. JSI worked with the FMOH to select one pastoralist region (Afar) and one agrarian region (SNNPR). Then JSI worked with regional health officials to select one district per region. In all three regions, the districts were within two hours’ drive of the regional capital and were selected as “typical” representations for the region.

In 2014, the FMOH, JSI, and BMGF jointly decided to scale the RED-QI approach from the original three districts. The FMOH requested the project work specifically in the developing regional states (DRSs) which tended to have lower immunization rates and poorer access to health facilities compared with other regions of the country. JSI and BMGF wanted to explore the use of the approach in better performing regions (i.e., regions with higher immunization rates and adequate health infrastructure) as well. So with supplemental funding from BMGF beginning in 2014, the approach eventually was scaled to 103 districts across four “developing” regions and two better performing regions (out of a total of 11 regions nationwide) in a phased manner over a period of six years. Two-thirds of the 103 districts were in settings of extremely limited infrastructure and low health system capacity, with hard-to-reach areas and populations, including pastoralist communities who migrate seasonally with their livestock herds in search of grazing land and water. The key criteria used in selecting where to scale-up were areas where there were health staff in place (e.g., districts that had focal points at health centers and health posts) but that had poor access and/or poor utilization according to administrative immunization coverage data.

“We looked at HMIS data and looked at where there were program gaps in pastoralist areas and prioritized which districts would have the program,” noted a former EPI manager from the FMOH, Ethiopia.

Figure 3. Map of UI-FHS intervention regions in Ethiopia



103 PROJECT DISTRICTS COUNTRYWIDE

Respondents in key informant interviews (KIIs) from both Ethiopia and Uganda perceived that the RED-QI approach effectively addressed routine immunization program needs and gaps. The most common responses from both countries describing these gaps included a lack of community and non-health stakeholder (NHS) engagement in immunization services planning or monitoring; little or no use of data for decision-making; inadequate micro-planning and limited use or implementation of completed micro-plans (“They had not understood the practicality of the plans. All the districts had micro-plans, but they were in the cupboards,” noted a senior medical officer, MOH, Uganda); poor estimates of catchment area’s target population; technical knowledge gaps among health workers; low utilization of immunization services by communities; and shortcomings in management and leadership.

Enablers and gatekeepers: Who are the enablers and gatekeepers for scaling up RED-QI in each country, in other countries, and more broadly as part of a general audience?

Key partners for scaling up the RED-QI approach in the two countries were the FMOH in Ethiopia and UNEPI in Uganda. These Ministries’ immunization programs, led by an EPI manager, direct immunization policies and programs at the national level. It was the EPI manager in both countries who worked with JSI to agree to pilot the approach initially, to help decide where it would be implemented, to facilitate introduction of the project to regional or district health officials, and then later to decide whether and how the approach would be scaled up. Similarly, **health officials and health workers at the sub-national levels** – regional immunization officers, district health officers, health facility managers, and health workers – served as enablers by working with project staff and facilitating and assisting with the project’s implementation.

BMGF served a critical enabler in both countries, as did **USAID** in Uganda, by providing both funding and technical support for the approach to be implemented, monitored, and scaled up. Immunization partner organizations, such as **WHO, UNICEF,** and the **Clinton Health Access Initiative (CHAI)** were also important enablers. One of the key methods the project used to sustain implementation of the RED-QI approach in both countries was to include QI processes and tools in national EPI guidance documents and training curricula. As WHO and UNICEF were important partners who helped influence and develop

national immunization policies and guidance, their buy-in about the approach was necessary. In Uganda, over time, CHAI and UNICEF both helped expand the use of certain components of the approach. For example, in 14 districts they supported, CHAI introduced several RED-QI processes, including using problem-solving tools, conducting participatory community mapping, and engaging non-health stakeholders (NHSs) in planning and monitoring immunization services (4). Similarly, UNICEF integrated NHSs in local health program planning in 15 of the districts they supported (4).

At the sub-national level, **non-health stakeholders** also enabled the successful scaling up of RED-QI practices in districts where the approach was implemented. These NHSs included both local administrators, such as chairpersons of local councils and district secretaries of health, as well as community members, such as parish chiefs, religious leaders, and leaders of community-based organizations. NHSs served on quality improvement teams (QITs) in Ethiopia (known as quality work improvement teams {QWITs} in Uganda), assisting in planning, monitoring, and resource allocation for immunization programs. The role of NHSs in RED-QI and the value of their engagement with immunization programs is described more fully in the “Reflecting and Learning” section below.



These same groups – Ministries of Health, subnational immunization managers and health workers, immunization partners (including donors), and non-health stakeholders – would also serve as gatekeepers and enablers of the approach in other countries.

Executing: To what extent was the intervention effective in accomplishing its objectives according to the theory of change/logic framework?

The theory of change used by the projects in the two countries was that, if critical resources and a functioning health infrastructure were in place, implementation of the RED-QI approach would result in better planning of immunization sessions, improved quality of services and of data for decision-making, improved utilization and sustainability of RI services, and increased equity of service provision through a greater ability to identify and provide services to underserved communities (5). There are extensive data describing the effectiveness of the RED-QI approach in accomplishing its objectives. Selected findings from both Ethiopia and Uganda are summarized below.

In **Ethiopia**, a review of supportive supervision data, an evaluation of baseline and summative data from 2014-2018, a mid-program review, baseline and endline coverage and serology surveys for the initial three program districts, and PDSA operational research demonstrated improvements in planning for immunization services, improvements in the reach of all eligible targets with vaccination services, health staff with greater capacity to provide and manage EPI services, and improvements in immunization data and use (6).

Improved planning for immunization services:

Table 3: Facilities with complete micro-plans (out of facilities visited at least three times) in UI-FHS (Universal Immunization through Improving Family Health Services) supported areas, 2014-2018

| Administrative level | Baseline | Endline |
|----------------------|----------|---------|
| District (N=84) | 14% | 89% |
| Health Center (N=97) | 8% | 93% |
| Health Post (N=99) | 1% | 84% |

Source: UI-FHS project monitoring data

Table 4: Facilities with a catchment area map in UI-FHS supported areas, 2014-2018

| Administrative level | Baseline | Endline |
|----------------------|----------|---------|
| District (N=18) | 39% | 72% |
| Health Center (N=37) | 46% | 76% |
| Health Post (N=73) | 49% | 77% |

Source: UI-FHS project monitoring data

Improved reach of all eligible targets with quality immunization services:

UI-FHS conducted combined immunization coverage and serology surveys in the initial three project districts at baseline in 2013 and after RED-QI program implementation in 2016. (6) Survey results from all three districts show that immunological protection from tetanus significantly increased from 2013 to 2016 (see table below). In 2016, the proportion of children with serologic protection against tetanus ranged from 79-99% among survey woredas. As such, results indicate performance improvement (and improved reach) of the routine immunization system from 2013 to 2016 in all three districts.

Table 5: Tetanus antibody levels, vaccination coverage (Penta3) and administrative report among children 12-23 months of age by the time of the survey in three Ethiopian districts, 2013 and 2016

| Woreda | Tetanus (sero) protected (≥ 0.05 IU/mL) (%) | | Documented [†] coverage (%) | | Crude ^{††} coverage (%) | | Administrative ^{†††} report (%) | |
|------------------|---------------------------------------------------|------|--------------------------------------|------|----------------------------------|------|------------------------------------------|------|
| | 2013 | 2016 | 2013 | 2016 | 2013 | 2016 | 2013 | 2016 |
| Arbegona | 73 | 84* | 36 | 29 | 40 | 59 | 98 | 102 |
| Assaietta | 60 | 79* | 27 | 28 | 35 | 46 | 79 | 109 |
| Hintalo Wajerate | 94 | 99* | 83 | 66 | 85 | 87 | 95 | 89 |

* Results in 2016 statistically significant from 2013 (p-value < 0.05) by McNemar test

† Documented coverage = percent of 12-23 month olds with 3 doses of pentavalent vaccine given no younger than 39 days of life as recorded on the vaccination card or in the health facility register

†† Crude coverage = percent of 12-23 month olds with 3 doses of pentavalent vaccine as determined by vaccination card, health facility register, or parental recall

††† Administrative coverage = proportion of 12-23 month olds with 3 doses of pentavalent vaccine as reported by the WHO Joint Reporting Form and the Ethiopian Ministry of Health

Table 6: Facilities with defaulter tracking mechanism in UI-FHS supported areas, 2014-2018

| Administrative level | Baseline | Endline |
|----------------------|----------|---------|
| Health Center (N=37) | 70% | 89% |
| Health Post (N=73) | 63% | 89% |

Source: UI-FHS project monitoring data

Also, with technical assistance in planning from UI-FHS, the number of health centers providing immunization services in UI-FHS districts in the SNNPR region nearly quadrupled, rising from 28 to 106 during the intervention period.

Health staff with greater capacity to provide and manage EPI services:

Over the course of implementation, districts improved their average scores on an EPI performance checklist by 49%, demonstrating improvement across broad categories relating to micro-planning, vaccine management, community involvement, and data quality, management, and use. These improved scores suggest that on-the-job coaching and other supportive supervision activities improved EPI process indicators.

In addition, missed opportunities to vaccinate for measles decreased by 71%, reflecting strengthened health worker capacity to properly screen children for timely vaccination. (6)

Improved data quality and use:

Table 7: Facilities with consistent Penta3 data across all reporting tools

| Administrative level | Baseline | Endline |
|----------------------|------------|------------|
| Health Center | 42% (N=12) | 90% (N=21) |
| Health Post | 52% (N=27) | 64% (N=47) |

Source: UI-FHS project monitoring data

Table 8: Facilities with a quality improvement team (QIT)

| Administrative level | Baseline | Endline |
|----------------------|----------|---------|
| District (N=18) | 17% | 100% |
| Health Center (N=37) | 43% | 89% |
| Health Post (N=67) | 39% | 78% |

Source: UI-FHS project monitoring data

Quality improvement teams used QI tools and processes to break down problems in immunization service delivery and management, tested possible solutions, and used data to make decisions.

Table 9: Facilities whose QITs use data to improve routine immunization

| Administrative level | Baseline | Endline |
|----------------------|------------|------------|
| Health Center | 30% (N=40) | 65% (N=83) |
| Health Post | 26% (N=47) | 42% (N=67) |

Source: UI-FHS project monitoring data

In addition, a key component of the RED-QI approach is engaging with non-health stakeholders in planning, monitoring, and resource allocation for routine immunization, described in greater detail in the “Value and Relative Contribution” section below. Data support the benefit of this component. For example, in the Developing Regional State of Gambella, Itang District had experienced many challenges with its RI program, including poorly defined plans and frequently cancelled vaccination sessions due to budget constraints. With the implementation of the RED-QI approach there, a detailed micro-plan was developed, and district officers were trained in how to advocate for increased immunization funding with the district’s civil authorities. As a result of this engagement with authorities, the district administrative council covered budget gaps for key immunization activities, including funding for 156 outreach immunization sessions (57% of outreach sessions) at 13 sites providing services to remote populations (7).

RED-QI program data likewise demonstrated similar positive results in **Uganda**. For example, a central component of the approach is conducting bottom-up micro-planning and mapping, a community-informed process that engages both health service providers and community members. This approach helped improve the equitable delivery of immunization, significantly increasing both the identification of communities needing vaccination and the number of communities reached with RI services. **By the end of the project in 2019, there was a five-fold increase in the number of health facilities with updated micro-plans and a 42% increase in the number of communities reached with RI services, representing 1,241 additional villages across 10 intervention districts (8).**

A separate assessment of six districts in two regions of Uganda found that micro-planning contributed to large increases in the number of RI sessions scheduled and actually conducted. **In two districts, for example, there was a 139% increase in the number of RI sessions planned, from 1,793 in April 2016 to 4,284 by April 2018. The number of sessions actually conducted more than doubled, from 1,346 to 2,758 (9).**

“Before micro-planning, I’d just go and vaccinate. But then with micro-planning, I put a question to myself. ‘I haven’t reached my target. Why?’...I realized we had a big dropout rate, and we had to sort out denominators.” (7)

—Health facility manager, Uganda

Better estimates of target populations and the identification of hard-to-reach areas also contributed to more efficient planning. Along with the doubling of immunization sessions planned, the number of sessions actually conducted also more than doubled, with 2.3 times as many sessions conducted by the end of RED-QI introduction compared with the beginning in 10 intervention districts (8).

Similar positive results were demonstrated in an assessment of six districts in two regions of Uganda. The assessment found that in the districts studied, micro-planning at the health facility level led to the identification of additional communities as well as the provision of RI services to them. **For**

example, in two of the six districts, there was a 68% increase (from 1,059 to 1,776) in villages identified and a 60% increase (from 774 to 1,237) in villages actually reached with RI services from baseline to endline (9).

The RED-QI approach introduced activities to help health personnel and community members to understand how immunization data available to them could be used in meaningful ways. The child register, a tool for identifying by name and location those children needing vaccination, was reorganized by village (based on the mapping done for micro-planning) so that health workers could quickly identify underserved communities and provide village health team members with lists of children requiring follow-up. To reinforce the importance of recording information in the child register, JSI introduced a step for health workers to reconcile the data recorded in tally sheets and child registers after each immunization session. These efforts to improve the utility and quality of data reduced discrepancies between data recorded in the tally sheets and that which was sent to higher levels in the monthly summary report from 56% at baseline to 26% at the end of the project in ten intervention districts (7). Similar reductions in data discrepancies were seen in an assessment of two intervention districts where, in a two-year period, discrepancies in DTP3 doses recorded on child registers and tally sheets fell from 50% to 11% (9).

As in Ethiopia, JSI in Uganda actively involved non-health stakeholders in immunization and built the capacity of health personnel to communicate and advocate with them. The involvement of local leaders and civil authorities with district



health teams led to increased financial, in-kind, and social/political support for RI in more than 20 districts that JSI supported. Specific examples include the allocation of local resources to purchase fuel for refrigerators to help ensure uninterrupted immunization services; funding for transporting health workers to outreach sites; funding to extend outreach sessions to formerly unreached villages; in-kind donation of a motorbike to transport health workers to immunization outreach sites; and a District Commissioner engaging with resistant communities to encourage their use of vaccination services (7).

How do you capture the value of execution according to the model, but also the need to be responsive to what you are learning along the way?

Information that addresses this question is found in the “Value and Relative Contribution” and “Adaptability” sections below.

Reflecting and learning: What lessons were learned or applied throughout the scaling up process? How were these captured?

Numerous lessons were both learned and applied during the course of scaling up the RED-QI approach in both Uganda and Ethiopia. Learning was gained through on-going monitoring of the approach’s implementation, regular review meetings, program assessments, field visits of project technical staff, and an operating principle of being flexible and open to adapting the model as needed (itself a lesson).



A significant lesson both learned and applied in Uganda and Ethiopia was the value of the innovative approach of non-health stakeholder engagement with the immunization program. A description of how this was implemented in both countries and the benefits derived from this practice is in the “Value and Relative Contribution” section below.

One of the key lessons learned during the scaling up process in both countries was about the optimal period of time for the RED-QI process to be introduced and supported by project staff in districts (5). In Uganda, this was originally expected to take 13-20 months per district. However, experience from implementation indicated that it

required 20-24 months, depending on the strength of each district’s health system. “The RED-QI assessment in Uganda found that this extended period was needed for health personnel to first become familiar with the concepts and tools, then actively engage in using them, experience early successes, and finally develop confidence in using and adapting the tools to their routine activities. For RED-QI activities that engaged non-health stakeholders in local resource mobilization and advocacy for RI, it took time to build trusting relationships and effective communication between health and non-health actors.” Also, for district officers and health workers, initially there was little quantitative evidence to persuade them to change their existing activities and adopt the RED-QI approach instead (e.g., switching from traditional district-based and district-owned microplanning to facility-based microplanning).

A very similar lesson came during the scaling up process in Ethiopia (9). Evidence from districts suggested that a minimum timeframe of 18 months was needed for a critical mass in any location to grasp, value, and become advocates for QI methodologies, up from an original planned minimum of 13 months. As a result, the project in Ethiopia revised its work plan to incorporate an 18-24-month timeframe in most districts. However, in the “strong” districts (i.e., districts with high-functioning immunization programs), the implementation period was 13 months due to budget constraints and the FMOH’s request to work in as many districts as possible.



Another key lesson common from Uganda and Ethiopia was the value of both viewing the approach as flexible rather than as a fixed design from which they could not deviate and of ongoing learning on the part of project officers during scale-up. Key informant interview respondents from both countries described this perspective and how they used it.

“Learning should be a continuous and integral part of any intervention. Districts in the last phase (of scale up) performed much better compared with the districts in the first phase. We were learning along the way and perfecting the approach... Sometimes if you are too rigid, you become a prisoner of your own ideas. Be willing to learn and unlearn. Along the way, you keep modifying, so by the time you reach the end, in most cases, if you are open-minded, you will likely have a better product than when you started.”

—Project Officer, Uganda

As a result of this flexibility, several important changes were made to the approach as implemented in Uganda. For example, the aspect of engaging with non-health stakeholders was strengthened in later-phase districts when positive results of this practice, such as increased resource allocation and local problem-solving, were seen in the earlier-phase districts.

This same lesson was noted by Ethiopia respondents. A project technical officer from JSI/Ethiopia described a key principle of the RED-QI approach there as “learning by doing” – that they continuously reviewed and monitored implementation as a means of improving performance and tailoring the approach to the local context. Working from this principle of continuous learning allowed the project to make changes, such as providing additional follow-up coaching to district officers after a training on micro-planning and prolonging orientation about the approach and support as it was implemented in Developing Regional States (DRSs).

Another lesson applied in both countries: Positioning QI practices as a means of helping to operationalize the RED strategy, which was a familiar and well-accepted model, was perceived as helping to promote the uptake of the QI practices (7). In Uganda, QI methods and tools were appreciated when seen as strengthening existing, familiar processes rather than promoting new, complicated activities which added to workloads. In Ethiopia, this same lesson was applied during scale-up by keeping familiar terms, such as supportive supervision, rather than changing the name of the revised practice to “coaching” or “mentoring.” Likewise, the project used existing committees comprised of health workers and community members rather than forming new committees to engage non-health stakeholders in immunization planning and support (4). In both countries, the lesson was that there was value in fitting the approach into an existing system and set of practices rather than creating an unfamiliar and parallel system.

A fourth key lesson applied in both Uganda and Ethiopia was that QI tools and processes could be expanded for use beyond the immunization program alone. In both countries, activities such as bottom-up micro-planning and community engagement, as well as the use of the fishbone analysis problem-solving tool, were applied to other health programs (e.g., family planning, antenatal care, nutrition, HIV prevention services) after first being tried and found to be effective in EPI.

A fifth lesson related to the timing of the approach’s expansion in the two countries. In Uganda, JSI used a phased approach of introducing RED-QI initially in two districts in the country in 2015, then in four districts one year later, and then in an additional four districts in the following year. Ethiopia used a similar process, scaling up in a multi-year, phased approach in each region. JSI credits this **step-wise introduction** as allowing the team to capture emerging learning, improve their own skills, and modify RED-QI to make it more effective and responsive to context. While the basic elements of RED-QI did not change, the ways in which they were carried out evolved (8).



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Additional specific lessons were learned during expansion of the approach in each country. For example, by mid-way through the project in **Uganda**, JSI realized that immunization program performance varied across health facilities that showed similar profiles in terms of staffing, size, and available resources. The main difference was in the **leadership, management, and accountability** capabilities of facility managers. Therefore, JSI developed a program to build their skills in these areas by first seeking advice from the managers of high-performing facilities as to key practices, then providing initial orientation and continued follow-up support to managers from another 121 facilities across eight districts.

JSI broadened its approach to supportive supervision in Uganda from initially involving only immunization staff to **whole site engagement** that included all health personnel at the health facility. Broadening the understanding of

immunization among all staff helped build competence in immunization and reduced the negative impact of frequent staff turnover. Noted a health facility manager in Uganda, “Everyone in the facility knows what is going on in immunization. (Previously) RI was just seen as the midwives’ job. Whole site engagement did wonders for us...It has helped us sustain our practices.”

In Ethiopia, the need to “lighten” the project activities and RED-QI processes as it was scaled from pilot districts to additional districts was also learned and applied. The project built its learning on QI approaches and implementation from its on-ground experience as well as from other BMGF grantees. Lessons from grantees emphasized that quality improvement should be continuous, locally owned, participatory, flexible and context-specific—and if scale was planned – designed lean enough to spread through local agencies (10).

One early step the project in Ethiopia took to lighten the approach as it was scaled was to create an internal “essential activities list” for RED-QI at the health post, health center, and district levels (the three levels where the approach was implemented). This same exercise was then conducted with district health officers to help determine which QI elements were essential. One outcome of this analysis was agreement that RED-QI was light if it was implemented using existing government resources (time, staff and funds) and if it fit within the time-availability of staff, was within the capacity of health staff, did not require costly equipment, and did not require routine external funding (10).

The project in Ethiopia made several specific changes to lighten the approach as it was scaled up (9). These included:

- **Streamlining rapid assessments:** In the three pilot districts, the project conducted extensive rapid assessments (including key informant interviews with stakeholders) in each district to develop a deep understanding of the district and context. However, the process took more than a week to conduct and several weeks to analyze the collected data. To lighten the process during scale-up, the project designed and used a situational analysis process instead, generating information for districts in far less time.
- **Developing a standardized EPI checklist:** The project moved from having health workers create their own EPI checklist to using a standardized checklist as the original process of creating their own checklist was too lengthy and produced similar results.



- **Clustering of project districts:** Rather than selecting intervention districts throughout a region, the project clustered RED-QI districts geographically. This enabled the regional team to be more efficient with their travel time and resources and provided additional opportunities for the approach's implementation and experience sharing.
- **Adjusting exchange visits to model districts:** Peer-learning exchange visits initially occurred by sending health staff to a single model district (which may have been in a different region of the country). Due to high costs, this approach was changed to creating opportunities to learn from other districts in the same region or zone and reduce the number of participants for exchange visits to a maximum of 10.
- **Staffing decisions:** During the pilot phase, one project staff member was based in each district to support RED-QI implementation. As scale-up was planned, the project recognized they needed to reduce the amount of support provided and focus more on skill-building of the health system personnel. Therefore, project staff were moved to the regional level, and the ratio of their support changed from one staff person per district to one staff person per five districts (in those with medium-to-strong health systems), and one staff person per three districts in those with comparatively weaker health systems.
- **Training of health officers:** The project built the capacity of district/regional health staff as trainers to team up with project staff to conduct project trainings. Adding these trainers allowed districts to more quickly implement RED-QI, while building local capacity and, most importantly, increasing sustainability of the approach through the active involvement of key government staff.
- **Reducing the number of quarterly review meetings (QRMs) to support:** The number of project-supported QRMs in districts was decreased from four to two per year, focusing on quality rather than frequency to help encourage local uptake and accountability.
- **Incorporating learning sessions into QRMs:** In the initial design of the RED-QI approach, each district would have separate "learning sessions" to discuss data from Plan-Do-Study-Act (PDSA) cycles and share lessons learned. This was unsustainable as a separate activity; the project needed to integrate the data review and discussion process into an

existing activity. The QRM presented the opportunity for integration, as it was a forum to share data and lessons learned.

The project in Ethiopia also applied the lesson of **providing follow-up support** when needed. For example, in the developing regional states where district officers were not accustomed to creating an EPI micro-plan, project staff found it was necessary to provide a follow-up visit after the original micro-planning training to help district officers finalize the plan. Although the training was for four days, the concept was new to officers, so most districts were unable to complete a micro-plan, or they needed additional time to collect information to fill it out correctly. As such, the follow-up visit, which provided individualized capacity-building, proved to be critical.



In addition, the Ethiopia project applied the lesson of **providing written resources** to health workers. Recognizing that a comprehensive approach like RED-QI had many different components, the project found it necessary to design a series

of job aids to support health workers to implement the approach. These job aids included a how-to guide for the provision of mobile immunization services, a QI process job aid, guidelines on updating EPI micro-plans, and a data triangulation job aid.

Planning and implementing mobile

sessions: In developing a tailored model for pastoralist districts in Ethiopia, project staff recognized the need for mobile immunization sessions to reach large segments of the target population. Mobile services were almost exclusively implemented by partners and run through the regional health bureau (RHB), not at the district level. The project found that districts had very limited capacity to plan and implement mobile sessions. Therefore, the project developed guidelines (including the how-to guide) for districts and designed a separate activity to help districts plan and implement mobile sessions.



Sustaining: What needs to be in place in order to sustain the RED-QI approach beyond the program inputs?

Critical components of a health system that affect sustainability of an approach beyond program inputs include having enough health care workers and a reasonable workload for them, reducing staff turnover, providing sufficient funding to cover costs for implementing micro-plans and outreach and mobile sessions, and providing a steady supply of vaccines (i.e., few or no stock-outs) and functioning cold-chain equipment (8).

In addition to these components, the following activities supported sustainability of the RED-QI approach (9):

- Positioning QI practices as a means of helping to operationalize RED, a well-accepted and familiar strategy
- Acquiring the buy-in and support of the Ministry of Health for the RED-QI approach and practices
- Working with the Ministry of Health to institutionalize key aspects of the approach by incorporating some components of RED-QI into national EPI guidelines, immunization reference materials, and training curricula
- Simplifying and streamlining some of the RED-QI tools so they are less complex and labor-intensive
- Providing RED-QI refresher trainings and reinforcing new skills and practices introduced by RED-QI during supportive supervision visits, on-the-job mentoring, and quarterly review meetings
- Building the capacity of sub-national officers and facility-level managers in leadership, management, and accountability skills
- Engaging with external advisory groups to share updates on implementation of the RED-QI approach and hear their ideas and inputs



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Also, as noted in the “Reflecting and Learning” section above, by working to enhance the existing RI system rather than creating a parallel system, the approach was designed to improve the likelihood of sustainability in both countries. “This meant introducing interventions that adapted or optimized current health system structures and processes: for example, asking existing community groups to serve as quality improvement teams (QITs), and adding QI methodologies to current microplanning to address barriers to service provision such as resource gaps for outreach services.” (4) KII respondents in Ethiopia described this same idea. Several said that the QI processes have become common practice by now and that QI activities have been integrated into the health system. “It was not a new program with a new system. It’s a project that embedded itself within the existing platform,” said a former national EPI manager. Another respondent, an MCH coordinator at a Regional Health Bureau in Ethiopia, noted: “There’s nothing new introduced that involves resources or technologies. They’re just refining tools and ways of doing things, which makes it more likely to be sustained.”

Key informant interview respondents from both Uganda and Ethiopia were unanimous in thinking that the RED-QI approach is sustainable. The key reasons noted by Uganda respondents that lend themselves to sustainability included:

- The approach **not needing extra funding** (“It did not need or bring in a lot of financial resources or equipment, like fridges and motorcycles,” said a district medical officer. Similarly, a district clinical nursing officer noted, “What I loved about the RED-QI approach is that it didn’t focus a lot on money. Because we were able to find ways, innovate ways, of how we could do things with the resources we had.”)

- The **skills and knowledge** gained by health workers and EPI officers through capacity building during workshops, supportive supervision, mentoring, and practice of RED-QI processes. (“It is sustainable because people now have the skills,” said a health facility manager.)
- The practice of including all health workers in RED-QI capacity building activities was seen as helping to sustain effective practices despite high staff turnover: (“**Whole site engagement** has really helped. Everyone in the facility knows what is going on in immunization. Before, RI was just seen as the midwives’ job...I have used support staff to do follow-up with children who had missed their vaccination. It has helped us sustain our practices,” said a health facility manager.)
- Several respondents also cited **non-health stakeholder engagement with the immunization program** through Quality Work Improvement Teams, bottom-up micro-planning, supportive supervision, and advocacy as helping RED-QI gain support and promoting local ownership of the program, rather than relying on external help. This engagement among health workers, government administrators, and local community leaders around problem-solving and planning was described as empowering and encouraging of sustainability of the approach.
- **Application of RED-QI practices in other programs** was noted by multiple respondents as helping to ensure sustainability of their use. Examples include using the PDSA cycle and microplanning in family planning services and using catchment area mapping, target-setting, and defaulter tracking in antenatal services.

A former EPI manager from the FMOH in Ethiopia singled out the Universal Immunization through Improving Family Health Services (UI-FHS) program’s methods of practicing transparency and effective collaboration with the FMOH as helping to sustain RED-QI. “I would like to mention about the good practice and partnership of UI-FHS with FMOH. UI-FHS has created a regular and consistent communication channel within MOH. (This) creates more awareness and ownership by the MOH. So that when the project phases out, the MOH is in place. This is a good practice by UI-FHS.”

Are there specific components of the approach that have been sustained whereas others have not?

In Ethiopia, a sustainability study in two regions assessed the status of RED-QI activities roughly 13-17 months after the end of direct technical support (11). They found that quality improvement teams (QITs) and QIT meetings have continued to function. These teams, comprised of health workers and community members, focus on immunization and conduct PDSA cycles, trace defaulters, and obtain community input on immunization program planning, including optimal location and time for vaccination outreach sessions, and problem-solving.

However, QI tools themselves (e.g., PDSA cycles, fishbone analyses) were considered complex and difficult to implement at the facility level without support from supervisors, some of whom had trouble with them as well. Use of these specific tools by QITs during their meetings had reduced or stopped after direct support ended. **Thus, QITs still focused on problem-solving and continuing collaboration with the community, but without the use of the tools or formal documentation of their work.**

The study also found that solutions put into place through QI problem-solving processes were sustained. For example, outreach sites established in underserved areas remained, though at times there were budget constraints; defaulter tracking, enabled by community participation and engagement of QITs, continued; and facility-level micro-planning.



All respondents also described how specific components were less well sustained. For example, a district medical officer in Uganda, where technical assistance from JSI had ended 18 months prior to the KIs, noted, “There are a few things that haven’t been done consistently or been sustained well: PDSA, data quality assessments, some quarterly review meetings (QRMs). Some things are limping.”

What factors were barriers in sustaining the RED-QI approach or components of the approach?

Challenges to the adoption and sustainability of RED-QI practices were largely rooted in the context of the health system (5). Staff turnover was a key impediment to the uptake and continuation of RED-QI practices, with limited handover of knowledge and skills from those who had received orientation (to those practices) to new staff who had not.

“Understaffing and shortage of time for all assigned activities and responsibilities was a second key factor that discouraged health workers from spending time on major activities related to RED-QI – especially lack of time required to do (some of the) more complex activities such as PDSA cycles... Health managers and health workers reported widespread low motivation, low commitment to quality, and poor linkages across government structures,” all of which served as barriers to sustaining the RED-QI approach and its components.

In both Uganda and Ethiopia, health personnel noted the complexity of the initial versions of micro-planning tools, citing both their length and the technical concepts they present. This made it challenging for health workers to update the micro-plan routinely, particularly at the sub-district level, and required ongoing support from supervisors.



“Additional health system issues, such as limited funding for outreach and mobile services and vaccine stock-outs, negatively affected the ability of health workers and managers to implement RED-QI in both countries. These obstacles limited the impact of the local problem-solving promoted by the RED-QI approach.”

Political instability also was a barrier to steady implementation of the approach. (11) In some program areas in Ethiopia, for example, political insecurity disrupted health services altogether for several months. This required technical and financial support for the RED-QI approach to be started up again after the political situation was resolved.

All respondents in Ethiopia described challenges to sustainability. These included:

1) commitment and ownership of the approach at all levels; 2) accountability of the system to address the needs/issues raised by the community and to create an enabling environment for health workers and supervisors; and 3) staff turnover, requiring on-going training and capacity-building about RED-QI processes and activities for new staff. At the same time, two respondents noted that staff turnover can help QI activities be sustained. “Turnover could actually help with sustaining and spreading practices of RED-QI” when trained staff are transferred to a new work site, said a Regional MCH Coordinator.

KII respondents in Uganda also noted challenges to ensuring sustainability of the overall approach or of individual practices. Several respondents cited the need for on-going capacity building about the QI practices. For example, “A lot of training, monitoring, and mentoring is still needed for it (the RED-QI approach) to really take hold,” said a district senior nursing officer, noting that the MOH and districts should be doing this. A project technical officer suggested that the likelihood of sustainability would increase if the approach was “lightened to keep key components that are critical to affect the change desired,” listing bottom-up micro-planning, NHS engagement, and data review as key activities. A third respondent, a district medical officer, noted that perception about the practices was also critical to their sustainability. “It is important that people see this as an approach rather than a project that you only practice during the implementation period.”

Is there sustained funding? Any donor sources available? Were other partners engaged, links with GAVI?

While both CHAI and UNICEF in Uganda carried on certain RED-QI activities after JSI support had ended, the majority of KII respondents in Uganda who were asked this question were uncertain whether there was sustained funding for the approach (e.g., “No specific funding that I know of” and “Not very certain”). However, one respondent, a senior medical officer at the MOH, noted that “Gavi funds are available to support the approach.”

Nearly all the respondents in Uganda noted that what was needed as much as sustained funding is agreement among immunization partners on a common approach to strengthen routine immunization to support nationwide.

“What is key for better compatibility is that partners should harmonize the RED-QI delivery package to districts to avoid confusion and duplication. We just need agreement that all partners going to the districts use the same approach – it would be good at the national level to agree on one approach, to standardize an approach to avoid parallelism. It’s up to the national level and partners to have that agreement.”

–Senior medical officer, national level, Uganda

KII respondents in Ethiopia were not aware of sustained funding specifically for implementing the RED-QI approach after JSI’s support ends in 2021. As noted elsewhere, however, most respondents said that using the RED-QI approach is not expensive. Several respondents suggested that if districts and health facilities developed effective budgets as part of their micro-planning, and if those budgets were approved and funded accordingly by the government, then there should be adequate funds to sustain RED-QI processes.



Objective 2: Identify components of RED-QI that worked well, have been most highly valued, and are more “scalable” and sustainable.

Evidence strength and quality: What are the perspectives of program staff and other immunization partners in each country about RED-QI’s evidence for achieving desired outputs?

From the perspective of respondents to key informant interviews in both countries, there is tangible evidence that the RED-QI approach achieved desired outputs. For example, multiple respondents in Uganda cited positive changes in indicators that they felt demonstrated the approach’s effectiveness, such as 1) an increased proportion of health facilities with completed and more action-oriented micro-plans, 2) an increased number of underserved communities identified and provided with EPI services, 3) improved data consistency and reduced data discrepancies between various data tools, and 4) capacity-building for health workers and district officers in 25 districts.



“I would just like to appreciate whoever is behind this approach. Because personally it is something that I saw with my own eyes change the status quo. This is an approach that I believe in, it works. And it has helped us to think, it has helped us to innovate, and it has helped us to do things better.”

–Health facility manager, Uganda

Likewise, from the perspective of Ethiopia KII respondents, RED-QI has been able to achieve its objectives. Again, they pointed to improved micro-planning, increased community engagement in planning, and improved EPI service delivery as evidence. “If you implement RED-QI components, you’re able to have services that are affordable, equitable, and of quality,” said a project officer, noting these were the approach’s objectives. Several respondents attributed increased immunization coverage in certain areas to implementation of RED-QI, even though that was not an objective of the approach and cannot be assumed to be the direct result of the approach alone.

When respondents in Ethiopia were asked what evidence or data they used to determine the approach’s effectiveness beyond immunization coverage, responses included: 1) an increased number of health centers providing routine immunization services (due to improved planning and more accurate target population estimates), 2) fewer measles outbreaks in intervention areas, 3) the increased number of micro-plans developed at health facilities, 4) minutes from quality improvement team meetings (which described discussions about EPI problems and proposed solutions), and 5) improved EPI data quality.

Respondents to key informant interviews for a sustainability study of RED-QI in two regions of Ethiopia also described evidence of the approach’s effectiveness (11). Many respondents noted specific aspects of the RI system that had improved: planning for and implementing immunization sessions designed to reach underserved populations; community engagement (which helped to improve understanding of immunization and dispel fears, raise demand, and identify remote communities needing services); collaborative problem-solving during quality improvement team meetings; and improved data recording

and using data more regularly. Both health workers and managers also described improved management abilities gained from the RED-QI approach, such as making more data-driven decisions on specific aspects of managing the EPI program (e.g., targeting which health facilities needed extra support), managing the cold chain and vaccine supply requests, or identifying important issues to discuss in regular meetings (11).

“I feel using RED-QI tools was helping us and improved the quality of EPI service. For instance, RED-QI tools address follow-up of the children who are taken the first dose of routine immunization, but not come back for the second dose of vaccination. These tools did a big job because we now got knowledge: how we can use the quality improvement team community representative to call all children who are not coming back to EPI service, and also we used this committee of community representatives to raise community awareness. Another important job that RED-QI tools helped us...the monitoring chart was showing us if Penta3 and measles are low, then we search for the root cause of these problems...”

—Somali health facility staff member in Ethiopia (11)



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Adaptability: In what ways has RED-QI evolved since its original design? How is adaptation considered as a part of any future scaling?

Adaptation of RED-QI to the local context was inherent in the approach's design in both Ethiopia and Uganda. As noted in the “Reflecting and Learning” section, project officers in both countries were willing to “learn and unlearn” over the course of several years of implementation, and be flexible and willing to modify the approach based on what they were learning. There are numerous examples of changes in the approach or in specific components used in the course of implementation, changes based on local human and financial resources, health system infrastructure, the time-availability of health workers, health worker capacities, and observations and feedback from officers and health workers who managed and implemented the approach.

In Ethiopia, as described above in the “Reflecting and Learning” section, there was a great deal of adaptation of the RED-QI model. One key aspect of this adaptation was lightening the approach during scale-up while keeping the QI elements that were considered essential. Briefly, this was achieved through:



- Adjusting exchange visits to model districts by selecting districts in the same region or zone for these visits and reducing the number of participants
- Increasing the ratio of project staff to support RED-QI implementation from one per district to one per five districts
- Building the capacity of district and regional health staff as trainers to work with regional immunization advisors to conduct project trainings
- Keeping QI capacity-building at higher levels of the health system in districts with extremely limited health system/immunization infrastructure
- Clustering of project districts within regions to reduce travel by managers and costs

- Reducing the number of quarterly review meetings (QRMs) to support from four to two per year and incorporating learning sessions into these meetings (rather than having separate learning sessions)
- Removing support for duplicative trainings
- Developing a standardized EPI checklist rather than having facility-specific checklists
- Streamlining rapid assessments
- Providing follow-up support to RED-QI activities (e.g., assisting district officers with completing an EPI micro-plan after officers had attended a workshop on micro-planning)

In addition to lightening some of the original components, other adaptations to aspects of the model were made based on lessons learned. For example, the **process of developing an annual EPI micro-plan** was modified to include community members in the first two days of planning. The community members helped with catchment area mapping, identifying travel routes for nomadic communities, and helped determine where and when outreach and mobile sites should be conducted.

Also, as the project in Ethiopia evolved, **many updates were made in curricula** for the supportive supervision training, microplanning training, and overall RED-QI training. These adaptations moved the trainings from a focus on information-sharing to a focus on skills needed to strengthen the RI system, using adult learning principles. Each training session also was used as an opportunity to reinforce QI concepts.

The project adapted its implementation plan to reinforce sustainability from first entering into a district. Each district signed a **memorandum of understanding (MOU)**, in which they agreed with UI-FHS on activity sharing and planning for sustainability of processes. The project changed the timeframe for “joint action planning” so that it occurred earlier in the period of JSI’s support, thus allowing for the final six months to be a transition period in which JSI provided minimal technical support.

In Ethiopia, the project was scaled up to 50 new districts in six regions, including in the developing regional states of Afar, Benishangul-Gumuz, Gambella, and Somali in 2015. This required project managers to design a modified RED-QI approach specifically for use in nomadic areas and low infrastructure districts. The focus of the adapted design was on capacity-building at each level of the health system; supporting district health officers with EPI microplanning with specific session planning for static, outreach, and mobile services; practical training and planning for supportive supervision; and managing the cold chain. In the majority of these districts, the project supported district officers to establish and provide ongoing routine immunization services. QI tools and processes were implemented largely at the district and primary health care unit levels, but not at the health posts (the lowest administrative level for health services).



The approach was additionally adapted for providing support in a few districts (at the request of the Regional Health Bureaus) where the capacity of the health system was determined to be too weak to implement quality improvement methods. In these districts, the project focused on building the capacity of health workers to implement the RED strategy and supporting planning to lay the foundation for routine immunization in the districts. Thus, the focus was on helping to establish a system, rather than on improving the quality of an existing system.

In addition, JSI realized it needed to utilize existing community groups to create Quality Improvement Teams (QITs), particularly at the lowest levels, and that these QITs needed to be led by health program staff rather than by UI-FHS staff. The trade-off of this modification was that UI-FHS staff were not available to answer QI questions and improve processes, but having UI-FHS staff engaged in any QIT was not sustainable.

Several Ethiopia KII respondents noted that adaptation and modification of RED-QI processes and tools were perceived as a key aspect of how the approach was implemented there. A project officer in Ethiopia described that it was necessary to lighten the approach in some areas because “districts and health facilities vary greatly in strength and infrastructure and health manpower and other logistics.” As noted earlier, adapting the approach took the form of lengthening the planned duration of support, using existing community health committees rather than creating new ones, and using accepted terminology rather than introducing new names for practices (e.g., supportive supervision rather than renaming it as “mentoring”).

The encouragement or support for local adaptation of the approach was viewed as coming from both the government health system at all levels (federal, regional, and district) as well as from JSI project staff.

In Uganda, the project also modified the approach in numerous ways. For example, it added capacity-building for health facility managers on key leadership, management, and accountability skills, addressing gaps in these abilities; established model health facilities for peer learning; lengthened the period of the approach's implementation from an initial 13-20 months to 20-24 months; provided supportive supervision to all health workers in a facility, not just those who conducted immunization activities; engaged non-health stakeholders in supportive supervision visits to strengthen collaboration with communities; and, as in Ethiopia, used MOUs so that districts agreed with JSI on activity sharing and planning for sustainability of processes .



In the Uganda KIIs, respondents described two major ways that RED-QI was adapted over the course of implementation: increasing the emphasis on NHS engagement and decentralizing quarterly review meetings from the health sub-district down to the lower sub-county level.

A project officer in Uganda described how the engagement of non-health stakeholders evolved in this way: “Engagement of non-health stakeholders was initially a very light component. During the second half of implementation, we made it a very strong component, and we made sure we did more activities with it – we realized the benefits when politicians and administrators would join in: accountability would improve, mobilization would improve, and local resource allocation would improve.”

Also during the course of implementation, quarterly performance review meetings were added at the sub-county level, one administrative level down from sub-

district, so that local leaders would participate. By conducting these meetings at this level, “We realized greater ownership,” a project officer noted. “When sub-county chiefs chaired the meetings and would make resolutions, they would take steps to ensure actions were taken to meet those resolutions.” Village health teams and parish chiefs were increasingly included in helping to plan outreach sessions and program monitoring over the course of implementation.

KII respondents in Uganda also answered this question by describing RI program practices that improved as a result of using the RED-QI approach, thus noting modifications in EPI practices rather than only in QI components. Improvements in supportive supervision practices, data analysis and use, peer learning, micro-planning, and resource mobilization were commonly cited.

Complexity: What are the perspectives of program staff and immunization program staff about the complexity of implementing RED-QI? Are there options to reduce complexity?

One RED-QI process that was considered by many to be complex was the Plan-Do-Study-Act (PDSA) cycle, a process to test solutions crafted by health workers and community members working together on local challenges. In Ethiopia, in

facilities where PDSAs were used (they were not introduced in facilities with extremely weak infrastructure and staffing), respondents reported focusing more on the Plan and Do phases of the cycle than on the Study and Act step. They reported finding great value in identifying root causes and testing out new change ideas to fix problems in immunization services or even other health services, but considered the Study step of recording and analyzing data difficult, particularly at the health facility level (4). A study in Ethiopia demonstrated that there was better understanding of the PDSA tool at the district level than levels below. Not surprisingly, those who had had training and/or support throughout the project had a clearer understanding of the PDSA tool compared with those who received less training and support (12).

“The “study” part is a bit difficult [laughter], it needs sacrifice.”

– Health Worker, health facility level, Ethiopia (12)

Multiple respondents in key informant interviews from both Uganda and Ethiopia also cited the complexity of the PDSA cycle: “This took some time for health workers to understand the application of this process. It needed more attention for them to understand,” noted a health facility manager in Uganda.

Other QI tools, such as the fishbone diagram and run charts, were considered by some in Ethiopia to be complex and difficult to implement at the facility level without support from supervisors. Use of the PDSA cycle, the fishbone diagram, and run charts by quality improvement teams (QITs) during their meetings had reduced or stopped in some places after direct project support ended.

At the same time, it is important to note that QITs still met and focused on problem solving and continuing communication/collaboration with the community, though they did so without the use of these facilitative QI tools or formal documentation of their work. **Thus, while the use of certain QI tools was not sustained due to complexity, the problem-solving and community collaboration processes engendered by the QI approach were sustained, which was the goal of the approach (10).**

Among key informants in Uganda, the most common response to the question about complexity was that data quality assessment and the documentation and regular use of data tools felt challenging to master and burdensome to practice for at least some health workers. “It takes health workers time to appreciate the significance of these practices. In most cases they lag behind,” noted a district assistant health officer, adding that “most staff lacked technical capacity to use and appreciate some data tools.” And a district senior nursing officer pointed out that “some PDSA terminologies were hard to understand by the quality work improvement team members, so a lot of effort had to be made to make people understand.”

The fishbone analysis tool for determining underlying reasons for program problems was less complicated, although the name itself was problematic for several people. “At the beginning, health workers were confused – ‘how would fish be involved in immunization?’ Once they understood the concept, it worked all right,” said a health facility senior medical officer in Uganda.

From Ethiopia KIs, the most common response to the question about complexity was that fully understanding and mastering the QI tools and processes required time and effort. A Regional MCH Coordinator noted, “RED-QI needs a



lot of time really...it's a little complicated for some of the health workers to use some of the tools the first time they encounter them. But when they try using them again and again, it will be easier, and they won't forget it again."

Options certainly exist to reduce the complexity of using the RED-QI tools and processes. As noted, the Study aspect of the PDSA cycle, which included recording and analyzing data, was considered in both countries to be difficult or burdensome by many health workers and even some supervisors. However, the project observed that staff could understand and value the PDSA cycle, even if documentation (the Study aspect) was omitted, and use the process of identifying causes of problems and trying out methods to address them in an organic way and achieve positive changes. Thus, supervisors and health workers adapted the process both to reduce the complexity and meet their needs and still benefited from its use.

Several KI respondents in Ethiopia noted that external characteristics in the country's health system added to the complexity of implementing the RED-QI approach overall. For example, multiple respondents described high staff turnover, which requires on-going training of new staff in the use of QI tools and processes, and competing priorities of health workers, which reduces the amount of time and energy they could devote to problem-solving practices and developing solutions, as adding to the challenges of implementing the approach. Other complicating factors that were mentioned included: the diverse geographic and cultural contexts where the approach was implemented in Ethiopia – including both agrarian and pastoralist regions, requiring additional adaptation of the approach to the local context – and poor infrastructure, especially in pastoralist areas.

Value and relative contribution: What components of RED-QI have been most highly valued? What is the perceived value about the RED-QI approach overall? Were there trade-offs in RED-QI implementation when scaling up?



All key informant interview respondents from both Uganda and Ethiopia were able to describe multiple ways that the RED-QI approach added value to the routine immunization program.

The most common responses were that RED-QI improved RI through the increased engagement of non-health stakeholders, bottom-up microplanning, supportive supervision using methods of mentoring and coaching, and peer-learning ("Colleagues were learning from each other, not just from an expert" said a district senior medical officer in Uganda). Additionally, respondents noted that the approach increased technical capacity among EPI managers and health workers and provided useful QI tools for staff to analyze and solve local issues. Through the use of these tools, health facility managers and health workers felt they did not have to wait for district managers to identify and solve problems, thus increasing health workers' self-reliance and autonomy. A project officer in Ethiopia described the overall value of the RED-QI approach this way: "The RED strategy tells people what to do, but not really how to do it," adding that the RED-QI approach helped them to operationalize the RED strategy.

The value placed on the RED-QI approach and on specific components by implementers of the approach is described in greater detail below:

Engagement of non-health stakeholders: Health workers and managers in both country programs described the positive aspects of RED-QI's innovative participatory approach to improve buy-in and ownership of health interventions and improve the likelihood of sustainability. "At the district level, RED-QI's collaborative approach of engaging local authorities and health managers to participate directly in activity implementation, review meetings, monitoring, and quality improvement to strengthen capacity was viewed as productive. At the health facility level in Ethiopia, the quality improvement teams (QITs) promoted increased partnership and communication with communities, and participants cited QITs as a supportive process for decision-making." (5)

This greater level of community involvement – in EPI planning and through participation in QITs (composed of health workers and community members) – was valued by nearly all Ethiopia KII respondents. The improvements they described resulting from this involvement included more accurate target population estimates, increased outreach sessions planned, local problem solving (including identifying local resources to support EPI services), and improvements in EPI service delivery. One respondent, a program officer from an immunization partner in Ethiopia, also noted, **"The biggest benefit of the (RED-QI approach) is giving the clients of the system the voice that they need to critique the system, which I think is really great."** And a project officer in Ethiopia said, "(It is) very rewarding for them (community members) to feel like they are solving problems locally; health workers also value partnerships with QITs."



Similarly, KII respondents in Uganda also described the value of non-health stakeholder (NHS) engagement. These stakeholders included both sub-national government administrators, such as the chief administrative officers, chairpersons of local councils, and resident district commissioners, as well as community leaders, such as parish chiefs and sub-county chiefs, church leaders, and members of community-based organizations. Respondents described the positive aspects of the increased engagement with NHSs in numerous ways: for example, by helping to hold technical staff accountable, supporting the monitoring of immunization services, participating in supportive supervision visits, advocating for increased funding for RI and/or providing local funds or material goods (e.g., a refrigerator, a bicycle) to support program gaps, helping to identify underserved communities, and planning for additional services, such as new outreach sites. A program manager at UNEPI in Uganda noted the long-term effect of this engagement, saying, "Involving non-health stakeholders got them to see the value of immunization and put dedicated resources to finance (it). This is more sustainable."

One Uganda respondent summarized a key aspect of the value of engagement with non-stakeholders, especially with local authorities:

"This approach did not circumvent the local government. Any approach that circumvents the local structures may face resentment and won't be well-sustained...The elected people want to be relevant. When the technical people run away with the services, the elected people become redundant...When lower local governments appreciate the implications of poor performance and their roles (in addressing it), it empowers them to take strong decisions for improvement...This has been the missing link."

– Immunization manager, MOH

The value of collaborating with non-health stakeholders, both in planning and local problem-solving, was also evident to immunization partners. For example, in Uganda, UNICEF recognized the benefits of this participatory approach and used it in 15 districts they supported. And another immunization partner in Uganda, the Clinton Health Access Initiative (CHAI), described using NHS engagement as well as other components of RED-QI in 14 districts in which they work (4).

At the same time, the increased community engagement in EPI planning was also viewed as having potentially unintended negative consequences. “You’ve equipped the community with tools to demand better (services), but if the system is not responding to what is needed, that becomes a problem,” noted a technical officer from an immunization partner organization in Ethiopia. Respondents said that the system at the levels above the service delivery level should be able to respond to those needs and have accountability. Otherwise, there is the danger that communities’ raised expectations for improved EPI services might go unmet.

Participatory mapping: “Health personnel from across all levels of the health system in both countries said that they appreciated two other concepts from RED-QI—participatory mapping of catchment populations, and use of this information to determine where to provide static, outreach, and mobile (in Ethiopia) sites for service delivery. District officials and health workers saw the presence of maps and micro-plans as strong enablers of effective implementation of RI services, especially for outreach and mobile activities. In Ethiopia, the project engaged community clan leaders in the mapping process so they could identify their small communities, their nomadic travel routes, and the best times and locations to reach these communities. Because the RED-QI approach to microplanning incorporated QI tools such as root cause analysis, problem prioritization, and problem solving, participants described it as a means for both planning to reach all communities and building health workers’ capacity for problem solving.” (5)



Microplanning: Nearly all Uganda KII respondents noted the value of RED-QI in strengthening both the quality and use of EPI micro-plans. **“Micro-planning was a game-changer,”** said a district health officer, noting that **having facilities create their own micro-plans “helped staff develop a results-oriented mindset. They then had a baseline for monitoring, a basis for analysis of performance gaps, and they developed a drive for better results. Knowledge of their catchment areas also improved the attitudes of health workers.”** Other respondents cited micro-planning as a means of empowering health workers, helping them to solve local problems based on their knowledge and use of available resources rather than relying on solutions from managers at higher levels of the system. “They feel great whenever they address a local hindrance that has been long-standing for no good reason,” noted a health facility manager in Uganda.

Likewise, Ethiopia KII respondents also noted the value of RED-QI in improving EPI planning. For example, community involvement in planning was viewed as a key contributor in developing a catchment area’s more accurate target population. “The eligible population is now (developed) through headcount rather than estimates. Conducting inventory (headcount) house-to-house...has shown that there are many more children than they thought,” said a Zonal EPI Manager. This in turn led to increasing the number of outreach sessions in many areas and providing services to more people.

Capacity-building methods: Qualitative findings from both countries indicated that health personnel valued the capacity-building methods used in the QI approach: the practical and interactive training during workshops, on-the-job mentoring, and supportive supervision. Multiple respondents mentioned training as a key enabler to successfully using RED-QI tools, including the fishbone diagram, the RED categorization tool, and PDSA cycles. The content introduced through training was reinforced through supportive supervision and other on-the-job training support. Respondents in both countries noted the need for additional reinforcement of RED-QI practices after initial training, thus affirming the value of supportive supervision and on-the-job training activities. Participants mentioned needing ongoing, consistent supervision as a key element to sustain the RED-QI process and use of RED-QI tools in the future. Health workers also reported that on-the-job training through supportive supervision and other technical support from JSI had improved their skills and knowledge for microplanning, QITs, PDSA cycles, and working with communities. Health personnel appreciated the mentorship aspect of supportive supervision because it was a change from the often punitive approach of traditional supervision, which has been compared with policing (5).

“When training is given, women health workers usually do not ask questions in training halls though they have misunderstandings. However, when they meet us during support supervision, they ask questions and we also identify many gaps they have...and then we show them on the spot. Therefore, the on-job training brings magnificent change in improving the knowledge and skill gaps of the health workers.”

– Health Manager, district level, Ethiopia (5)



Several KII respondents in Uganda also noted that the supportive supervision methods used by managers improved because of the RED-QI approach, moving from fault-finding to mentoring, on-the-job training, and assisting with finding solutions.

“The method of supportive supervision is now focused and more engaging than before where supervisors were more like police. Now there is more of a dialogue.”

–Assistant Senior Nursing Officer, District Level, Uganda

These methods were described as a means of helping health workers appreciate the application of RED-QI concepts to improve performance. Others cited the fact that supervisory visits were more often EPI-focused rather than attempts to review all programs, thus providing more support for RI-specific problem solving. The participation of non-health stakeholders in supportive supervision visits was also noted as a positive, helping them to understand and address program gaps and hold health workers and officers accountable.

Problem-solving tools: KII respondents in both countries especially noted the value of the approach in improving local problem-solving. “Having QI within the RED (strategy) – the PDSA cycle, fishbone analysis – helps health workers

identify local problems and come up with local solutions. (It) also helps open their eyes to other problems that may not necessarily be related to immunization,” said a technical officer from an immunization partner in Ethiopia, adding that “there are often underutilized resources in local communities, and using these problem-solving tools will help alleviate this.” A project officer in Ethiopia described health workers’ use of the fishbone analysis tool, saying, “They were able to dig deeper into analysis and problem-solving, which they valued.” A study of the use of QI tools in Ethiopia also reported that the fishbone diagram was felt to be simple to use and popular. It was often the first step used to identify problems among participants -- getting into the “why” behind

issues, and then how to address these once the “why” questions were answered (12). Other QI tools cited as being valued were the pareto charts (to help prioritize problems) and the run charts (to track coverage).

The use of RED-QI processes and tools for other public health programs beyond immunization was noted by multiple KII respondents in both countries, saying they had seen the QI problem-solving tools and processes used by health workers in nutrition, maternal and child health, and HIV prevention and treatment programs.

Leadership, management, and accountability training: An additional highly valued QI program component among health facility managers (“in-charges”) in Uganda was training on leadership, management and accountability (LMA). RED-QI project staff in the country had observed that in facilities where managers lacked these LMA abilities, plans were poorly developed and budgeted, infrequently referred to or monitored, and incompletely implemented. The project staff developed key content material for a one-day LMA training and trained 121 facility managers in eight districts. District



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health teams provided these trainees with further on-the-job mentorship and coaching on LMA content during supportive supervision visits (13). KII respondents in Uganda expressed appreciation for this training and viewed it as strengthening their abilities as managers.

Few trade-offs in RED-QI implementation during scale-up were described, either in existing project documentation or in the key informant interviews. One specific trade-off, however, was attributed to the large scale of the approach's expansion in Ethiopia. There it was introduced in six of the country's 11 regions, reaching more than 2,700 health facilities in 103 districts. The program was unable to directly train all health workers on RED-QI practices to scale up the approach, and thus relied on cascaded training, peer mentoring, and supervision to introduce and reinforce concepts (5). Two-thirds of the 103 districts were in settings of extremely limited infrastructure and health system capacity, with hard-to-reach areas and populations, including nomadic communities who migrate seasonally with their livestock herds in search of grazing land and water. The use of cascaded training rather than the provision of training by project staff may have resulted in a reduced level of learning and uptake of QI practices by all managers and health workers.

Categories of costs and resources: What are the categories of costs and resources needed to implement the RED-QI approach? Do stakeholders perceive the costs of QI as high or feasible? What factors need to be in place for these funds to be available?

The exact costs and resources needed to implement the RED-QI approach will vary based on the level of support needed by districts. However, the categories of costs needed to implement the approach for up to 24 months were similar across both Ethiopia and Uganda. The activities to support implementation, their frequency, and input categories are provided in the table below. These are not intended as a template to follow exactly, but as examples for planning purposes.

Table 10: Examples of implementation activities, frequency, and input categories to support RED-QI

| Name of activity | Frequency | Input categories |
|---------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| Situation analysis | 1 time | Travel, per diem, lodging |
| RED microplan training | 1 time | Hall rental, refreshments, participants' and facilitators' transport allowance and per diem, training supplies and printing |
| Supportive supervision training | 1 time | Hall rental, refreshments, participants' and facilitators' transport allowance and per diem, training supplies and printing |
| Supportive supervision visits | 6 times | Supervisor's per diem and lodging |
| Quality improvement training | 1 time | Hall rental, refreshments, participants' and facilitators' transport allowance and per diem, training supplies and printing |
| Updating microplan | 1 time | Participants' and facilitators' transport allowance and per diem |
| Outreach support to district | 6 times | Participants' transport allowance and per diem, fuel |
| Review meetings | 2-4 times | Hall rental, refreshments, participants' and facilitators' transport allowance and per diem, training supplies and printing |

All KII respondents in Ethiopia said they thought that the cost of implementing the RED-QI approach was inexpensive. The most common reasons given for the perceived low costs were the facts that the approach was embedded in the existing health system (rather than a parallel, project-driven system), that it enabled staff to improve on already practiced activities (e.g., micro-planning, supportive supervision), and it did not require the purchase of equipment or the need to pay salaries of additional staff. "Having a better, more efficient system actually ends up saving money," said a former EPI manager at the FMOH in Ethiopia.



Respondents noted that the approach's costs were mostly for activities that were part of the regular support needed to operate routine immunization programs: "outreach sessions, supportive supervision, conducting review meetings, micro-planning exercises." Respondents felt that these activities should be included in annual budgets and therefore not incur large additional costs as part of implementing RED-QI. **However, while these activities are indeed normative for RI programs and therefore assumed to be supported through government budgets, in reality many district and health facility immunization programs are underfunded for the operational costs**

needed to provide services to catchment area populations. Additional resources are commonly needed for these routine activities, requiring advocacy from stakeholders at all levels. As described above, the non-health stakeholder engagement component of RED-QI has helped with resource provision at the local level. But this component cannot be expected to address all of the shortfalls in EPI operational funding that commonly occur at the district and health facility levels.

KII respondents in Uganda also said they felt that the costs of implementing the approach were very low. A senior nursing officer at the district level said, "If districts understood it well, and used the approach in existing platforms, there aren't additional costs." A senior medical officer at UNEPI noted that there were small costs in the beginning of implementation for initial training, "but then in mentoring and supportive supervision, that capacity building continues, what we should be doing routinely."

At the same time, minor challenges around costs were also cited. Multiple respondents noted that non-health stakeholders, in particular community members, expected "facilitation" (e.g., per diem) or considered themselves to be health workers for participating in meetings with health officers and should therefore receive a salary. Respondents described various local fixes, such as the local government providing facilitation for NHSs to attend meetings.

Objective 3: Examine the contextual factors and conditions that affected the implementation and scale-up of RED-QI components in Ethiopia and Uganda.

Beneficiary needs and resources: What management structures, policies, and infrastructures promote successful scale?

Any approach should ideally operate within a functioning system in order to fully succeed. For the RED-QI approach, key central system inputs included sufficient numbers of trained health personnel at the district and health facility levels, adequate health infrastructure, reliable and adequate funding, transport, and steady supplies of vaccine and EPI equipment (8). However, despite shortcomings in these inputs, benefits can be achieved through the approach.

Multiple KII respondents in both countries echoed the need for central system functioning and support, noting the following inputs as necessary: immunization data that is reliable and accurate ("RED-QI is very evidence-driven. Having strong immunization data and community-level data would be a requirement," said a technical officer from an immunization

partner organization); leadership and management skills of district officers and health facility in-charges; effective supply chain systems to help ensure the steady supply of vaccines and EPI equipment; and reliable financing to support the routine immunization program at all levels. In addition, KII respondents in Ethiopia cited political commitment to reducing both under-five mortality and maternal mortality from the highest level as being important as well as commitment of the MOH to QI processes.

A final aspect noted for effective scale-up was the need for accountability at all levels. **“If one level is using the approach, the other levels need to be responding to what’s being surfaced. Otherwise, it’s demoralizing over time for health workers who are implementing it but not getting support from above,”** said a technical officer from an immunization partner in Ethiopia.

Among Uganda KII respondents, the majority noted the need for improved management skills for the approach to be implemented and sustained. A technical officer at an immunization partner organization described how the creation of new districts (by splitting existing districts into two or three new ones) has had a negative impact on immunization managers. “We have acting managers and leaders (in the newly formed districts) who lack skills needed for their roles. Some do not know how to assess if their districts are performing well or not.” Respondents noted there is a need to reorient or train the first-time managers at all levels on RED-QI practices as well as a need for managers to have buy-in for the approach.



In addition, concrete actions demonstrating the support and buy-in from national and sub-national immunization managers provided critical assistance to both implementation and scale-up of the approach. Briefly, these include participating in the introduction of the approach to new districts; conducting supportive supervision visits to districts and health facilities to monitor the approach’s implementation; inviting implementers to share experiences and innovations with technical partners at national EPI review meetings; and including QI practices and tools in updated national EPI guidance documents and curricula. These actions are described in greater detail in the “Leadership Engagement” section below.

To what extent are the use of components of RED-QI dependent on local circumstances and, consequently, are some components easier to reliably scale?

It is clear that context affects the implementation and scale-up of the RED-QI approach and use of its components. A sustainability study of RED-QI in Ethiopia described the impact of implementing the approach in the context of poorly resourced and under-performing regions. Among the local issues were managers’ competing priorities, which reduced their ability to focus on RED-QI as a priority area for supervision; low retention of both managers and health workers, leading to a loss of institutional memory; intensive workload of health workers; infrequent supportive supervision visits or opportunities for professional skills-building; and political and civil unrest, which interrupted service delivery (11).

The study found that roughly 13-17 months after the end of direct technical support, health facilities without regular supportive supervision from the district level had diminished knowledge and use of QI tools – such as PDSA cycles and fishbone analysis – over time. However, health facilities made adaptations that worked for them. For example, some health workers and facility managers continued to hold QIT meetings with community members on how to solve problems, even

if they didn't use QI tools to facilitate their efforts. Also, solutions developed through QI problem-solving processes – such as establishing outreach sites in underserved areas and defaulter tracking – continued. **Thus, while the use of particular tools and processes may be dropped due to contextual issues, problem-solving skills gained through the approach and solutions developed can be sustained.**

External policy and incentives: What is the existing landscape for QI efforts in each country and how does this shape uptake of the RED-QI approach? Are there plans to continue to expand the approach in each country? Engagement/linkages with other initiatives?

Responses from key informant interviews described the existing landscape for QI efforts in each country. For example, the majority of respondents in Uganda felt that partners or donors are supportive of expanding the RED-QI approach. However, challenges were noted in moving from partners' interest to full-fledged support. A senior medical officer from the MOH in Uganda noted, **“Some of them (immunization partners) are still stuck in their old ways, or they bring their own practices, different tools, different approaches. So, there is no agreement at the national level among partners at present.”**

Another Uganda respondent, a technical officer from an immunization partner, noted that global EPI donors and partners are interested in approaches that are shown to improve EPI services, but that “it is important to demonstrate sustainability and cost-effectiveness of the approach.”

Likewise, most respondents in Ethiopia felt that partners and donors would be supportive of further scaling up the approach. At the same time, they noted some challenges in moving from donors'/partners' interest to their actually

providing funding for further expansion. One challenge is the perceived need for evidence of effectiveness. A technical officer from an immunization partner in Ethiopia said, **“Donors would be interested. But the limiting factor is that they need to see some hard, quantitative evidence. Some donors would like to see a stronger relationship between RED-QI and actual immunization coverage.”** Similarly, a former EPI manager said, “The more evidence that can be generated around usability and scalability, the more donors would gravitate towards it.”

Also noted as a potential barrier to getting multiple donors or partners interested in a single approach in Ethiopia is the fact that partners may specialize or focus only on certain aspects of routine immunization rather than overall program improvement. **“There are partners working on specific components: communication, cold chain, etc. (But) none of the partners are really taking on all (five) components of the RED strategy. It's difficult to get every donor on board with one approach because they all have their own approaches they want supported,”** noted a program officer from an immunization partner organization in Ethiopia.

Key informant respondents also cited several challenges or barriers that affected the implementation and expansion of the RED-QI approach. In Uganda, the majority of the responses described challenges that impacted not only the RED-QI practices but the functioning of the routine immunization program overall. For example, staff turnover among both district



officers and health workers was noted as a challenge for maintaining QI practices. Limited supportive supervision visits, in part due to staffing gaps, and inadequate follow-up were noted as leading to a slacking in practices. Intensive workload of health workers and managers was also cited as a barrier: "Health workers just feel too busy to hold meetings to carry on the necessary discussions," a senior nursing officer at the district level noted.

Several Uganda KII respondents described that challenges are greater after the end of project support compared with during the period when project staff were supporting and monitoring implementation. For example, "External support is needed for mapping the local area and doing a situation analysis to identify gaps. If this process is not aided externally, it will not happen," said a district EPI officer in Uganda. External technical support for the micro-planning process was also noted as necessary by multiple respondents.

Uganda KII respondents also cited large, system-level issues affecting the benefits brought about by RED-QI, such as improved micro-plans. A project officer noted, "There was a lack of coordination between EPI planning and vaccine logistics. Plans would be made for outreach services, but there would be vaccine stock-outs from higher levels. The missing link was due to the fact that vaccine distribution in Uganda is handled by National Medical Stores (NMS), and micro-planning is done by staff at the health facility and district level. It was not easy to have the micro-plans influence what NMS does. There was a lack of harmonization between UNEPI and NMS (because they are different government departments)."

Frequent staff turnover was the most common response about challenges to implementing RED-QI at scale in Ethiopia. The reality of frequent turnover requires ongoing orientation and training about the approach to new staff. Training all staff at health facilities on the approach (rather than only staff who implement routine immunization) was seen as one way to address this challenge so that when there is staff turnover, remaining staff and managers can orient new staff on RED-QI practices and tools.

Other challenges noted by KII respondents in Ethiopia included:

- **Competing priorities of health workers and supervisors;** this was especially challenging in developing regions where staff capacity is lower and where staff are more regularly required to turn their full attention to emergency response, such as drought relief
- **Developing community engagement:** A technical officer from an immunization partner said, "In general, RED-QI is very effective, but it requires intense engagement. If you want communities to participate in micro-planning processes, you need health workers to engage with them. This requires time and resources."
- **The length of time needed to see results,** especially when community involvement presents a normative or cultural change ("This will take a long time to materialize – maybe years. Each new community needs to go through a learning curve before they see the fruits of the tools," said a technical officer from an immunization partner.)
- **Budget shortfalls at the health facility/health center and district levels for RI activities,** such as supportive supervision, outreach services, review meetings, transport, and fuel



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- **Lack of accountability** (“If you use the QI processes to measure the problems, you need systems to address the problems. This is still a gap,” noted a program officer from an immunization partner organization.)
- Challenges related to **documentation and use of local immunization data**



When asked whether the RED-QI approach should be expanded throughout the country, all KII respondents in both Uganda and Ethiopia felt that it should. However, only one respondent in Uganda spoke specifically about whether there were plans to expand the approach. An EPI manager at the national level noted: “We have already adopted the approach at the national level, and follow-up with mentorship on the ground. We try to ensure that partners use it too. The challenge is to try to ensure that all districts do it well.”

Similarly, Ethiopia respondents said they felt it would be a good idea to continue to scale up the approach, both in the country’s regions and nationwide. There was a mixed set of responses to the question about whether there were specific plans for further scaling. At least two respondents said they were not aware of plans for scaling up the approach. The majority of respondents

said there were plans for further scaling up, but they were either not sure when those plans would be implemented or said that the FMOH was looking for funding support from other partners in order to scale up. However, even respondents who were not aware of plans noted the government’s high level of interest in RED-QI. “They have a strong appetite for the approach,” said a technical officer from an immunization partner organization.

While noting the interest of scaling up, respondents also described the need for long-term commitment and support. “It should be scaled up, but anyone who wants to scale up needs to commit themselves to a long haul. They need to set up specific milestones as well to see the gradual change,” said a technical officer from an immunization partner in Ethiopia.

There are several examples of the RED-QI approach linking with other initiatives and components of the QI approach being expanded by use of other immunization partners. In Ethiopia in 2019, UI-FHS rolled out a pilot activity in four districts in four different regions to integrate planning and service delivery of immunization with selected nutrition services (e.g., Infant and Young Child Feeding [IYCF] counseling during EPI sessions and the provision of Iron Folic Acid [IFA] tablets for pregnant women during mobile and outreach EPI sessions). All four districts completed integrated micro-plans and provided integrated sessions based on those plans. The activity was actively monitored for continuous learning, including monitoring visits conducted to guide early implementation. In each district, UI-FHS engaged in partnership with civil society organizations and NGOs in an effort to strengthen implementation of the integration work. Multiple partners and various departments from the MOH engaged in planning for the integration activity, building skills in coordinated action planning for integrated activities. Plans through the end of the intervention period included the use of QI approaches in all four districts to address implementation challenges.

In Uganda, USAID’s Maternal Child Survival Program (MCSP), which implemented RED-QI, worked with the Ministry of Health (MOH) to support integration of the RED approach to enhance access to a broader package of child health interventions in four demonstration districts in 2017-18 (14). MCSP provided this support at the national, regional, district, and health facility levels. Specifically, at the facility level, MCSP and government partners supported staff to work with village health teams (VHTs) to use the RED approach and tools to:

- Map all villages in each health facility's catchment area
- Determine target populations for essential child health packages in each village
- Identify needs and re-organize service delivery to reach underserved villages and children
- Use basic QI problem-solving tools to develop solutions
- Use quarterly meetings with VHTs to update and use community data to monitor coverage of selected child health interventions.

As a result, the proportion of facilities implementing RED practices adapted for child health – developing catchment area micro-maps and child health intervention monitoring charts, meeting with VHTs, and submitting VHT quarterly reports – increased among the 137 health facilities in the four districts. Also, feedback from stakeholders during quarterly program review meetings in these districts noted that RED improved the guidance provided to and decision-making by health facility staff who support child health outreach services and VHTs, particularly in the allocation of resources. These stakeholders also shared that RED made the priority interventions that should be promoted and offered to children clearer to district and facility managers. In addition, the number of children reached with two health interventions – vitamin A supplementation and deworming – in the four districts also increased compared with the previous year.

Also, Uganda KII respondents cited examples of partners incorporating RED-QI processes and tools in areas they supported. A technical officer from an immunization partner described using and adapting RED-QI practices in up to 14 additional districts in Uganda. The practices included participatory community mapping; engaging village chairmen, opinion leaders, and volunteer health workers in planning and monitoring of services; using QI problem-solving tools; creating QWIT teams; and conducting immunization program data reviews. A project officer in Uganda noted that UNICEF had adopted the QI method of bottom-up micro-planning into their district work plans and also said, “Even the funding for equity and coverage from Gavi health systems strengthening (HSS), we made sure the components of RED-QI were incorporated into those activities.”



Compatibility: How does the approach fit with existing workflows and systems?

All key informant interview respondents in both countries noted that they felt that the RED-QI approach was compatible with their country's health system and the immunization program. Common themes among the responses were that the approach built on and was easily integrated with the existing system, required few or no additional resources, and helped address well-known programmatic issues or shortcomings. A district medical officer in Uganda said, “What the RED-QI approach did was break it down for us, and give us more practical ways...in which to implement what we should have been doing in the first place.”

Another respondent, a district assistant health officer in Uganda, listed several reasons for compatibility: **“The approach was simple and user-friendly. It was compatible because it focused on integration with the existing system. It did not require additional resources. It was just a concept to help us understand our problems and how to maximize available resources.”** At same time, several Uganda respondents noted that the RED-QI approach’s practices required capacity-building and on-going technical support in order to be sustained.

Likewise, all respondents in Ethiopia felt the RED-QI approach was compatible with the EPI system. One of the key reasons given was that the QI processes and tools fit well with already existing EPI activities, such as supportive supervision, quarterly review meetings, and micro-planning, as well as with established community health committees, and only aimed to improve the quality of practices rather than replace them with something new. Several respondents pointed out that project staff made an effort to integrate RED-QI activities as smoothly as possible into the existing system. Said a project officer in Ethiopia, **“The project always made sure that the real actors (government health officers and health workers) remain in the driver’s seat...they (project staff) help them lead the effort.”** Respondents noted that in this way the approach did not depart from the system, but just tried to make the system work better.



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Readiness for implementation: How did the EPI programs in the two countries demonstrate commitment to implementing RED-QI as the intervention began?

The Uganda National Expanded Programme on Immunization (UNEPI) demonstrated commitment to the RED-QI approach as the intervention began by:

- Enabling the initial work under ARISE, starting about 2010
- Expressing interest in expanding the approach further under MCHIP in 2012
- Requesting the continuation of the MCHIP work in five districts for another 10 months and requesting expansion to another 20 districts under MCSP in 2014
- Accepting the support from BMGF when the MCSP funding proved insufficient in 2014
- Approving the districts for expansion and writing letters of support to the district health teams that were required for introducing RED-QI in those districts
- Inviting JSI staff to serve as members of the Immunization Technical Working Group at the national level and presenting on the RED-QI work
- Serving on the SS4RI External Advisory Group
- Encouraging JSI to incorporate elements of the RED-QI approach in national-level documents, particularly the Uganda Immunization in Practice (IIP) manual (15)

The Federal Ministry of Health (FMOH) in Ethiopia also demonstrated commitment to implementing the RED-QI approach as it started. For example, the FMOH:

- Jointly designed and provided approval for implementation of the RED-QI approach's learning phase in three pilot districts
- Expressed interest in scaling up the approach after two years of learning phase implementation
- Accepted the support of BMGF for scaling the approach to 103 districts in six regions, including four Developing Regional States
- Invited JSI to help design and roll-out the National Routine Immunization Improvement Plan (RIIP) and to support district-based micro-planning and supportive supervision activities for the RIIP (10)
- In 2015, JSI created a "How to Guide" for RED-QI implementation. Elements from the RED-QI How to Guide were included in the updated RED guidelines for the country.
- Also similar to the Uganda team, JSI staff in Ethiopia were invited to join the Immunization Technical Working Group at national and regional levels.



Leadership engagement: Explore commitment levels from the MOH in each country to implementing the approach and to continuing to scale the RED-QI approach.

The Ministry of Health in Uganda, specifically UNEPI, was viewed as having been very supportive of implementation of the RED-QI approach by KII respondents in that country. Each respondent provided multiple examples of this national level support; these included the following:

- Participating in the selection of districts where the approach would be implemented
- Providing authorization to implementing partners to roll out the approach in agreed-upon districts
- Participating in meetings that introduced the approach to districts, so that districts would not see the approach as separate from or unsupported by the MOH
- Conducting supportive supervision visits from the national level to districts and health facilities to monitor implementation of the QI approach
- Providing a platform for JSI to share QI experiences and innovations at national EPI review meetings with technical partners, allowing partners to understand the approach and be informed of new practices/innovations
- Supporting the revision of the Uganda version of “Immunization in Practice” to include RED-QI practices, thus helping to institutionalize the approach’s components



- Supporting the revision of the pre-service curriculum of nurses and midwives to include RED-QI practices
- Issuing as an MOH/UNEPI document the “District Leaders Commitments for immunization” document that resulted from an 18-district workshop convened by MCSP/SS4RI
- Requesting SS4RI to present the RED-QI methods and share copies of its documents at a nationwide meeting for all health districts in 2019
- Posting RED-QI tools and methods on the MOH Intranet

Similarly, the FMOH in Ethiopia demonstrated commitment to implementing RED-QI. For example, the FMOH and Regional Health Bureaus (RHBs):

- Selected the districts where the approach would be implemented
- Were directly involved in the coverage and serology surveys
- Participated in “advocacy” meetings to introduce the approach in some districts (not all because of scale)
- Were engaged in the situational analyses conducted in each district
- Jointly supported/or led all three RED-QI trainings
- Participated in supportive supervision visits, mobile visits, and endorsed peer learning exchanges between districts and within regions

- Routinely provided opportunities for JSI to share experiences and innovations from RED-QI
- Included the RED-QI micro-planning process as part of the MCV2 training, introduction and roll-out in 2019

As noted above in the “External Policy and Incentives” section, all KII respondents from both Uganda and Ethiopia agreed that the RED-QI approach should be expanded throughout the country. However, there was general uncertainty about whether there were specific plans to scale up in either country or, if there were plans, when they would be implemented or how they would be funded.

Access to knowledge and information: Is information about the approach and its benefits easy to access, understand, and operationalize?

KII respondents in Uganda noted numerous ways that health workers and district officers can learn about the RED-QI approach and its practices even if they were not formally trained on the components during the project period. For example, multiple respondents cited the following methods as opportunities for learning about QI components: during supportive supervision/mentoring visits; through peer-to-peer learning on the job; during quality work improvement team (QWIT) meetings; and by using RED-QI job aids.

However, some respondents also acknowledged that learning about RED-QI practices is more challenging than during the project implementation period, especially for new health workers. At that time, a senior medical officer at a health facility said, “We had regional mentors who are like icons of RED-QI, spreading the gospel and influencing others to improve, but at the end of the project they were not there.”

The majority of Ethiopia KII respondents also felt that information about the RED-QI approach was accessible and understandable. Respondents noted several methods through which health staff could learn about the approach’s processes and tools: through discussion with the district EPI focal person or health extension workers already familiar with the approach; through the use of the approach during quality review meetings (QRMs) and with quality improvement teams (QITs); by asking zonal or regional EPI focal persons; and by finding information on websites.



CONCLUSIONS

The combined review of existing documentation about RED-QI and the results from key informant interviews with respondents in Uganda and Ethiopia provide valuable findings about the implementation and scale-up of the approach in the two countries. Below is a summary of key findings from this assessment.

- **The RED-QI approach is widely viewed by those who implemented it in both countries**, including regional and district immunization officers and health workers at the facility level, **as being valuable, effective, inexpensive, compatible** with existing systems, and **sustainable**. Aligning the QI approach to the widely accepted RED strategy and providing methods of operationalizing the components of that strategy contributed toward the effectiveness of the RED-QI approach and its perceived value in both countries.
- **Quantitative findings from both countries indicate that the approach was effective in reaching its objectives** of better planning of immunization sessions, improved quality of services and of data for decision-making, and increased equity of service provision through a greater ability to identify and provide services to underserved communities.
- **Engagement of non-health stakeholders**, including civil authorities and political and community leaders, in immunization planning, monitoring, and resource allocation **is perceived as innovative, productive, and central to the effectiveness of the RED-QI approach**. Evidence from both Uganda and Ethiopia demonstrates the benefits of this engagement in helping to mobilize local resources for immunization, enhancing local ownership and problem-solving, and identifying underserved communities. As one national manager in Uganda noted, this engagement successfully avoided the common mistake of a technical project circumventing the local government authorities and structures, which can lead to resentment and a lack of sustainability of an approach once external support ends.
- Specific RED-QI **components** that were cited most often as **easily scaled and/or sustainable** were participatory community mapping, bottom-up micro-planning, and the fishbone (root cause) analysis tool. Components considered **less sustainable or easily scaled** were data quality analysis (DQA) and the PDSA cycle. At the same time, skills and systems were built to allow for problem-solving to continue in both Ethiopia and Uganda.
- **The project leadership's key operating principle of on-going learning, flexibility, and open-mindedness about making changes to the RED-QI approach led to an improved intervention**. Rather than implementing the same approach while it was scaled-up in a phased manner, project managers continuously monitored the implementation, modifying the approach or specific components as results demonstrated what worked well and what did not. **Adaptations** such as strengthening the component of non-health stakeholder involvement in Uganda and lengthening the duration of support in low-performing districts in Ethiopia **were the result of this openness to learning and not “becoming a prisoner of your own original ideas.”**



- The **close partnership** between JSI and both FMOH in Ethiopia and UNEPI in Uganda **was appreciated and felt to be effective in helping the MOH feel ownership of the RED-QI approach.** This was achieved through the collaborative nature of planning, the regular communication and feedback about implementation to MOH leadership, and ensuring that the MOH “was in the driver’s seat.”
- While there was unanimous agreement among KII respondents that the **approach should be expanded further** within these countries, no specific plans or designated funding for additional scaling-up was identified. The lack of a single agreed-upon approach to strengthening EPI among immunization partners in these countries and the perceived need for evidence of the approach’s effectiveness in increasing vaccination coverage by immunization partners were cited as potential barriers to future expansion of RED-QI.
- **Challenges to the sustainability and further scaling of the RED-QI approach were identified.** These include health system issues, such as **high staff attrition, intensive workloads of health workers and managers, funding shortfalls, a perceived lack of accountability at higher levels,** and, in Uganda, inadequate coordination between the government departments that separately manage immunization services and vaccine supply, leading to stock-outs. In addition, several of the QI practices themselves are considered to be complex, and there is a reported shortage of on-going capacity-building, through supportive supervision, to reinforce the use of the practices.
- For RED-QI practices to be sustained in the face of high staff turnover among both supervisors and health workers, **there is a felt need on the ground for continuous capacity-building, follow-up support, and mentoring.** KII respondents from both countries and respondents in the sustainability inquiry in Ethiopia described how some QI practices reduced or stopped after direct project support ended, although solutions to local issues that were developed using QI tools had continued.



SELECTED RESOURCES

1. Uganda REC-QI how to guide: <https://www.jsi.com/resource/strengthening-the-routine-immunization-system-through-a-reaching-every-child-quality-improvement-approach-in-uganda/>
2. Ethiopia RED-QI how to guide: http://mpffs6apl64314hd71fbb11y-wpengine.netdna-ssl.com/wp-content/uploads/2016/04/UI-FHS_HowtoGuide.pdf
3. RED-QI resources and tools from Ethiopia: <https://uifhs.jsi.com/resources/>
4. Uganda capacity building in leadership, management, and accountability skills: <https://www.jsi.com/resource/experience-in-building-capacity-of-health-facility-managers-in-uganda-on-leadership-management-and-accountability-a-missing-link-in-routine-immunization-service-delivery/>
5. Toolkit for how to engage with non-health stakeholders in supporting immunization programs: <https://www.jsi.com/resource/a-toolkit-for-engaging-non-health-stakeholders-in-supporting-routine-immunization-in-uganda/>
6. Guide to improving quality of mapping in EPI micro-plans: <https://www.jsi.com/resource/reaching-every-community-using-quality-improvement-rec-qi-mapping-to-support-routine-immunization-microplanning-in-uganda/>
7. Capacity building of health facility managers in routine immunization: <https://www.jsi.com/building-capacity-of-health-facility-managers-in-uganda-the-missing-link-in-routine-immunization/>
8. Article on how QI tools improved equity in routine immunization in Ethiopia: <https://www.jsi.com/using-quality-improvement-tools-to-address-equity-gaps-and-improve-immunization-in-ethiopia/>

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7. <https://www.jsi.com/resource/mobilizing-local-support-for-immunization-experience-from-uganda-and-ethiopia-in-engaging-local-stakeholders-and-leaders/>
8. <https://www.jsi.com/resource/innovating-to-vaccinate-every-child-in-uganda-through-strengthening-subnational-management/>
9. <https://www.jsi.com/resource/learning-from-implementation-of-the-reaching-every-child-using-quality-improvement-to-strengthen-the-routine-immunization-system-in-uganda/>
10. Correspondence from Lisa Oot, technical officer, JSI.
11. <https://www.jsi.com/resource/sustaining-immunization-gains-for-all-communities-in-ethiopia/>
12. <https://www.jsi.com/resource/linking-health-facilities-and-communities-improves-routine-immunization/>
13. <https://www.jsi.com/resource/experience-in-building-capacity-of-health-facility-managers-in-uganda-on-leadership-management-and-accountability-a-missing-link-in-routine-immunization-service-delivery/>
14. <https://www.jsi.com/resource/increasing-coverage-of-child-health-interventions-in-uganda-using-the-reaching-every-district-child-approach/>
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GLOSSARY

Data Quality Self-Assessment Improvement (DQSI): A process to continuously measure and facilitate improvement of data accuracy and consistency at all levels. DQSI is used during internal (at the health facility) and external supportive supervision.

Fishbone Diagram (root cause analysis tool): A graphic tool used in QI that helps generate possible causes of a problem, classify them, and drill down to analyze the root causes of the problem.

Five (5) Whys: A QI technique to explore the root cause of a particular problem. It asks a series (typically five) of “why” questions, based on the answers to the previous why question.

Flow Diagram (Process Map): A graphic tool used in QI that provides a picture of a process or procedure in order to clearly define a process, standardize procedures, design a new, or modify an existing process, and/or point out aspects of a process that are unclear.

Health Development Army (HDA): A cadre of volunteers at the community level who engage in health promotion; HDA is also known in some areas as the Women’s Development Army (WDA).

Lot Quality Assurance Sampling (LQAS): A statistical method, using random sampling, to determine whether a “lot” (sampling unit) meets a certain quality standard.

Macro-mapping: A continuous process of identifying and assigning communities to health facilities for quality health service delivery to define facility catchment areas and populations for micro-planning.

Micro-mapping: A continuous process of identifying and assigning communities with a facility catchment area to RI service delivery points (static and outreaches).

Model for Improvement: A framework to guide QI. The model includes three fundamental questions (the aim, the outcome measures, and the possible solution to a problem -- a change idea) and cyclical PDSAs.

Pareto Chart: A bar graph used in QI that breaks down a problem into categories to identify the vital few categories that contribute the most to a problem.

Plan-Do-Study-Act (PDSA): A QI problem-solving model used for carrying out changes or making improvements. P=plan the change; D=do the change; S=study the change; A=act to maintain the change or to continue to improve.

Process Map: A QI tool to critically examine how a task is accomplished. It involves comparing the ideal with the actual process, enabling the users to identify and address the gaps. By identifying inefficiencies, it serves to align the actual with the ideal.

Quality Improvement (QI): A cyclical process of measuring a performance gap; understanding the causes of the gap; testing, planning, and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions in response.

Quality Improvement Team or Quality Work Improvement Team (QIT or QWIT): The group of individuals that meets regularly to identify and analyze areas in need of improvement, propose solutions, and test change ideas. The QIT oversees and performs carefully selected tasks to solve identified problems affecting the specific program.

RED Categorization Tool: An Excel-based tool to collect and analyze core EPI performance indicators (Penta1, Penta3, and Measles) data. It allows assessment of performance by health facilities and the district as a whole.

Reaching Every District using Quality Improvement (RED-QI): An approach to strengthening the routine immunization (RI) system through the application of practical quality improvement models and tools, with the aim of making the five components of RED fully operational in a district.

Village Health Team (VHT): A non-statutory community structure selected by the people themselves to manage all matters related to health and cross-cutting issues. VHT members are chosen by their own communities to promote the health and well-being of all village members.