



Health System Strengthening in Mozambique

A National Program to Improve Last Mile Distribution for Rural Communities

Update

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VillageReach is a non-profit social enterprise. Our mission is to save lives and improve health by increasing access to quality healthcare for remote, underserved communities. Our philosophy and practice is to strengthen the performance of existing health systems, serving as a catalyst to improve performance. Our intention is to minimize the degree of our own intervention for greatest cost efficiency and to leave a legacy of stronger health systems. The methodologies VillageReach develops can be used by health systems for long-term sustainable impact.

This document outlines the VillageReach program to improve the performance of the Mozambique national health system. The program objective is to significantly increase the quality of health for the millions of residents living in challenging circumstances in rural communities throughout the country. The specific approach is to strengthen the existing health system by improving the last mile distribution of vaccines and other medical commodities that health centers use on a daily basis.

The VillageReach distribution model – known as the Dedicated Logistics System (DLS) – was first pioneered for a demonstration project conducted in northern Mozambique from 2002 to 2007. As a result of detailed evaluations of the impact of that project, the government of Mozambique has recommended that all provinces apply the VillageReach model to their vaccine distribution systems. The publication of these evaluations has also resulted in requests for VillageReach to develop other programs in Africa and India.

The scale of the Mozambique program is significant for two reasons. The national deployment will provide clear benefit for millions of otherwise poorly supported people living in rural communities across Mozambique. Lack of access to vaccines in these remote communities contributes to high mortality rates in children and adults. In addition, documenting the effectiveness of this approach at such a significant scale is also intended to provide compelling evidence of the cost-effectiveness and replicability of the approach for programs elsewhere in the developing world.

This document is intended for public distribution to ensure maximum transparency of the VillageReach Mozambique program. It will be updated regularly and posted on the VillageReach website. It is also intended to highlight the significant impact potential and cost efficiencies that are achievable by leveraging logistics, information management, and active last mile supervision – or supportive supervision – for health system strengthening programs, and to encourage the greater global health community to focus more resources at the last mile.

For more information on VillageReach and its activities, please visit www.villagereach.org. We welcome inquiries to our Seattle office at 206-925-5200.

2011 Progress-

VillageReach has been engaged in its health system strengthening program in Mozambique for nearly two years. This update follows an extensive review of the program since the last report was issued in August 2011.

- **VillageReach is currently active in four provinces:** Cabo Delgado, Gaza, Maputo and Niassa (see the November program update at the conclusion of this report for further details).
 - The first six-month evaluations for Cabo Delgado and Niassa were completed in February and March. A summary of the results from these evaluations is available online [here](#). The one-year evaluations of progress in Cabo Delgado and Niassa provinces were completed in September and October.
 - Summaries of the one-year evaluations are expected to be finalized in early 2012, subject to approval from the provincial health authorities (DPS).
 - Baseline costing surveys were conducted in Gaza and Maputo to supplement previously implemented coverage rate surveys and additional surveys are to be completed in November 2011 – January 2012.
 - Distributions of vaccines were sometimes delayed or not completed due to funding shortages or funding delays for the provincial governments. Distributions were completed in 11 of 16 months (69%) in Cabo Delgado and in 11 of 14 months (79%) in Niassa. Since September, distributions are being completed for both provinces.
 - As a result of the delays and interruptions in distributions, we have gaps in collection of data from the health centers concerning various performance metrics.
 - VillageReach currently employs a national staff of 17 personnel to train, supervise and administer the program. Staff are now based in all four provinces as well as in Maputo City.

2012 Planning Update -

- **Extension of periods of engagement for some provinces:** Progress towards meeting the indicators identified in the phases of technical assistance has taken longer than anticipated in some provinces. As a result, we have concluded that we may have to extend beyond three years for these provinces. The project plan has been revised to indicate the potential for these extensions.
- **Budget increase:**
 - Due to cost increases experienced in 2011, noted below, we forecast that both core costs and province-specific costs will increase in the new year.
 - With our government partners, we have sought 3rd-party organizations (e.g., Elizabeth Glaser Pediatric AIDS Foundation) to provide support for government costs for the project, but such arrangements have not been able to fully meet the needs of the implementation. In response, we commit to supporting a limited number of these costs to avoid implementation delays in 2012 in order to achieve impact.
 - These costs are nominal relative to the total budget – estimated at an average of approximately \$2,500 per province per month, representing a maximum of \$120,000, if necessary, for 2012 across all four provinces. We do not expect to carry these costs indefinitely.

- **Focus on existing provinces:** We will focus our resources for the coming year on the four provinces in which we are currently engaged. No new provincial deployments will begin until the following are achieved:
 - marked improvement in reported distributions and routine data collection;
 - identified minimum funding level of 70% of the estimated costs for a complete engagement (3-, 4-years) in each additional province; and
 - hire of VillageReach staff for each new province in advance of any new engagements.

This document includes an updated project plan and budget, reflecting these program updates.

Program Overview –

VillageReach is engaged in a multi-year program to improve the performance of the health system in Mozambique, focusing on rural communities that represent over 60% of the country's population. The program, started in January 2010, is expected to cover eight of ten provinces, with more than 12 million people served by the program, based on available census data. The program is dependent on available funding and the successful capacity building of each provincial government. Its purpose is to achieve systemic change in the performance of the Mozambique Ministry of Health (MISAU) through the use of dedicated distribution channels for vaccines and other medical commodities to community health centers. The following are key considerations for the program:

- Our goal is to build the capacity of MISAU to manage and expand the dedicated logistics system, which results in VillageReach decreasing its role over time as greater capacity is built to implement and manage the system in-country. The role of VillageReach is limited to technical assistance and support for the government health authority in each province - *Dirreção Provincial de Saúde (DPS)* - to manage and implement the system.
- To ensure the optimal level of VillageReach support and expenditure, the program is being rolled out in a series of staggered provincial deployments. The three- to four-year VillageReach engagement period per province is the estimated time required to sufficiently build local capacity to manage the dedicated logistics system and evaluate its benefits.
- The program was launched in two provinces in 2010 and two additional provinces in 2011. Funding is the chief determinant of deploying the model in future provinces. This document focuses on the schedules and operational details for the existing four provinces. An explanation of the criteria for expanding to additional provinces is also provided. Changes will be updated as new information becomes available. The level of support VillageReach provides to each province may differ depending on the province's capacity.
- The key objective of the program is to yield results in terms of patients served/children vaccinated. Estimates in this document provide details of the number of anticipated incremental children vaccinated as a result of VillageReach's intervention during the period VillageReach is engaged. We have not attempted to estimate longer-term impact of the program in terms of sustainable improvement of the health system.
- We expect each DPS authority to assume responsibility for funding its own personnel and operating costs. Because of delays in identifying funding for some provinces we have witnessed since the program began – and in some cases subsequent delays in receiving funding support from 3rd parties to align with funding cycles once identified – we have concluded it is in the program's interests for us to contribute nominally to support some DPS costs. The updated program budget provided in this document reflects these updated cost estimates. Note the following concerning the assumption of these costs:
 - DPS costs for the DLS program include per diems for field coordinators, drivers, and supervisors, fuel, and training for health workers to understand and operate the system.

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- Our budget includes a cost-sharing approach whereby we are prepared to fund the per diems for field coordinators and drivers, should the funds not be available in the DPS budget or from a 3rd party.
- These costs are nominal – estimated at an average of approximately \$2,500 per province per month, representing a maximum of \$120,000, if necessary, for 2012 across all four provinces. The great majority of funding VillageReach allocates to the program will continue to be dedicated to VillageReach costs for its technical assistance for the DPS.
- Measurement is a critical component of our methodology and model. Initial baseline and concluding endline evaluations are conducted for each provincial deployment. Data from these evaluations is publicly available on the VillageReach website, posted on approval from the government of Mozambique. (See the Mozambique page of the VillageReachFocus section on our website for currently posted reports and other report summaries).
- Within the three- to four-year technical assistance period, a Field Officer employed by VillageReach will be responsible for the technical supervision and capacity building of a single province. As activities transition from the Field Officer to DPS, VillageReach will provide a semesterly supervision visit and process evaluation to evaluate the success of the dedicated logistics system implementation.
- The Fundação para o Desenvolvimento da Comunidade (FDC), a Mozambique non-profit organization that originally partnered with VillageReach on the 2002-2007 demonstration project, is taking responsibility for independently deploying the model in the remaining two provinces.
- To support the Mozambique program, VillageReach is seeking funding in terms of these broad categories of activities:
 - Personnel and associated operating costs for technical assistance provision;
 - Training to build provincial capacity for system implementation; and
 - Program measurement: e.g., baseline or endline surveys.

Health System Performance in Low Income Countries –

Although much time and money have been applied to strengthen medical supply distribution, supervision and information management, many systems remain ineffective, inefficient and unable to support the provision of medical commodities in order to meet the needs of the community. Significant stress is placed on rural communities due to inadequate support for community health centers. Here, the health service delivery level – or “last mile” - often functions well below its potential. Gaps in services dependent on functioning infrastructure present further challenges to health intervention operations. From its various program experiences, VillageReach sees many of the following circumstances:

- The absence of regular, reliable support to the health facility places great strain on frontline health workers. These workers are forced to travel long distances from their health center to collect and deliver paper forms, obtain supplies for their health center, and receive the training they need to execute on a multitude of assigned tasks. VillageReach estimates that health workers may spend as much as 18% of their time collecting vaccines and related supplies.
- Local vehicles serving the health center are often broken, lack fuel, are unable to travel in difficult weather, and may be used for other purposes. Travel costs for transport workers may not be paid for months or at all.
- Poor information systems make it difficult for the districts and provinces to know how much supplies to order.
- Unsupervised staff may do a poor job of stock rotation, ordering supplies, inventory management, and maintenance of cold chain (refrigeration units used to store vaccines) and other equipment.

The result is higher system downtime, lower numbers of children served, poorer health in the community and increased unit costs for delivery. Moreover, these barriers also delay the introduction of newer medical commodities and practices. Without adequately addressing the last mile, a choke point is created, limiting the overall distribution of essential commodities.

VillageReach Experience and History in Mozambique -

Mozambique has a national vaccination coverage rate of 72%, as measured by children vaccinated with DPT-Hep B3 (diphtheria-pertussis-tetanus-hepatitis). This is significantly below the World Health Organization's (WHO) international goal of 90%. Mozambique suffers from high under-five mortality rates. Current figures estimate that for every 1000 live births, 154.2 children in Mozambique will die before they turn five.¹ In addition to low coverage rates, Mozambique, like many low-income countries, has a weak and poorly resourced health system. Rural health facilities are geographically isolated, often covering 10,000-50,000 community members, and they are chronically understaffed. As UNICEF reports: "Health services [in Mozambique] are inadequate in terms of coverage and quality. These facilities often have limited supplies and drugs ... and are staffed by overstretched health workers with insufficient training."²

As a result, workers must perform a wide range of medical and support services. Training and/or picking up supplies from a district office may remove the health worker from the health center for long periods of time, during which the center closes or functions with limited staff. Responsibility to fix problems at the health center usually falls on the health worker. If needed medicines are out of stock or the necessary equipment is broken, the health worker must divert his or her attention from delivering care to resolving the infrastructure problem. Resolving these problems requires people, vehicles, time and money – all scarce resources better employed in the direct provision of healthcare services.

VillageReach has worked in Mozambique since the organization was established in 2001. In its initial assessment of the condition of the health system, VillageReach concluded that weak logistics practices, a lack of actionable information, and poor health system supervision were major impediments to the effective delivery of immunization services. Starting in 2002, a five-year demonstration project was conducted to ensure prompt and universal access to vaccines in the northern Mozambique province of Cabo Delgado. The ad-hoc, collection-based approach, where frontline health workers had to collect vaccines and related supplies from their district office and perform various administrative tasks, was replaced by a dedicated, integrated distribution system where a small number of specialized workers visited each health center once a month to deliver vaccines and supplies, repair equipment, facilitate an information system, and provide supportive supervision. The distribution system incorporated supportive supervision and data management with the distribution. This reassignment of tasks to create a systematic distribution process, the related information management system, and an active and ongoing recurrent training and supervision program are the core innovations of the VillageReach dedicated logistics system. The model significantly improved operational efficiency at the service delivery level, resulting in a dramatically higher immunization coverage rate for children in the region.

VillageReach released the results of an independent impact evaluation in November 2008. In June 2009, VillageReach released the results of a complementary study comparing the costs of the VillageReach-designed logistics system with the system used in the control province of Niassa, typical of government practices used throughout the country. Following is a summary of those evaluations:

- DPT-Hep B3 vaccine coverage rates increased from 68.9% to 95.4% for children age 24-35 months. All other vaccines had similar increases resulting in an average coverage rate of 92.8%.
- The reported monthly incidence of stock outs in rural health centers decreased from 80% to 1%.

¹ MISAU. Mozambique National Child Mortality Study 2009: UNICEF, 2009 available at: http://www.unicef.org/mozambique/child_sas_011317.html.

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- Up-time of the cold chain increased from approximately 40% before the project to 96% over a year after the conclusion of the project.
- An average of 95% of health centers were visited each month by the dedicated logistics system staff with an average interval of 31 days in between visits despite extremely difficult road conditions and harsh, rainy seasons.
- Over 90% of all children surveyed in the evaluation had visited a health center in the previous month despite 47% of the population living over two hours away, 85% having to walk to get there, and the most common reason for vaccination failure being “place of immunization too far”.
- The VillageReach model was 17% more cost-effective, at \$5.03 per child fully vaccinated with DPT-Hep B3 compared to \$6.07 per child vaccinated in Niassa, where VillageReach was not engaged. The VillageReach system was also 21% less expensive per vaccine dose delivered: \$1.18 per dose delivered vs. \$1.50 per dose delivered for the control province.

VillageReach Health System Strengthening Model –

VillageReach provides critical last-mile support for health intervention programs through a complementary set of skills and approaches. The strategic intent is to provide health systems with greater capacity and higher efficiency to support the health of communities. There are three categories of our support:

1. Logistics and Supply Chain Optimization

To address what we believe is one of the most pressing weaknesses of health systems in the developing world today, VillageReach has developed standard tools and practices to ensure effective distribution of medical commodities and supplies to the last-mile level. VillageReach evaluates the effectiveness of the current system and individual roles to determine roadblocks and barriers to effective distribution and related health services provision, and takes into consideration the available human/financial resources and infrastructure conditions to design, optimize and implement effective distribution systems. Focusing on the lower levels of the supply chain, VillageReach first assesses logistics system design, aggregation points for storing medical commodities, management and support structures, and the roles and responsibilities of health workers and other players. Based on this analysis, VillageReach designs logistics systems that appropriately distribute supply chain duties and responsibilities to best meet existing skills, infrastructure, and needs.

2. Information Management

The design and deployment of effective logistics systems are dependent on the use of strong information systems that ensure adequate capture and flow of information. VillageReach’s Management Information System in Mozambique, *vrMIS*, produces ongoing, routine metrics to enable continuous adjustments to improve health system and/or program performance. The versatility of the system enables the collection and real-time tracking of program data, which drives critical decision-making by health administrators and maximizes the capacity of health program workers. The system significantly enhances overall transparency of the distribution process adding a higher level of security into the supply chain. *vrMIS* also provides critical data for the management, monitoring, and evaluation of the overall program or intervention.

Designed for operating environments with varying levels of communications infrastructure, the information system allows data to be entered and reported through a convenient and intuitive web interface when Internet connectivity is available. For greater versatility, data can also be uploaded via mobile devices. Data may also be entered and stored offline when communications networks are not accessible, then securely uploaded once connectivity is re-established or transferred. VillageReach’s use of Internet and mobile application technologies provides administrators of the program with a real-time, online view of system performance at the last mile level, even for communities that are well beyond the reach of the electrical grid and Internet connectivity.

3. Technical Assistance and Supportive Supervision

The provision of reliable supply chains and effective information systems are important to addressing gaps at the last mile. However systematizing technical assistance and supportive supervision for health personnel are critical to improving health sector performance at the service delivery level. VillageReach provides technical assistance and supportive supervision, and builds systems to incorporate regular supportive supervision for all aspects of the logistics and supply chain system. These elements help to improve overall health facility management, stock management, data records, service provision, and adherence to national policies. The VillageReach model of supportive supervision focuses on building lasting systems to empower health workers in the facilities, so all observations and findings from supervisory visits are discussed with the staff in order to develop a shared improvement plan to guide future supportive supervision visits.

Expansion Program: Overview -

Based on the documented success of the demonstration project, the Mozambique Minister of Health has formally directed officials in each of Mozambique's provinces to pursue implementation of the model. VillageReach has already begun the process of supporting MISAU and DPS in their efforts to implement the new system across Mozambique. The four provinces of Cabo Delgado, Maputo, Niassa, and Gaza are engaged in the preparation and implementation phases of the program.

Specific program objectives are:

- Improve child health in Mozambique by sustaining high vaccination coverage rates and low vaccination dropout rates;
- Improve the community's knowledge of, trust in, and use of health services;
- Increase the capacity of DPS to manage and operate the dedicated logistics system in order to ensure sustainability of the new system;
- Increase the cost-effectiveness and cost-efficiency of the logistics systems for vaccines and other related commodities in Mozambique;
- Reduce stock outs of vaccines in all health centers where the system is implemented;
- Reduce interruptions in service delivery due to stock shortages, health worker absence and lack of health worker time; and
- Integrate additional key commodities – such as rapid diagnostic tests – into the dedicated logistics system.

In the first two years of the program we have identified a number of factors impacting program performance that have influenced our plans for 2012. The key factor is available funding for DPS operational costs. While the DPS has been able to support staff time for implementation of the project, costs such as fuel and per diems have been more difficult for them to find in their budget. In some cases, VillageReach has worked with 3rd party funders – such as Elizabeth Glaser Pediatric AIDS Foundation – to help secure DPS funds for the program through alternate sources. However, any delays in these sources of funding leads to delays in implementation of the program. VillageReach identified this problem in September 2011 and has successfully addressed it by providing a small amount of additional funding in each province to ensure distributions happen on time, even if DPS budgets are under-funded.

VillageReach's key priorities for 2012 are to ensure that maximum outputs and outcomes are achieved in the four provinces in which we are already active, and to see institutional absorption of the Dedicated Logistics System in Mozambique. In light of this, in 2012 we will focus on the quality of the implementation in the existing four provinces – Cabo Delgado, Gaza, Maputo and Niassa – before considering expanding the dedicated logistics system. This is a change from our initial program plan, when we had expected to enter one additional province in 2012 (total five).

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To continue the national expansion to Inhambane, Manica, Sofala and Tete provinces, we will require the program to indicate a strong likelihood of success in the current provinces. Key indicators of that success are:

1. A marked improvement in stock out data that is maintained for at least 9 concurrent months. This requires regular distributions of medical commodities as well as data collection in the field.
2. DPS demonstrates independent financial support for its costs (or through 3rd parties) to collaborate on the dedicated logistics system program.
3. Advance VillageReach funding of 70% of the estimated three- or four-year budget for a new province. Estimates of program costs for provinces beyond the original four will be provided in an update in mid 2012.

Impact on Health Quality -

The benefits of the Mozambique program are intended to extend well beyond the program period in which VillageReach will be engaged. We expect the Mozambique government to be able to measure long-term results for the program. However, we also expect to document relatively short-term impact, the key metric of which is increased number of children vaccinated. During the course of the program we forecast an additional 50,042 children will be fully vaccinated. This estimate has been revised, with a focus only on the provinces in which we are currently engaged. In addition, specific baseline coverage rates were revised based on new data, per:

- Cabo Delgado Province : 85% -> 89%, based on VillageReach 2010 baseline evaluation
- Niassa Province: 72% -> 80%, based on VillageReach 2010 baseline evaluation
- Maputo Province: 72% -> 73%, based on 2010 provincial evaluation

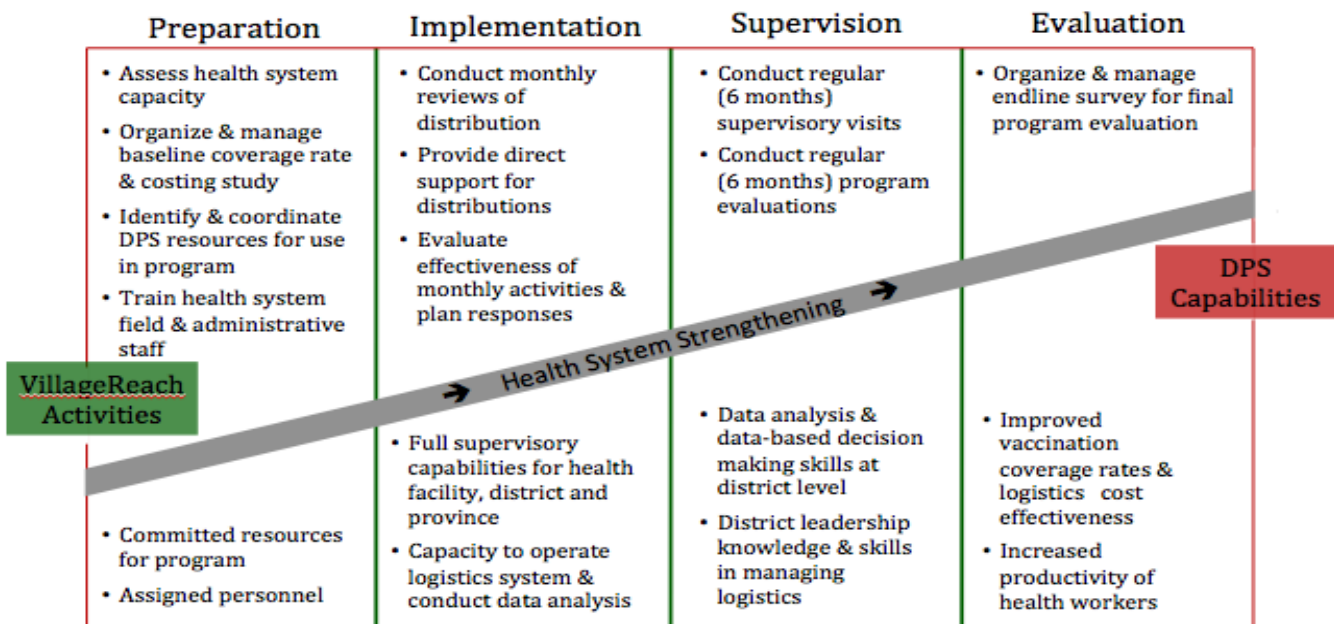
The following chart is a breakdown per province per year of the estimated impact the program will have on children who would otherwise not receive full vaccination.

Estimate of Incremental Children Vaccinated with DPS-Led Dedicated Logistics System											
Province	Population served by Dedicated Logistics System	Vaccinatable population			Children vaccinated with current system			Total children vaccinated with Dedicated Logistics System			Incremental children vaccinated
		Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	
Cabo Delgado	1,732,750	70,696	72,110	73,552	62,920	64,178	65,462	63,627	64,899	66,197	2,164
Niassa	1,250,227	51,009	52,029	53,070	40,807	41,624	42,456	40,807	44,225	47,763	7,908
Gaza	1,372,807	56,011	57,131	58,273	40,328	41,134	41,957	44,808	48,561	52,446	22,397
Maputo	1,166,376	47,588	48,540	49,511	34,739	35,434	36,143	38,071	41,259	44,560	17,573
Total	5,522,160	225,304	229,810	234,406	178,794	182,370	186,017	187,313	198,944	210,966	50,042
Notes:											
Population data is based on 2007 census and added 2% per year for population growth.											
Population served is based on the year of anticipated start date for the province.											
Vaccinatable population increases by 2% each year.											
Children vaccinated with current system is based on estimates from coverage rate studies for Cabo Delgado (89%), Niassa (80%), and Maputo (73%). All other provinces based on national rate of 72%.											
Total children vaccinated with new system is 80% in the first year, 85% in the second year, and 90% in the third year. The exception is CD where it is 90% for all 3 years.											

Strategic Approach -

In seeking to strengthen the Mozambique health system, VillageReach applies personnel and other resources more intensively at the beginning of each provincial implementation that subsequently decline over the three-year period as the DPS builds capacity to sustain the model. VillageReach has developed a phased approach to technical assistance for the provinces in order to ensure that adequate support and capacity is available at any stage within a three-year implementation. At the conclusion of three years, the government health system is expected to be fully independent of VillageReach resources and have documentable evidence of the benefit of maintaining the model and resources to support it well into the future. There are four phases of technical assistance for each province: preparation, implementation, supervision, and evaluation. The following chart presents a high-level view of the comparative responsibilities for VillageReach and the DPS as the program progresses in a province.

Phases of Technical Assistance -



The estimated time for implementing the different phases varies per province, according to known resources of each province. Following is a visual depiction of the anticipated time allotted to each phase of the project, by province.

PROVINCE	2010		2011		2012		2013		2014	
	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H
Cabo Delgado	Orange	Green	Green	Green	Green	Green	Yellow	Brown		
Niassa	Orange	Green	Green	Green	Green	Green	Green	Green	Yellow	Brown
Maputo		Orange	Orange	Orange	Green	Green	Green	Green	Yellow	Brown
Gaza			Orange	Green	Green	Green	Green	Green	Yellow	Brown

Preparation Phase Implementation Phase Supervision Phase Evaluation Phase

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The time spent to complete each of these phases depends on the capacity of each province and the resources available to support the work in each province. VillageReach provides the most intensive technical assistance during the preparation and implementation phases, with the VillageReach involvement and technical assistance greatly declining over time as the capacity of the province increases. The VillageReach technical assistance activities and key performance indicators for each phase are outlined below.

Phase 1: Preparation (4-6 months)

VillageReach works closely with DPS to plan the implementation of the system and to conduct the baseline evaluation. This includes working together to assess the current system, design the implementation of the dedicated logistics system, and identify and train the government staff needed to manage the implementation of the system. Key activities include:

- Assessment of current logistics system to identify gaps;
- Resources needed for dedicated logistics system confirmed and in place (vehicles, resources to support DPS operations, staff identified, training conducted);
- Baseline coverage rate and costing study;
- DPS staff visit another province where the system is in use for job shadowing and training;
- Training of field coordinators in logistics system, field coordinator responsibilities, and supportive supervision; and
- Training of health center staff in cold chain, immunization and vaccines, and data management.

Phase 1 is considered complete when the following indicators are met:

- Customized distribution plan is complete;
- DPS resources are committed and available for system operation; and
- Coverage rate study is complete.

Phase 2: Implementation (1-2 years)

During the implementation phase, VillageReach provides a Field Officer to support DPS in implementing and evaluating the dedicated logistics system. Once the province shows progress towards meeting the key performance indicators, VillageReach's technical assistance and the role of the Field Officer will phase out and all responsibilities are transferred to the provincial Immunization Program Chief and district immunization staff. Key activities include:

- Monthly supervision of field coordinator activities and distributions;
- Support DPS planning, budgeting, and implementation of the dedicated logistics system;
- Support DPS in conducting regular distributions, supportive supervision, and data collection to health units; and
- Support DPS in monthly activity analysis and developing and implementing recommendations.

Phase 2 is considered complete when the following indicators are met:

- Distributions of vaccines to health facilities are occurring on a regular schedule (either monthly, bimonthly, or quarterly, as determined by the province);
- The monthly funding mechanism to support the field coordinator and the distribution schedule are in place and operating for a minimum of six months) without the need for external support;
- The costs of the dedicated logistics system are included in the DPS annual plan and budget;
- The field coordinators demonstrate the knowledge and skills needed to provide supportive supervision to the staff at the health centers;
- Monthly activity analysis to support distribution is completed for at least six months without intervention by VillageReach;
- The quality of data collected by the field coordinators is accurate and complete;
- The DPS leadership can articulate the value and benefits of the dedicated logistics system;
- DPS has demonstrated ability to refine distribution system activities in response to system performance; and
- The program is meeting key distribution system indicators and targets for at least six months.

Phase 3: Supervision (~1 year)

Typical activities during the supervision phase include a supervisory visit two times per year to assess the functioning of the system, troubleshooting issues, and to review the progress towards key performance indicators. Phase 3 is considered complete when the following indicators have been met:

- The dedicated distribution system continues to run on a regular schedule with appropriate resources dedicated to its implementation;
- District leadership have increased knowledge and skills in managing logistics;
- New MISAU staff are oriented to the system and demonstrate knowledge of the operations; and
- DPS staff have capacity to train other provinces on effective implementation of the dedicated logistics system.

Phase 4: Evaluation / Impact (after 3-4 years of implementation)

VillageReach will assist the province in conducting a coverage rate study and cost study to measure the impact of the three years of implementation of the dedicated logistics system. Phase 4 and the full provincial program are considered complete when the following indicators are met:

- Completion of the endline study;
- Documented decreases in implementation costs of the system; and
- Improvements in vaccination coverage rates, targeting 90%.

Program Budget –

The Mozambique DLS Program will be conducted over a multi-year period, the length of which depends on the availability of funding and demonstrated readiness of each province. Based on the program implementation assumptions provided in the Phases of Technical Assistance Section, above, following are annual actuals/estimates costs for the program:

	Actual FY2010	Prelim Actual FY2011	Projected FY2012	Projected FY2013	Projected FY2014	Totals
Core Costs	401,787	385,396	541,409	549,408	576,879	
Cabo Delgado	111,861	62,094	94,077	153,781		
Niassa	94,334	56,957	188,505	114,437	175,159	
Maputo		114,318	95,156	99,914	159,909	
Gaza		83,671	197,993	100,249	160,261	
Direct	607,982	702,437	1,117,140	1,017,789	1,072,208	4,517,557
Indirect	85,118	182,634	290,456	264,625	278,774	1,101,607
	693,100	885,070	1,407,597	1,282,414	1,350,983	5,619,163

Notes –

- Provincial costs include baseline and endline evaluations, transport vehicles, program officer vehicles, program officer and driver salary and support costs, intra-province travel, fuel, and maintenance)
- Core costs include core staff (Country Director, Program Coordinator, Maputo Acct., Program Officer, information systems team), inter-province travel for supervision, international travel, technology support, and Maputo office costs
- Direct are costs directly related to the program.
- Indirect are costs leveraged across a variety of VillageReach programs, e.g., administration, business development, etc.

Based on these annual estimates, there is a projected program budget shortfall of \$3,050,000 that will be required to support the program in the first four provinces through the estimated period. This gap would be larger if the program extends beyond the current four provinces.

VillageReach maintains a team of program administrators who provide program management, technical training and evaluation support. The team works with national, provincial, district, and health facility MISAU employees to improve their technical skills in support of the program and to ensure appropriate levels of oversight to monitor the effectiveness of the dedicated logistics system. In addition to staffing personnel for the national program, VillageReach also incurs costs for assets it deems critical to ensure the program is implemented on schedule in each province. A summary of costs for personnel, assets and activities includes:

- Personnel: Personnel represents the largest portion of the VillageReach program budget. The scale-up of the national program requires greater administrative oversight in country than was previously required for the demonstration project in the north. Staff resources are:
 - Program Director and Program Assistant (Seattle) – provide overall leadership in terms of program design, customization of tools (e.g., baseline and endline assessments, costing comparisons), apply global best practices to the Mozambique context;
 - Technology Director and Manager (Seattle) – provide overall information system design and application of vrMIS for the national program;
 - Country Director, Administrator, Program Officer, Monitoring & Evaluation Officer (Mozambique) – responsible for ongoing dialogue with MISAU in terms of understanding and contributing to national policy and providing technical assistance, negotiate terms for agreements with each province, provide in-country day-to-day program and operations management; and
 - Per-province Field Officer and transport driver (Mozambique) – provides day-to-day support for the provincial implementation and DPS capacity building.

- Note: in some cases, a provincial administrator may be required to manage the flow of funding, accounting, and documentation.
- Monitoring and Evaluation (M&E) – significant cost is incurred to conduct baseline and endline assessments that measure both community health metrics (e.g., vaccine coverage rates), distribution system costs and performance improvements of the distribution system.
- Transportation support – VillageReach has budgeted a single transportation vehicle (a one-ton capacity Toyota pickup truck) to support the distribution of vaccines and other medical commodities in each province. An exception has been made in the case of Niassa where two vehicles are required to support the full implementation. The provincial health authorities are responsible for providing an additional one to three trucks for the dedicated logistics system. To ensure the trucks are properly driven and maintained, VillageReach is retaining ownership of the vehicles and using its own drivers. Each provincial field officer requires their own transport.

Program Update: March 4, 2011 –

VillageReach has been working on its national health system strengthening program in Mozambique for a full year. With the insight gained in from the first year, we are able to make a number of updates to the six-year project plan and budget, reflecting our greater understanding of the challenges and opportunities to progress the program.

We have greater insight into key elements of the program and clarification of our plans, including: greater understanding of the ministry of health's financial and human resources that can be allocated for the program; identification of 3rd-party funding sources in Mozambique that can be accessed by the government to support their share of costs for the program; increased funding for VillageReach as a result of contributions received in 2010 that enables us to plan further ahead; and greater visibility into projected funding for VillageReach in the future. Following are specific updates to the program:

- VillageReach is active in Cabo Delgado, Niassa and Maputo provinces. The initial start in 2010 in these provinces was slower than had been anticipated, primarily due to concerns about funding for VillageReach, and some delays in dialogue with the government, but we now have good progress in all three provinces. Baseline assessments have been completed in both Cabo Delgado and Niassa and distributions are well underway. The assessments cite current vaccine coverage rates and performance indicators – eg. stock outs of certain medical commodities.
- We continue to seek approval from the government to share publicly the baseline assessments as well as six-month evaluations in order to demonstrate the type of information we track. VillageReach will publish the assessments as soon as it receives approval from the Mozambique Ministry of Health.
- The updated project plan shows VillageReach conducting its work in eight provinces, as originally planned and documented in July 2010. Changes to the project plan reflect new information the program team in Mozambique has learned as a result of its engagement in country. The order in which we engage new provinces and the timing of activities is our best estimate, based on our understanding of provincial government resources and interest.
- In the last six weeks of 2010 VillageReach received funding from individual donors well beyond expectations. Until this time it had not been clear what level of activity would be possible for the Mozambique program in 2011.
- Because of this lack of visibility, we had not pursued any new DPS discussions late last year, except for Gaza, where the Elizabeth Glaser Pediatric Aids Foundation (EGPAF) had indicated they can provide funding for the Gaza provincial governments activities. Note that it can take some months of discussion with a provincial government before permission to work in the province is received and finances and personnel are allocated by the government.
- After Gaza, we expect to work in Inhambane, with outreach to the government there planned for once we have hired a new program manager. We have identified a strong candidate. We estimate the start of those discussions with Inhambane Province in summer 2011.
- We estimate current funding will support VillageReach activities in Mozambique through mid FY2012. This translates to a remaining funding gap of approximately \$3.5M for the six-year program. VillageReach is actively seeking new sources of funding, including foundations and individuals. A full budget summary can be found at www.villagereach.org.

Program Update: August 30, 2011 –

The Mozambique program is now approaching the end of its second year. We have expanded our presence and grown our staff to address the increased level of activity. Following are specific updates to the program:

- VillageReach is now on schedule per the above project plan, to engage with government health authorities in individual provinces – we recently adding Gaza to Cabo Delgado, Niassa, and Maputo provinces.
- However, there have been some delays in the distribution of medical commodities by the government in Cabo Delgado and Niassa, largely due to limited funding and/or slow provision of that funding to the government. Maputo Province work is ramping, with expectations for distributions to be underway towards the end of the year. We are monitoring the dialogue between the Elizabeth Glaser Pediatric AIDs Foundation, which is supporting the province's costs (see below) and the province to ensure we schedule our activities accordingly.
- Actual spending is slightly behind the projected budget of \$804,450 for the year by 10 – 15%. This is primarily because of the slow start to the year due to a lack of visibility on long-term funding (which is now not the case) and also contributed to by provincial government budget shortages (see below).
- However in the past several months we have been staffing up – adding program/field officers and staff for our Information System Group (ISG). In Mozambique, we have reached optimal capacity for the program and expect to run the program at the level of activity as originally planned.
- In Gaza, work has begun on a baseline costing study for the province. We expect distributions to begin in the next quarter on schedule. A field officer has been hired for the province.
- The scope of the program has expanded beyond vaccines to include also the distribution of Rapid Diagnostic Tests (RDTs) for HIV, malaria, and syphilis in Cabo Delgado, Gaza and Maputo.
- The integration of RDTs in the program provides for field coordinators to deliver vaccines and RDTs every month to districts and health centers, collect data about the RDTs, and provide supportive supervision. We are near the beginning of this process today – RDTs have been delivered in conjunction with vaccines, but this is not yet consistent across the provinces – and we look forward to a more complete integration in the coming months.
- We have been seeking financial support from institutions interested in covering provincial government costs to participate in the VillageReach program. This is necessary because of the provincial governments' fundamental lack of financial resources: providing budgetary approval to participate in the VillageReach program requires provincial governments to prioritize VillageReach over other program options. The provinces are not always able to do this, therefore we have sought support from other independent institutions willing to enable the governments. In Cabo Delgado, Gaza and Maputo, we have financial commitment from the Elizabeth Glaser Pediatric AIDs Foundation (EGPAF) to support government costs for our program. Terms of that support are private to EGPAF and the provincial governments.
- Baseline assessments for Cabo Delgado and Niassa were recently posted on the Mozambique page of the VillageReach section of our website, after we received Ministry of Health approval from each province.
- Initial six-month evaluations have been completed in Cabo Delgado and Niassa. In Cabo Delgado, we are preparing for the one-year evaluation. In September we expect to conduct an evaluation in Niassa. We are seeking government approval to post these reports.
- Based on financial support to date, we estimate a remaining funding gap of approximately \$3.2M for the six-year program. VillageReach continues to seek new sources of funding, including foundations and individuals.

Program Update: November 23, 2011 –

VillageReach has been engaged in its health system strengthening program in Mozambique for nearly two years. This update follows an extensive review of the program since the last report was issued in August 2011. A number of important updates have been made to the program based on this completed review, as noted in the beginning of this document.

2011 Review –

- **VillageReach is currently active in four provinces:**
 - Cabo Delgado – the program has run in the province since the beginning of 2010.
 - Distributions of medical commodities and data collection are currently active. There were five months in 2011 where distributions either did not occur or were limited to providing commodities only as far as the district level (i.e., not reaching to the rural health center). This accounts for about 33% of the total distributions throughout the life of the program. This problem, owing to insufficient funding for government operational costs, was not experienced in 2010.
 - We expect the program will conclude in the province by end of 2013, an extension of our earlier estimate of end of 2012. This is due primarily to the need to enable the DPS to develop greater experience in working with the DLS model.
 - A one-year evaluation has been completed for the province. A summary of the evaluation will be posted, pending government approval.
 - Gaza – the program began in the province in July 2011.
 - The preparation phase is complete: a baseline cost study has been completed and will be posted publicly, pending government approval; training of government staff has been completed.
 - Distribution of medical commodities began in November 2011.
 - Maputo – the program began in the province in October 2011.
 - The preparation phase is complete: a baseline cost study has been completed and will be posted publicly, pending government approval; training of government staff has been completed.
 - Data from a 2010 immunization coverage rate survey has been used to establish baseline estimates of the necessary benchmark data on the status of the province.
 - Distributions are scheduled to begin in December 2011.
 - Niassa – the program began in April 2010.
 - Distributions are being conducted in six of the province's 16 districts, owing to limited financial resources of the province. A one-year evaluation has been completed for the province. The evaluation will be posted, pending government approval.

- **Cost Increases:**
 - General cost increases – there have been broad increases in costs for fuel and other basic budgeted items in the past year (inflation exceeded 10% in 2010). In addition, the Mozambique currency, Meticaís, has increased in value against the dollar by nearly 15% since mid 2011.
 - Funding for provincial DPS costs – as noted previously, we have been seeking financial support from institutions interested in covering provincial government costs to participate in the DLS program. This is necessary because of the provincial governments’ fundamental lack of financial resources: using limited government budgets to support the DLS requires provincial governments to prioritize the DLS over other program options, which is not always possible. The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) has offered to provide financial support for Cabo Delgado, Gaza and Maputo provinces. To date, we have a firm commitment for some months of coverage in 2012 from EGPAF for both Cabo Delgado and Gaza. Negotiations on Maputo continue.
 - Indirect costs (administrative, business development,) for the program have increased.
 - We have revised the composition of our indirect to include business development costs. These expenses, shared across all of our budgeted initiatives, cover the cost of VillageReach to develop new program opportunities to support health systems and reach new communities.
 - According to this new standard, the indirect costs shown in our budget for 2012 and beyond are based on the rates for fiscal year 2011, at 26%. This provisional rate may change once we have final, audited results for FY2011.
- **Staffing:** In the past several months, VillageReach has hired staff to support the four provincial engagements. As of this writing there are 17 staff in Mozambique, based in the provinces and in Maputo city. To support provincial personnel in training and supportive supervision of the DLS program, VillageReach employs a provincial field officer plus a driver. Maputo-based staff have broad responsibility for supporting work to: supervise the vrMIS management information system, liaise with the MISAU personnel, supervise program evaluations, and provide administrative support for the program.
- We estimate current funding will support VillageReach activities in Mozambique through mid FY2012. Based on financial support to date, we estimate a remaining funding gap of approximately \$3,050,000 for the program. VillageReach continues to seek new sources of funding, including foundations and individuals.