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## The Right Cost: Analyzing Public Health Supply Chain Costs for Sustainability



USAID | DELIVER PROJECT 2013

A staff member reviews stock cards and delivery receipts at Paquitequete Health Center in Pemba, Mozambique.

**Adequate financing is essential to a well-functioning supply chain; supply chains can be optimized to minimize costs, but only if costs are known and analyzed systematically.**

### SEPTEMBER 2013

This publication was produced for review by the U.S. Agency for International Development. It was prepared by the USAID | DELIVER PROJECT, Task Order 4.

U.S. Agency for International Development  
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With the cost of medicines and supplies eating up a large percentage of health budgets, developing country governments have a keen interest in working to ensure that their public health supply chains are operating effectively and efficiently; they also recognize that supply chains need adequate financing to work properly. Having detailed and reliable information on warehousing, distribution, management, and other supply chain costs is the key to achieving this goal.

The USAID | DELIVER PROJECT (the project) developed a supply chain costing methodology and tool that supply chain managers can use to analyze activity-based costs. Applied in Guatemala, Nigeria, Rwanda, Zambia, and Zimbabwe, they have helped guide supply chain management and policy decisions. The project's recently published [\*Guide to Public Health Supply Chain Costing: A Basic Methodology\*](#), plus its [\*Supply Chain Costing Tool\*](#) and [\*Supply Chain Costing Tool User's Manual\*](#)<sup>1</sup> will make supply chain costing more accessible for management purposes.

Supply chain cost analysis has multiple uses:

- understanding total costs and costs disaggregated across different levels, functions, and partners to inform planning and management
- making cost comparisons between different supply chains, commodities, or facilities
- understanding cost drivers, such as which functions are the costliest, or how system design influences costs
- providing evidence to support advocacy for adequate funding.

## Rwanda: Improving Supply Chain Financial Sustainability

A recent costing study in Rwanda sought to improve the financial sustainability of the supply chain in three different tiers. The

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<sup>1</sup> Available at <http://deliver.jsi.com/dhome/resources/publications>

public health supply chain in Rwanda currently stores products at the central level, at 30 district pharmacies, and at more than 500 service delivery points (SDPs); including primary, secondary, and tertiary facilities. A cadre of more than 30,000 community health workers complete the system (see figure 1).

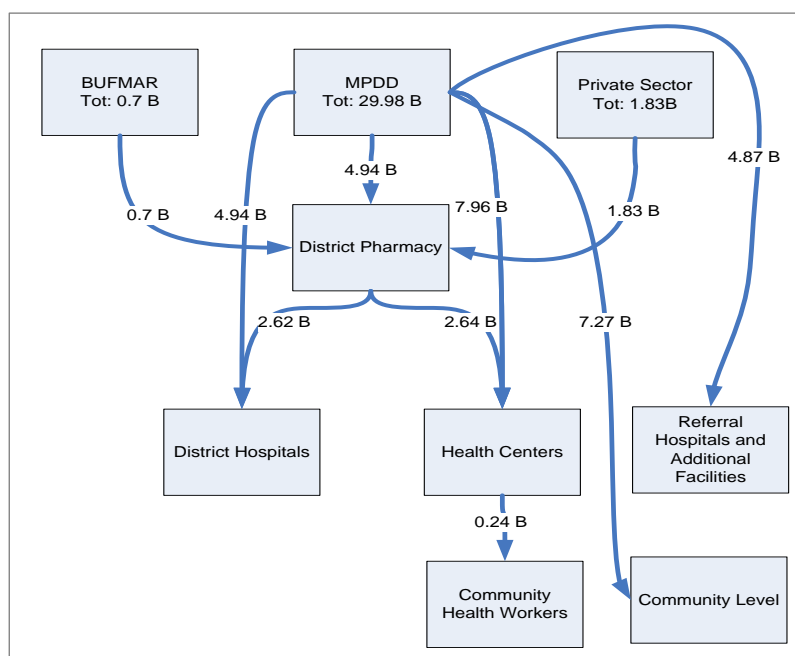
Central medical stores charge handling fees as a percentage of the unit value of the goods, but the fee could be only loosely related to the actual cost of handling a particular commodity; this was the case in Rwanda. In 2008, the government introduced a management fee of 9 percent (per product value) to enable the Medical Procurement and Distribution Division (MPDD) to cover management costs for central storage and distribution of donated commodities and to accrue capital for future investment. Since 2008, however, the value of the commodities handled per year has increased 15-fold—from about \$3.3 million to \$50 million<sup>2</sup>—while management costs have only increased four-fold.

Despite the management fee, donor partners and health programs have not been uniformly charged for MPDD's services. While most donor programs are charged 9 percent of commodity value for customs clearance, storage, and distribution of commodities from Kigali to the 30 district pharmacies and SDPs; others are charged 7.5 percent of product value (as of 2012) for a service that also includes procurement—a service that typically incurs its own fee of around 6 percent. Furthermore, district pharmacies pay MPDD a value-based markup of 15 percent for procurement, storage, and distribution of essential medicines; which means under-resourced districts are paying a higher fee than donors.

In May 2012, the Ministry of Health (MOH) and the project conducted a costing study to examine these issues; they estimated total, functional, and system tier-specific supply chain costs across all health programs; they also provided recommendations for management fees that could equitably fund supply chain operations. The results helped explain key financing issues; clarified the important, but under-funded role of district pharmacies; and informed the following recommendations:

**Harmonize management fees for all MPDD clients.** To provide direct delivery to districts, MPDD is increasing staff and expanding distribution capacity. This will also increase its expenditures. Based on an estimate of future management expenses through 2015—and applying a projection model to predict future revenue—MPDD would have an operating loss every year from 2012 to 2015, even if it maintained a 9 percent fee for all donor partners. To increase its revenue base and improve equity for all clients, MPDD should be authorized to apply a uniform 14 percent management fee—based on commodity value—for procurement, storage, and distribution; or 8 percent for storage and distribution only (see figure 2).

**Figure 1. Estimated Flow of Commodities (Rwandan Franc) by Source and Destination**



<sup>2</sup> Exchange rate of Rwandan Franc 600 to U.S. \$1.00

**Secure long-term financing for district pharmacies.** The 30 district pharmacies in Rwanda have a key role in the storage and distribution of commodities for over 500 SDPs; management responsibilities continue to devolve from the central- to district-levels. Several different funding sources support district pharmacy budgets, but the total funding is inadequate. The costing exercise showed that four out of 10 district pharmacies surveyed were probably operating at a loss

(see figure 3); more would probably show a loss if capital depreciation was included in expenses— this analysis did not consider depreciation. Funders and other stakeholders should jointly review the financial sustainability of district pharmacies and should consider approaches that ensure they can adequately cover costs, while maintaining appropriate levels of efficiency and service.

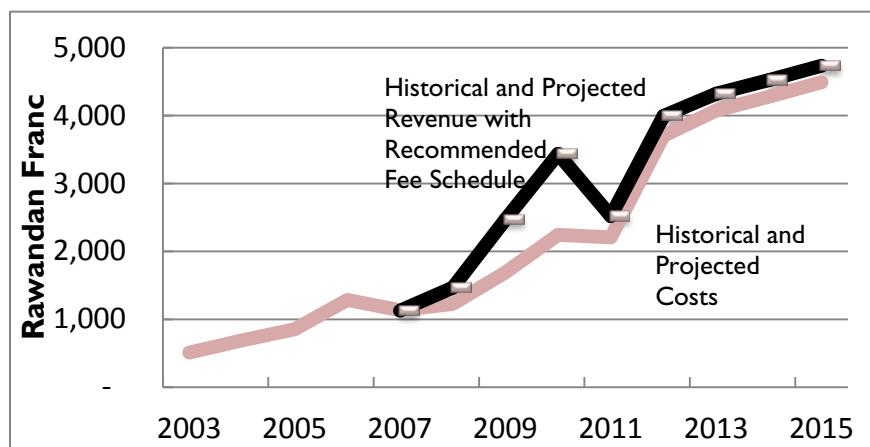
**Analyze and address the cause of commodity expiries.** The costing exercise revealed that as much as 31 percent of central-level operating expenses relate to expired products. Five warehouses are being rented to store approximately \$650,000 in expired stock and obsolete equipment. MPDD, with help from the MOH, health programs and partners, should conduct an inventory analysis to better understand the general source of the expiries, and consider operational and monitoring changes to address them. One

potential way to reduce expiries at the central level is by innovative pricing of warehouse space. In keeping with commercial practices, improved warehouse analytics and strengthened financial management systems could support a fee-for-service based on the amount of pallet space utilized.

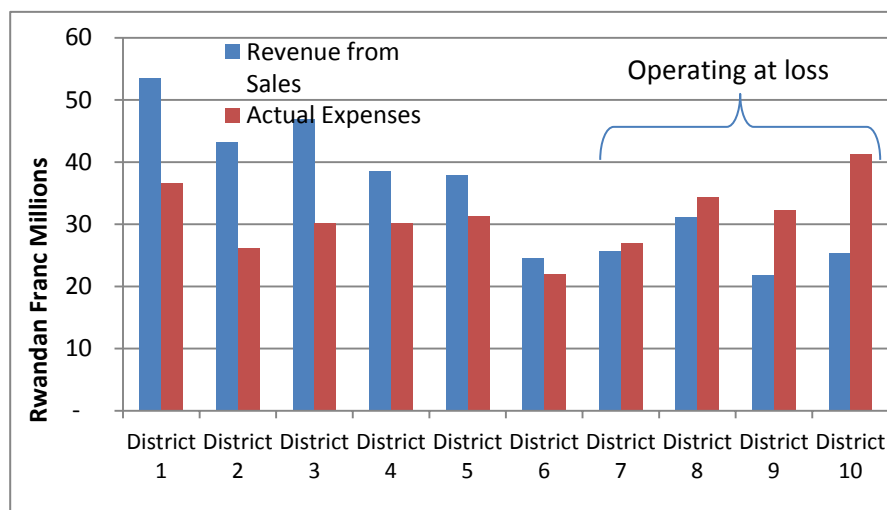
## Conclusion

Rwanda's public health supply chain has made substantive gains in product availability and information visibility during the past decade; but serving the needs of future populations will require a continuous review of operations and investments in the system. The supply chain costing assessment clarified and highlighted critical financing and financial management issues; the results will inform future system strengthening efforts. Costing exercises have also been conducted in other countries to inform policy decisions, or to test system design options. Each exercise addressed a discrete perspective of the country's public health supply chain and, also, guided practical decisions about investments in system design or optimization.

**Figure 2. Projected Revenue and Costs at MPDD**



**Figure 3. Comparison of Gross Margin from Sales and Out-of-Pocket Expenses by District Pharmacies—Millions Rwandan Franc**



- In **Nigeria**, total supply chain costs of the contraceptive logistics management system (CLMS) were collected and compared with the contraceptives' cost recovery scheme (Sommerlatte and Spisak 2010). It revealed that the CLMS had an annual operating deficit of \$518,000 and that an imbalance in the fee structure resulted in a large deficit for local governments and SDPs.
- In **Zambia**, the costs of three different distribution channels for antiretroviral (ARV) drugs were assessed (Baruwa, Tien, and Sarley 2010); the researchers found that the cost of delivering the ARVs varied widely—between 7.6 percent and 16.1 percent of the value of the commodities.
- In **Zimbabwe**, a costing analysis compared six scenarios, based on the Delivery Team Topping Up (DTTU) system for HIV commodities and the essential drug system (Sarley, Baruwa, and Tien 2010). The findings were used to determine the feasibility of expanding the DTTU to handle 44 additional commodities for the primary health center level.

Adequate financing is essential to a well-functioning supply chain; supply chains can be optimized to minimize costs, but only if costs are known and analyzed systematically. Where logistics/handling fees are charged, costing studies can help decisionmakers set an appropriate fee and mobilize adequate resources to successfully operate the supply chain.

*For more information on this brief, or supply chain costing methodology, please contact the USAID | DELIVER PROJECT at [askdeliver@jsi.com](mailto:askdeliver@jsi.com).*

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The authors' views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the United States Government.

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