USAID | DELIVER PROJECT

FROM THE AMERICAN PEOPLE

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October 2012–September 2013

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USAID | DELIVER PROJECT, Task Order 4

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Abstract

This report describes the activities and achievements of the USAID | DELIVER PROJECT, Task Order 4, from October 1, 2012, to September 30, 2013. The project works to improve the lives of men, women, and families by strengthening the supply chains that deliver health commodities, developing sustainable national capacity and ownership for operating the supply chain, and cultivating enabling environments for contraceptive security (CS).

Cover photos:

Women wait for an antenatal check up in Nampula Health Center, Mozambique. November 2005. Arturo Sanabria, USAID | DELIVER PROJECT.

Pharmacy worker at Wukro Hospital in Ethiopia. June 2012. USAID | DELIVER PROJECT.

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Acronyms

AFP	Advance Family Planning
ARV	antiretroviral
CARhs	Coordinated Assistance for Reproductive health supplies
CHAI	Clinton Health Access Initiative
CMAM	*Central de Medicamentos e Artigos Médicos*
CMS	Central Medical Store
CS	contraceptive security
DDIC	direct delivery and information capture
DFID	Department for International Development (UK)
DHS	Demographic and Health Survey
DTTU	Delivery Team Topping Up
eLMIS	electronic logistics management information system
EMF	Emergency Medicines Fund
EMLIP	Essential Medicines Logistics Improvement Program
EUV	End-Use verification
FMOH	Federal Ministry of Health
FP	family planning
FY	fiscal year
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHSP	Global Health: Science and Practice
GIS	geographic information system
GPS	global positioning system
GTM	Medications Technical Group
HEW	health extension worker
HFG	Health Financing and Governance (project)
HIV	human immunodeficiency virus
HR	human resources
IAPHL	International Association of Public Health Logisticians
IPLS	Integrated Pharmaceutical Logistics System
IQC	Indefinite Quantity Contract
JSI	John Snow, Inc.
LAC	Latin America and the Caribbean
LMIS	logistics management information system
LMU	logistics management unit
LSU	logistics sub-unit
MCH	maternal and child health

MDG	Millennium Development Goal
MNCH	maternal, neonatal, and child health
MOH	Ministry of Health
MOHCC	Ministry of Health and Child Care
MOHSW	Ministry of Health and Social Welfare
MOPHP	Ministry of Public Health and Population
MSD	medical stores department
NDS	National Drug Service
NGO	nongovernmental organization
NMFA	Norwegian Ministry of Foreign Affairs
OCR	optical character recognition
PAI	Population Action International
PATH	(acronym only)
PBF	performance-based financing
PFSA	Pharmaceuticals Fund and Supply Agency
PMI	President's Malaria Initiative
POC	proof-of-concept
PPMR	Procurement Planning and Monitoring Report
PSM	procurement and supply management
PST	pre-service training
PtD	People that Deliver
RH	reproductive health
RHB	Regional Health Bureau
RHCS	reproductive health commodity security
RHSC	Reproductive Health Supplies Coalition
RI	Regional Institute
SCC	Supply Chain Compass
SCM	supply chain management
SCMP	Supply Chain Master Plan
SCMS	Supply Chain Management System
SDP	service delivery point
SOP	standard operating procedure
SURE-P	Subsidy Reinvestment and Empowerment Program
TAG	Technical Advisory Group
TB	tuberculosis
TO	task order
TWG	technical working group
UNCoLSC	United Nations Commission on Lifesaving Commodities for Women and Children
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development
VMI	vendor-managed inventory
WAHO	West African Health Organisation
WHO	World Health Organization
ZAPS	Zimbabwe Assisted Pull System

Our approach to building strong health supply chains:

- Focus on improving health.
- Use evidence to drive action.
- Find innovative solutions for persistent problems.
- Link programs and supply chains.
- Leverage global and local partnership efforts.
- Build local capacities and increase country ownership.
- Produce measurable results.

Introduction

Well-performing, sustainable supply chains are essential to ensuring that key health commodities are available to clients, where and when they need them. As a critical part of a strong health services delivery system, supply chains support health programs that save and improve lives by providing a continuous flow of medicines and health supplies, no matter how remote the clinic or community.

By leveraging global, national, and local partnerships; applying an extensive suite of best practices; and implementing new and innovative supply chain solutions, the USAID | DELIVER PROJECT contributes to improved health outcomes. The project strengthens complex health supply chains, often in adverse environments with political instability; an uncertain economic outlook; and, frequently, a fragile infrastructure.

The project builds capacity for supply chain management (SCM) by fostering national institutions and ownership that ensures the sustainability of the interventions beyond the life of the project. Engaging all stakeholders in the supply chain, and helping partners develop organizational structures that inspire trust and are based on collaboration, helps to ensure contraceptive security (CS), as well as resilience within the supply chain.

To continually improve our practice, the project is driving innovation by applying commercial-sector learning to public-health supply chains at strategic and operational levels, building the knowledge base in these areas, and disseminating our guidance through targeted channels. A front runner in connecting cost and value, the project is advancing the understanding of supply chain costs and cost drivers; it is making the case for evidence-based investment in supply chains, as well as health commodities, globally and at the country level.

Shabana Firdous, a family welfare worker at the Family Welfare Center at United Christian Hospital, Lahore, Pakistan. Photo: Derek Brown for USAID

Highlights from the Year

During fiscal year (FY) 2013, the project's Task Order 4 (TO4) worked with 29 countries, maintaining country offices in 21 and providing short-term technical assistance to eight others (see figure 1). In Indonesia and Burkina Faso, new TO4 activities began in already established offices; in South Sudan, Togo, and Yemen offices were opened to support new programs for improving product availability and strategic development of logistics and CS interventions. During the year, operations closed in Bolivia and Nepal.

The project's efforts to apply and adapt technology, particularly to improve data visibility through strengthened logistics management information systems (LMISs), are offering stakeholders better data for decisionmaking in nine countries—including Pakistan where a web-based LMIS is being expanded to include vaccines in addition to contraceptives and tuberculosis (TB) products. Routine reporting from health facilities via mobile devices was piloted or scaled up in five countries, shortening the time it takes to report logistics data and improving the accuracy of information; mobile devices were also used for assessments or monitoring activities in seven countries. In Tanzania and Zambia, the ministries of health collaborated to develop joint requirements for an electronic logistics management information system (eLMIS), based on an open-source platform; this will result in cost savings and will provide a code base that can be a potential starting point for other LMIS implementations.

The project focused on identifying and sharing, or replicating, viable, field-tested solutions, such as Zimbabwe's Delivery Team Topping-Up system; in Nigeria, a variant of the system is improving product availability and reporting rates this year. Through the Procurement Planning and Monitoring Report (PPMR), the project is offering global- and country-level stakeholders actionable information to respond to or to avert stock crises in a greatly expanded portfolio of countries. By leveraging the project's growing experience designing and evaluating performance-based financing schemes, efforts were made in Mozambique to improve stock management; it

Workers package malaria commodities at Adil warehouse in Matola, Mozambique, for distribution to health centers and community health workers.

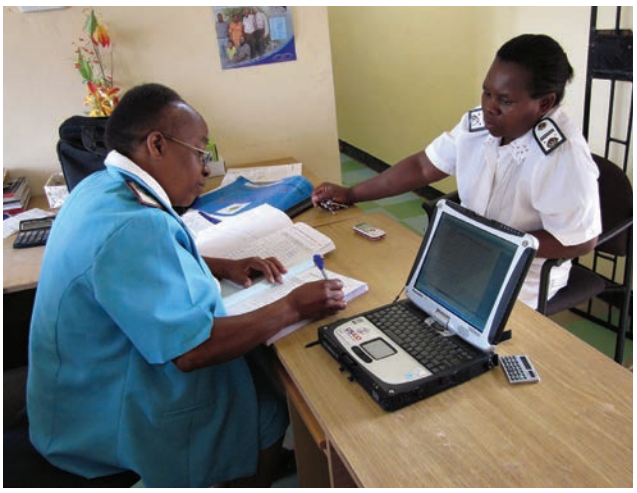
included schemes to motivate staff and align incentives among stakeholders. The project also published guidance on applying commercial-sector strategies to public-health supply chains.

The project improved how supply chain costs and financial flows are understood by documenting and disseminating what it has learned in those two areas; the costing approach was further field-tested in Guatemala this year and it is informing investment and performance-based financing (PBF) design decisions. A number of countries are benefiting from project analyses of geographic, logistics, and costing data to optimize distribution and other supply chain functions, or to visualize these data for decisionmaking. The project's thought leadership also developed further in a supply chain evolution model and development of the Supply Chain Compass, a computerized decision-support and monitoring tool. The project's efforts to ensure local ownership of and the capacity to sustain supply chain strengthening and operations resulted in capacity-building work with a growing number of capable regional institutions; for example, SCM curricula was integrated into four additional pre-service academic training programs for nurses and pharmacists.

Tanzania's new logistics management unit (LMU) has a strong implementation plan because of the project's efforts. The project also facilitated country-to-country knowledge transfer through study tours from Guinea to Zimbabwe and Liberia to Ghana, and positioned itself to apply experiences and learning from others in the development community, the private sector, and academia by participating in more than 30 presentations and sessions at 18 global or regional conferences this year.

Health-facility reporting rates indicate how well supply chain managers can access and use logistics data for decisionmaking. Reporting rates through country LMISs in nine presence countries averaged approximately 90 percent, providing stakeholders with crucial visibility into product availability at service delivery points (SDPs).

As a result of increasingly well-performing supply chains and routine supervision, monitoring, and reporting, product availability for key contraceptive methods remained similarly high at 90 percent, or better, for such high-demand resupply products as male condoms, oral contraceptives, and injectables. The notable exception among reporting countries is Malawi, which continues to struggle with higher stockout rates. Global monitoring of stock levels for 46 different programs, in 32 countries, allows the PPMR to present a fuller picture of national contraceptive supply situations.



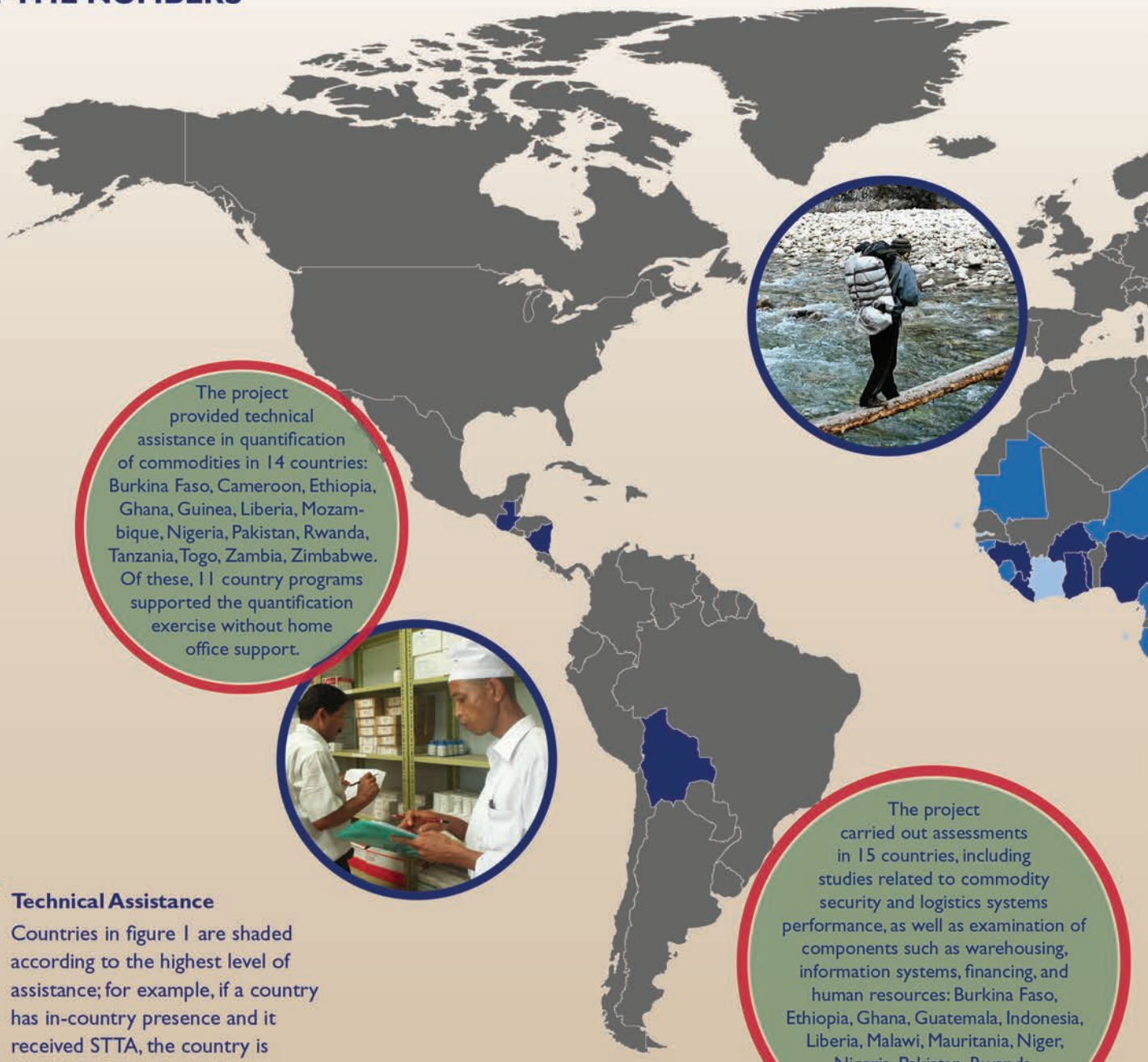
Delivery team members input the data needed to manage the Delivery Team Topping Up system.

Finally, new research by the project this year indicates that distance from a health facility and the reliability of contraceptive supplies at local health facilities definitely influence the likelihood of contraceptive use. The results underscore how important well-performing supply chains and product availability are to the success of family planning programs.

Figure 1. Where We Work

During fiscal year 2013, the project's Task Order 4 worked with 29 countries, maintaining country offices in 21 of them and providing short-term technical assistance to eight others.

BY THE NUMBERS



The project provided technical assistance in quantification of commodities in 14 countries: Burkina Faso, Cameroon, Ethiopia, Ghana, Guinea, Liberia, Mozambique, Nigeria, Pakistan, Rwanda, Tanzania, Togo, Zambia, Zimbabwe. Of these, 11 country programs supported the quantification exercise without home office support.

The project carried out assessments in 15 countries, including studies related to commodity security and logistics systems performance, as well as examination of components such as warehousing, information systems, financing, and human resources: Burkina Faso, Ethiopia, Ghana, Guatemala, Indonesia, Liberia, Malawi, Mauritania, Niger, Nigeria, Pakistan, Rwanda, South Sudan, Togo, Yemen

Technical Assistance

Countries in figure 1 are shaded according to the highest level of assistance; for example, if a country has in-country presence and it received STTA, the country is shaded in the darker color.

- In-country presence
- Short-term technical assistance
- Regional initiative

The project facilitated logistics system design exercises in two countries: Ethiopia, Yemen.
The project was involved in significant strategic planning activities in eight countries: Ghana, Indonesia, Liberia, Mozambique, Rwanda, Tanzania, Zambia, Yemen.

Six core supply chain functions contribute to supply chain sustainability.

Of 20 Project-presence Countries—

50% **have all six** supply chain systems in place for sustainability: Burkina Faso, Ghana, Liberia, Mozambique, Nepal, Nicaragua, Rwanda, Tanzania, Zambia, Zimbabwe

35% **have five of six** supply chain systems in place for sustainability: Guatemala, Guinea, Indonesia, Malawi, Nigeria, and Pakistan

10% **have three of six** supply chain systems in place for sustainability: Togo and Yemen

5% **has only one of six** supply chain systems in place for sustainability: South Sudan

100% have an **established procurement unit** or other body responsible for the procurement of health commodities

95% have documented and approved protocols, procedures, or guidelines for **procurement of health commodities**

90% have documented and approved protocols, procedures, or guidelines for **operational warehouse management** of health commodities (manual or automated)

80% have documented and approved protocols, procedures, or guidelines for **disposal of medical waste and management of expired and damaged products**

75% have documented and approved protocols, procedures, or guidelines for **transportation of health commodities**

70% have documented and approved protocols, procedures, or guidelines for **an LMIS** that routinely reports stock status from service delivery points to the higher administrative levels

Martin Likambo, pharmacist assistant, in the hospital store at the Yei County Hospital, Eastern Equatoria state, South Sudan.

New Country Programs

Juba, South Sudan

In South Sudan—a newly independent country ravaged by decades of internal conflict—the USAID | DELIVER PROJECT partnered with the United Kingdom's Department for International Development (DFID) and the Nor wegian Ministry of Foreign Affairs (NMFA) to implement the Emergency Medicines Fund (EMF) program, which will provide a one-year supply of essential medicines and health commodities. The EMF will enable continuity of primary care health services across the country by ensuring that medicines and commodities are procured, stored, and delivered to county health departments.

The project is also improving the capacity of the Central Medical Stores (CMS) in Juba by dejunking; repairing the electrical system for power lighting, ceiling fans, and air conditioners; developing standard operating procedures (SOPs) for storage and distribution of pharmaceuticals; and developing an Excel-based tracking and monitoring sheet for moving commodities within the CMS.

Sanaa, Yemen

Despite a challenging security situation in Yemen, the project began working with the Ministry of Public Health and Population (MOPHP) to strengthen the public health supply chain and improve reproductive health commodity security (RHCS) using key strategic activities. In collaboration with UNFPA, the project supported the MOPHP as they completed a five-year strategic plan and operational budget, and facilitated its endorsement by national part ners, governorates, and other stakeholders.

To improve the contraceptive supply chain, the project facilitated a supply chain system design workshop, bring ing together decisionmakers and practitioners from all levels of the supply chain to garner support for an updated system design and development of new SOPs, based on the agreed-to design. The project also led the development of a five-year national forecast for contraceptives to inform procurement decisions by donors with pending com mitments. Recognizing the need for advocacy around family planning, the project is working with the MOPHP to develop an advocacy plan. For resource mobilization among donors/partners, the project initiated the development of advocacy tools, including a five-year national forecast for lifesaving RH commodities.

System Strengthening for Health Impact

To improve health outcomes, countries need a steady supply of health commodities at every SDP. To achieve this, the project conceptualizes and implements supply chain solutions that are guided by best practices and innovations tailored to local contexts. To leverage their expertise, the project works with all levels and functions of in-country public-sector supply chains, building strategic partnerships with the private sector, nongovernmental organizations (NGOs), and academia.

With comprehensive strategic planning, time-tested supply chain best practices, and the newest technologies and approaches—including geographic information systems (GIS), network modeling, and eLMIS—the project helps countries strengthen complex public health supply chains. Much of the work to strengthen supply chains relates to the ability to access and analyze logistics data for decision-making. With greater visibility and better communication up and down the supply chain, performance improves and commodities are more likely to be available at the last mile.

The project helped advance the supply chains in many countries, which was the result of longstanding programs that include the Delivery Team Topping Up (DTTU) system in Zimbabwe; as well as new efforts to develop, test, and implement effective system improvements, including the ILSGateway in Tanzania.

Improving Visibility and Analysis of Data for Decisionmaking

Data visibility is a key characteristic of a well-performing supply chain. Yet, in many of the countries where we work, capturing and reporting accurate and timely LMIS data from the lower levels of the supply chain remains a challenge; and data is primarily recorded on paper. As such, the project continues to explore electronic data transfer—e.g., short message service (SMS); web-based systems; electronic documents, including MS Word, Excel, or scanning with optical character recognition (OCR)—as a way to move data faster and more accurately from facilities to the central level.

Systems strengthening activities help increase the performance of in-country supply chains. Guided by best practices and innovation, each intervention is tailored to the local context and constitutes a step toward the integrated supply chain.

More countries than ever before are using innovative technologies to strengthen their public health supply chains

9 countries are using eLMIS	7 countries are using mobile technologies	7 countries are using geographic information systems

To assess the potential of OCR for tapping into current paper-based systems, the project conducted a proof-of-concept (POC) exercise to evaluate a number of OCR tools and their applicability for digitizing paper reports. Of the five tools evaluated for accuracy and feasibility in reading data from paper LMIS forms in the field, one—Captricity—showed potential for digitizing paper forms. Once digitized, the data can more easily be analyzed and made available for supply chain decisionmaking. In Mozambique, to improve data collection at the last mile, the project conducted a pilot test of Open Data Kit scan technology, which facilitates community health worker logistics reporting.

Data dashboards and GIS mapping can be effective tools for visualizing data to make it more accessible. In Ethiopia, the project, in collaboration with Tigray Regional Health Bureau (RHB) and Pharmaceuticals Fund and Supply Agency (PFSA), developed dashboards that present facility data in a meaningful way and improve the use of logistics data for decisionmaking. In Mekelle (Tigray region), a facility dashboard allows the RHB and PFSA hub to see real-time stock levels of health commodities in up to 12 hospitals in the region—a major milestone in achieving data visibility across all supply chain levels.

Using GIS and web-based maps, the project improved and expanded access to the Procurement Planning and Monitoring Report (PPMR) data, making it easier for donors and stakeholders at the global level to track contraceptive stock levels for national supply chains in more than 30 countries (see figure 2). Better access to data enables decisionmakers to respond to and prevent stockouts. For stakeholders in the field and for donors, this analysis and presentation of data can also demonstrate the effect of policy and management decisions on the supply of commodities. Through GIS, data becomes more concrete and visible to decisionmakers. The map is available on the project's website and on the Reproductive Health Supplies Coalition website.

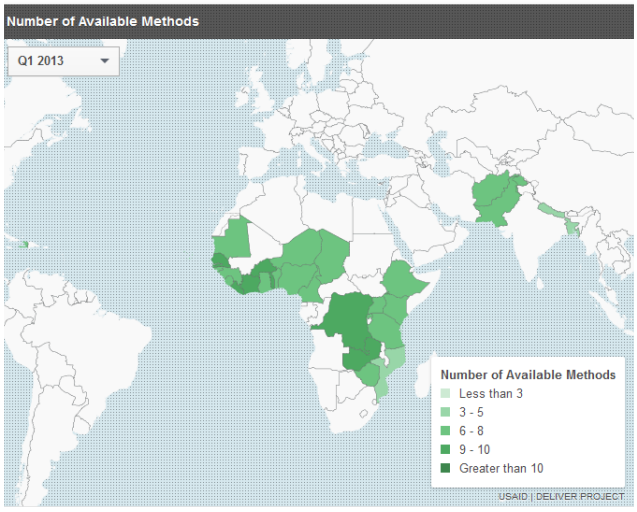
Our work using geography to visualize data is enhancing the project's use of analysis for supply chain strengthening; it is also adding to the global GIS body of knowledge. In Tanzania, the project supported geolocation of health facilities; in South Sudan, logistics data were mapped to illuminate potential distribution routes. In Nigeria, both

Pakistan: Contraceptive Prevalence Rate Increases and Government Funding Sup ports Sustainability of the Supply Chain

In Pakistan, project activities generated recognition of USAID, both locally and internationally, based on modeling that used three years of logistics data. Notably, the Demographic and Health Survey (DHS) 2012-13 reported an approximately 5 per cent increase in the contraceptive prevalence rate.

Project efforts to achieve sustainability in supply chain management resulted in resource mobiliza tion from the GFATM for systems strengthening, as well as $8 million in co-financing by the Pakistani federal and provincial governments to support commodities, transportation, and warehousing. Based on the project's analysis of costs and trans portation requirements, all provincial governments have partially allocated monies in their annual development budgets.

Figure 2. Number of Available Methods from the Online Procurement Planning and Monitoring Report



paper maps and global positioning system (GPS) tracks, transformed into digitally mapped roads, contributed to optimized distribution planning. GIS work is underway in Malawi to present the relationship between logistics and Demographic and Health Survey (DHS) data, over time, at the household level; supply chain managers in Pakistan will soon be able to see web-based LMIS data on a map.

As the effectiveness of the supply chain hinges on access to information for decisionmaking, building a better LMIS is a major focus for the project in many countries. In an innovative approach to building an eLMIS, Tanzania and Zambia collaborated in developing system requirements for implementing OpenLMIS, an open source platform based on broadly applicable requirements; it was created by multi-donor, multi-partner groups (see figure 3). The project has enhanced the OpenLMIS codebase to meet the specific requirements of the Tanzania and Zambia eLMIS implementations, which means that it can be used for future eLMIS implementations and, potentially, can reduce the cost of building such systems in other countries. The joint requirements process also resulted in cost savings. During FY2013, the project began implementing the first version of the system in both countries.

The eLMIS computerizes the collection and reporting of essential logistics data; it will greatly improve timeliness and accuracy of data, empowering health staff with the evidence they need to make better SCM decisions. ThoughtWorks programmed OpenLMIS using the specifications developed by the two countries, under contract to and with the technical guidance of VillageReach; with funding from the Rockefeller Foundation, Bill & Melinda Gates Foundation, PATH, UN Commission on Life-Saving Commodities via UNICEF, and USAID.

As the effectiveness of the supply chain hinges on access to information for decisionmaking, building a better LMIS is a major focus for the project in many countries.

Figure 3. Why eLMIS? An Excerpt from the Infographic Improving Health Outcomes in Zambia

During the year, the project developed or supported computerized LMIS work in nine countries, including Ethiopia, Ghana, Malawi, Mozambique, Nigeria, Pakistan, Tanzania, Zambia, and Zimbabwe. Mobile phones were used to conduct both assessments and routine monitoring activities in Ethiopia, Ghana, Malawi, Mozambique, Nigeria, Tanzania, and Zambia; and routine reporting from health facilities via mobile devices was piloted or scaled up in Ghana, Mozambique, Nigeria, Tanzania, and Zimbabwe. End-to-end visibility into supply chain data is an integral feature of a well-performing supply chain; therefore the advancement of LMISs—whether paper-based, computerized, or a hybrid—will continue to be a cornerstone of the project's work in strengthening national supply chains.

In Ghana, mobile phones are used to report logistics data via the Early Warning System, an SMS-based stock reporting system.

Learning from Private Sector Practices

To achieve optimal performance within the supply chains we work with, the project has looked to the private sector, where supply chains have evolved to seamlessly connect each part of the chain. In Zimbabwe, the DTTU model, based on the commercial sector practice of vendor-managed inventory (VMI), has proven effective in delivering health commodities directly to health facilities; this has resulted in high rates of reporting, as well as stock availability. Government personnel are responsible for key distribution and coordination tasks, as well as the storage of certain commodities.

In FY2013, a pilot program in Nigeria's Ebonyi and Bauchi states for a similar VMI health commodity delivery system—known as direct delivery and information capture (DDIC)—reduced stockouts of contraceptives and other common health products in Ebonyi from more than 70 percent to below 5 percent, after only four consecutive supply trips.

State ministry of health personnel are team leaders who travel on delivery trucks to assess stock-on-hand and other logistics data, which is entered into a specifically-designed inventory management database called AutoDRV. This mobile routine data collection at facilities has strengthened the LMIS and resulted in increased data visibility, giving the project and other stakeholders immediate access to logistics information; they can monitor system performance and prepare for the next resupply period. An upcoming cost-effectiveness evaluation will compare DDIC to a number of other delivery systems currently in use in Nigeria.

Focus on Performance through Improved Logistics System Design and Targeted Improvements

Thoughtful logistics system design, grounded in industry best practices, can influence supply chain performance by ensuring that actions are well coordinated. To achieve the best system performance, the project looks to field-tested solutions, as well as innovative approaches, to deliver the system improvements that best fit the country's specific context, while maximizing efficiency and sustainability.

The Zimbabwe Assisted Pull System (ZAPS) pilot is an example of a new intervention to accelerate the progressive transformation of supply chains. Over the past 10 years, the Zimbabwe Ministry of Health and Child Care (MOHCC) has developed and implemented a number of vertical supply chains for condoms and contraceptives; malaria, tuberculosis, and essential medicines; and antiretrovirals (ARVs). Although the systems have achieved high supply chain performance, including reporting rates and resupply rates of around 98 percent, they are resource intensive and have limited capacity to withstand an increasing volume of products.

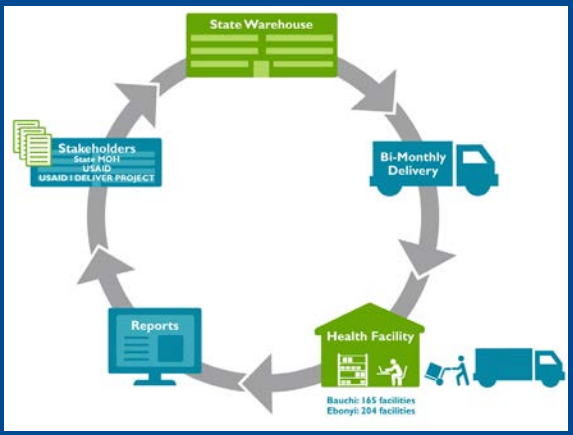
Using ZAPS, the MOHCC plans to reduce the number of systems and implement more effective and efficient supply chain operations that will be sustainable in the medium to long term, without sacrificing performance. The project believes that a rigorous evaluation of ZAPS will provide a new stream of evidence-based knowledge

Nigeria: DDIC

The delivery team completes the records needed to resupply a facility served by the DDIC system, while a health worker administers vaccines.

In Ebonyi state, stockouts of contraceptives and other common health products dropped from more than 70% to below 5% from January to September 2013 with bimonthly deliveries from DDIC (see figure 4).

Figure 4. Direct Delivery and Information Capture (DDIC) Model



Workers offloading health commodities at the National Drug Service central warehouse in Monrovia, Liberia.

of a logistics system design option that will contribute to global best practices for public health supply chains.

Following a successful pilot, another pull resupply system is being scaled up in Zambia. The Essential Medicines Logistics Improvement Program (EMLIP) will improve access to commodities, particularly reproductive health, family planning, and malaria products. So far, it has been rolled out to 27 districts throughout the country, which includes training 1,814 health staff. Since the roll-out, reporting rates have continued to average 94 percent in the 27 districts. Central stockout rates have been reduced from about 50 percent in October 2012 to approximately 28 percent in October 2013. The project will continue to roll out the EMLIP in 2014.

In Liberia, the project worked with the Ministry of Health and Social Welfare (MOHSW), National Drug Service (NDS), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), and partners to respond to problems with product diversion and to devise an interim distribution system that would allow donated commodities to flow after a three-month suspension in distribution. This interim approach was designed to build stronger accountability for health commodities, improve the accuracy and availability of logistics data, and enhance commodity availability at facilities. Implementation of the interim approach led to the roll-out of a top-up distribution system in Grand Bassa, Bong, Nimba, Margibi, Montserado, and Lofa counties.

With support to the Nigerian government's Subsidy Reinvestment and Empowerment Program (SURE-P), the project demonstrated leadership in the management of maternal and child health (MCH) commodities. SURE-P currently distributes MCH commodities to 625 health SDPs nationwide, with plans to scale up to 1,000 health facilities. The project worked with the family planning and reproductive health program to ensure that SURE-P sites offer comprehensive MCH services, including reproductive health and family planning. To address a number of supply chain weaknesses, the project conducted a supply chain course for SURE-P management and staff, completed forecasting and quantification of SURE-P–supported commodities, designed a logistics system to manage the MCH commodities, and assessed zonal warehouses.

In Malawi, economic and political crises in the country and a negative and declining environment within the Ministry of Health (MOH)—as well as low morale and widespread underachievement in the health sector and the health commodity supply chain—resulted in declining health facility reporting rates in 2012. In 2013, because of a concerted plan of action that included intensive joint supervision of the facilities, focused training efforts, and the involvement and training of key partners; the project dramatically turned the reporting rates for family planning and other products around—from 61 percent for the quarter ending in March 2013 to 84 percent for the quarter ending in September 2013. The reporting rate for HIV test kits improved even more—from 57 percent to 87 percent in the same nine-month period. The rates for September 2013 were both above 90 percent. Due to management and performance problems at the CMSs, in addition to other factors outside the project's control, commodity availability did not show the same improvement, although the picture started to improve at the end of the fiscal year.

Using Strategy and Coordination As Key Tools for Interventions

Health supply chains are complex systems that include many actors at different levels and functions. Common to all is the need for strategy and coordination, both in daily operations and for long-term planning. Strategic plans and supply chain master plans, with a longer view and a broader scope, are increasingly important for countries as they look to improve health outcomes for growing future populations. Such planning exercises help stakeholders come together to find a way forward, while providing a basis for developing and monitoring operational plans.

Ghana's Supply Chain Master Plan (SCMP) has the potential to dramatically improve service delivery. To support the implementation of the plan, the project conducted various analyses and assessments, including an IT/LMIS landscape analysis and a national warehouse assessment, which provided comprehensive information for decisionmaking about the future supply chain. The project also assessed options for using performance-based financing to improve supply chain performance.

In Rwanda, using the results from a national supply chain assessment as a baseline for prioritization, the project supported the Ministry of Health in developing a five-year National Pharmaceutical Supply Chain Strategic Plan. To move toward a high-performing, integrated system, the plan was developed using an inclusive process to define strategic objectives and interventions. The MOH approved the plan and the project continues to support the MOH's implementation.

During planning, assessments and analyses play a critical role in informing decisions. In Tanzania, a fleet requirements analysis informed the Medical Stores Department (MSD) how best to utilize available vehicles; it also noted resource gaps that will need to be addressed to run the direct delivery system, which the project is helping to expand. National expansion of the program (including Zanzibar) will entail a ten-fold increase in the number of distribution sites. Upcoming analyses will determine the most efficient grouping of health facilities with the zonal stores that will resupply them; the analyses will also determine optimal distribution routes. In the coming year, the project expects to finalize the national network and transportation optimization analysis for all nine MSD zones and to begin the full implementation phase of the expansion.

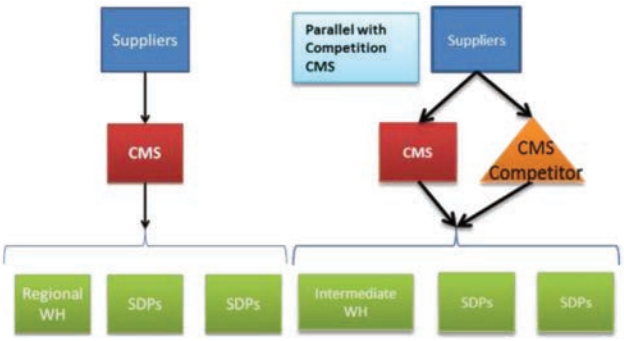
In Malawi, health commodities are being transported by boat.

In Mozambique, as part of the Reproductive Health Medications Technical Group (GTM) subgroup, the project's work to analyze and process provincial quarterly requisitions with the *Central de Medicamentos e Artigos Médicos* (CMAM) resulted in a reduction in provincial stockout rates. Assessment or planning activities to strengthen supply chains and support CS also took place, or are underway, in Burkina Faso, Indonesia, Liberia, Mauritania, Niger, Togo, and Yemen.

Building the Supply Chain Body of Knowledge

In addition to the numerous strategic and operational system strengthening activities implemented with the MOHs and other partners, the project also added to the supply chain knowledge base by exploring sustainability in SCM, new paradigms for system design, and risk management. The research resulted in a new set of resources, including guidance documents and tools that document the project's learning; but more important, helped translate intellectual principles into real system improvements on the ground.

Figure 5. Parallel Central Medical Stores with Competition—One of Several Alternative Approaches to the Traditional Role of the Central Medical Store



At a workshop in Bogota, Colombia, youth leaders from Bolivia, Nicaragua, Dominican Republic, El Salvador, Guatemala, Honduras, Paraguay, and Peru learned how to use data and evidence to advocate for health rights and to raise awareness about barriers to accessing contraceptives and family planning services.

Stakeholders across contexts can use the project's documentation and tools in concrete decision-support processes to better understand their current supply chain situations and options for improvement. Development of such products offers the project and partners across sectors an opportunity for collaboration and creates a multiplier effect as resources are disseminated far beyond the reach of the project's direct interventions.

During FY2013, the project identified a new set of approaches that either de-emphasize the CMS or enact a radical shift in its management. CMSs in low-income countries often form the backbone of public health procurement and distribution models. Yet, in practice, CMSs sometimes demonstrate inadequate performance in areas that include procurement, financial and logistical management, security, and storage. The findings from this work are published in a detailed report, *Alternative Public Health Supply Chains: Reconsidering the Role of the Central Medical Store;* and a succinct technical brief, *Getting Products to People Without a Traditional Central Medical Store* (see figure 5).

The new approaches potentially offer a superior solution to improving supply chain performance when compared to approaches that continue to emphasize the CMS. A framework for selecting an approach can help determine whether such a change is suitable for a particular supply chain. Country government stakeholders and supply chain strengthening partners now have an articulated set of potential options and case studies to inform local discussions around the logistics performance implications of a traditional CMS-centered system.

Another document published this year focused on risk management for public health supply chains. For commercial-sector supply chains, risk management involves a continuous process of assessing and responding to risk within the supply chain. The project developed a toolkit—*Risk Management for Public Health Supply Chains: Toolkit for Identifying, Analyzing, and Responding to Supply Chain Risk in Developing Countries*—to introduce risk management activities that can provide public health supply chain managers in developing countries with a simple process for identifying and analyzing sources of risk and developing a robust management response.

By bringing stakeholders together in a risk management workshop, coordination among stakeholders also improves as they assess and analyze the risks in the supply chain; such interaction also encourages improvement in the supply chain's governance and leadership—a focus of the Supply Chain Integration Framework.

In FY2013, the Supply Chain Sustainability Technical Advisory Group (TAG) further explored the prospects for supply chain sustainability. The group, comprising international supply chain and development experts, discussed

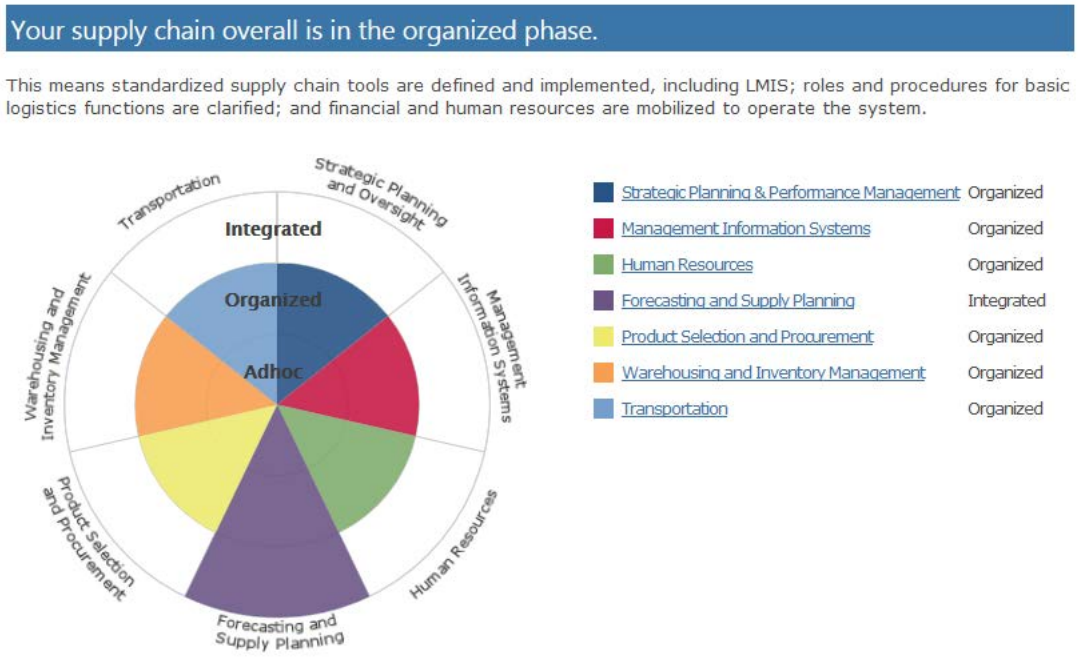
issues around country ownership and how it relates to supply chain sustainability. Among its findings, the TAG considered the role of an engaged citizenry in maintaining and improving public health systems. Published outputs of the TAG's findings will provide high-level strategic guidance to in-country supply chain managers and policymakers.

Also in the realm of supply chain integration and sustainability, the project developed the Supply Chain Compass (SCC), a web-based self-diagnostic tool for supply chain improvement (see figure 6). It is a learning tool for the basic elements of a strong supply chain, and it provides a dashboard diagnostic report that can help countries quickly understand where they are on the supply chain evolution trajectory; it also provides a high-level roadmap for planning technical assistance and investment, including suggestions for when to apply full assessments to evaluate progress.

The tool benchmarks a country's overall supply chain strengthening approach against a set of criteria developed and adapted from a supply chain evolution model developed by the project, JSI's *Supply Chain Integration Framework, and the SCMS project's Capability Maturity Model* from SCMS.

SCC helps in-country supply chain managers, country teams, and donor activity managers place a supply chain on an evolutionary trajectory in two key areas: *Managerial* (Strategic Planning and Oversight, Management Information Systems, Human Resources) and *Functional* (Product Selection and Procurement, Transportation, Forecasting and Supply Planning, Warehousing and Inventory Management). The tool also includes references to resources and tools from a range of partner organizations to help build well-performing, integrated public health supply chains.

Figure 6. Sample Output from Supply Chain Compass, a Web-based Self-Diagnostic Tool for Supply Chain Improvement



Building Sustainable National Capacity and Supporting National Ownership

Supply chains depend on a skilled and capable workforce to function effectively. Building both individual and institutional capacity is a significant part of the project's approach to strengthening supply chain performance and promoting local ownership and management of the supply chains in the countries we support. Through a variety of didactic interventions and knowledge sharing, both virtual and face-to-face, the project builds the technical skills and abilities of decisionmakers and logisticians working at all levels of the supply chain.

The project collaborates with and provides technical assistance to local and regional organizations as they work to strengthen in-country supply chains and to build the local capacity to manage them. The project's experience providing technical assistance to countries indicates that active participation from local individuals and institutions is essential for the longevity and success of supply chain performance improvements. By promoting appropriate human resource processes and procedures in local supply chain institutions, the project helps to build a motivated, well-educated, and coordinated supply chain workforce that can create and maintain successful, locally owned public health supply chains.

Using Cost-Efficient Means to Build Strong Health Workforces

Personnel who carry out SCM tasks often have no formal training in SCM, which can lead to poor commodity management and can result in poor service delivery. Traditionally, health workers learn logistics tasks during in-service trainings, which are expensive to implement and often rely on external technical assistance. To ensure a more sustainable model for capacity building, the project continued to promote pre-service training (PST) for future supply chain professionals.

PST activities have enabled countries on three continents to introduce supply chain training into pre-service curricula and to develop and implement training programs that better prepare the health workforce for logistics tasks. With PST, students of nursing, pharmacy, and public health are required to take courses that focus on supply chain theory and applied concepts, preparing them to take on supply chain tasks when they enter the health workforce.

To function effectively, supply chains depend on a skilled and capable workforce. Building individual and institutional capacity strengthens supply chain performance and promotes local ownership.

In FY 2013

2,615 people trained by the project

7 courses taught by regional institutes

591 learning sessions completed through online courses

Countries with a pre-service training program:

9

Countries with a logistics management unit or dedicated supply chain management positions:

16

Figure 7. An Infographic Highlights the Value of Pre-Service Training

Together, in-service training and pre-service training create a supportive learning environment where health workers can build and expand their competency in SCM to help ensure that commodities will be available for their clients. In FY2013, the project introduced PST in Ghana and Tanzania and supported the initiation of a logistics training program for pharmacist assistants in Burkina Faso. These three countries joined the growing list of nations where PST in SCM is already in place; Ethiopia, Malawi, Pakistan, Rwanda, Zambia, and Zimbabwe. The project's experiences with PST were documented in *Pre-Service Training: Saving Lives by Developing Local Capacity in Supply Chain Management (SCM)* (see figure 7).

In Rwanda, the project evaluated PST activities begun in 2010. To date, more than 300 students have graduated with training in SCM. Respondents in the evaluation rated the training contents highly relevant to supply chain

job duties and very effective in preparing them to complete SCM tasks on the job. More than 40 percent of the countries where TO4 works have developed a long-term training strategy, in conjunction with the MOH, for staff working with the country's logistics systems; all of the strategies include future PST activities.

Other types of logistics training addressed more immediate needs. In Ethiopia, health posts and health extension workers (HEWs) are key to the country's strategy to improve health outcomes. The last mile of the supply chain is the most challenging for commodity availability. As part of the roll-out of a streamlined supply chain system—the Integrated Pharmaceutical Logistics System (IPLS)—the project provided training in key supply chain procedures and practices for more than 600 health center staff, representing about 300 health centers that, in turn, support about 1,500 health posts.

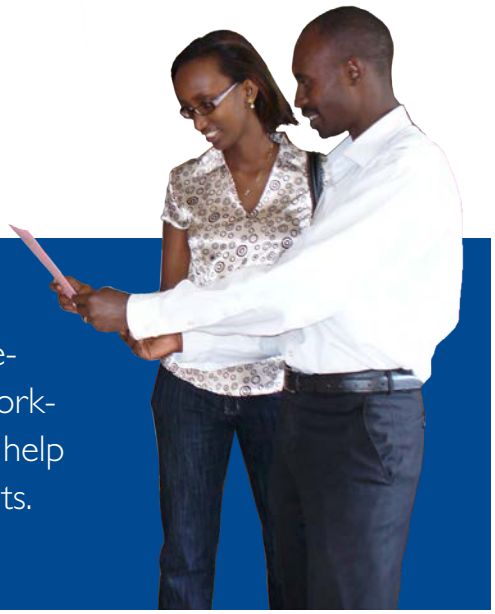
South-to-south learning remains an important part of capacity building. In July 2013, a delegation from the Guinea Ministry of Health and Public Hygiene and the Guinea CMSs visited Zimbabwe on a three-day study tour to learn about their logistics sub-unit (LSU). The delegation observed the day-to-day operations of the LSU, learned how it was designed and implemented, and heard about the positive impact it has had on managing health commodities and their availability at health facilities. As a result of the positive feedback from the study tour, the Guinea MOH and stakeholders, with the project, are now establishing a similar logistics management unit (LMU) in Guinea.

As incubators for logistics champions and catalysts for using logistics data for decisionmaking, LMUs can be powerful focal points for health logistics. In Tanzania, the

Abosse Mechalu, store manager at Bussa Health Center in Ethiopia, updates bin cards for health commodities.

MOHSW and the MSD, with support from the project and SCMS, established an LMU as a management structure responsible for coordinating the logistics management activities of multiple health commodity categories. The unit will perform strategic and operational functions, including logistics data management; quantification, monitoring and evaluation; coordination and collaboration; supply chain intervention planning, training and capacity building; and supervision. The LMU is expected to be in place by November 2013. In 14 countries, the MOH had a position or a unit of people dedicated to SCM.

Together, in-service training and pre-service training create a supportive learning environment where health workers can build and expand their competency in SCM to help ensure that commodities will be available for their clients.



Promoting the Professionalization of Public Health Logisticians

Elevating the profile of SCM as a distinct and critical profession, with its own unique qualifications and competencies, is an important part of creating a robust supply chain workforce that can support the sustainability of service delivery programs.

The International Association of Public Health Logisticians (IAPHL) has become an important structure to support SCM professionals, giving them a virtual space to share knowledge, experiences, and resources. In FY2013, IAPHL membership has grown by 45 percent, with a presence in 107 countries; it has become a hub for logisticians who want to continue to engage and develop professionally (see figures 8 and 9). An improved IAPHL website—including a blog, resource library, news, events, and job opportunities—will facilitate new ways for knowledge-sharing, networking, and professional development among IAPHL members.

IAPHL helped organize and manage the 5th Global Health Supply Chain Summit in Kigali, Rwanda, on November 14–16, 2012. The summit was attended by 163 visitors from every continent. IAPHL raised funds for the event from eight corporate donors and they sponsored 18 IAPHL members to attend. Almost all participants were from public, private, and academic organizations based in Africa. Summit evaluation results were extremely positive; they indicated that participants hoped they would be able to apply many of the skills and lessons learned from the summit into their own professional environments.

To support the global *People that Deliver* (PtD) initiative to professionalize the health supply chain workforce, the project continued to lead the Advocacy and Knowledge Management Working Group and participated in the TWG. The working group formed strategic partnerships with the World Health Organization (WHO) and i+solutions, and disseminated print and presentation materials to raise awareness of the need for professionalizing human resources for SCM (HR for SCM).

TWG members continue to promote workforce development in SCM; and, to this end, in June 2013 published *Human Resource Capacity Development in Public Health Supply Chain Management: Assessment Guide and Tool.* This resource is a toolkit to help public health supply chain managers in developing countries assess and improve the management of their human resources. It offers a structured, rating-based methodology that collects data needed for a rapid, comprehensive assessment of the capacity of the human resource support system for a country's supply chain.

Although PtD's primary focus is strengthening supply chain human resources, with the support of the project, a country-specific PtD Forum in Indonesia has become a mechanism for implementing a range of interlinked procurement and SCM procurement and supply management (PSM) activities. The PtD Forum has enabled stakeholders to focus on PSM strengthening efforts and to build local ownership of supply chain initiatives. Forum members are implementing activities that were developed as part of a joint work plan with the General Directorates for Pharmaceutical Services and Medical Devices (BinFar) and for communicable diseases.

Figure 8. IAPHL Membership Growth

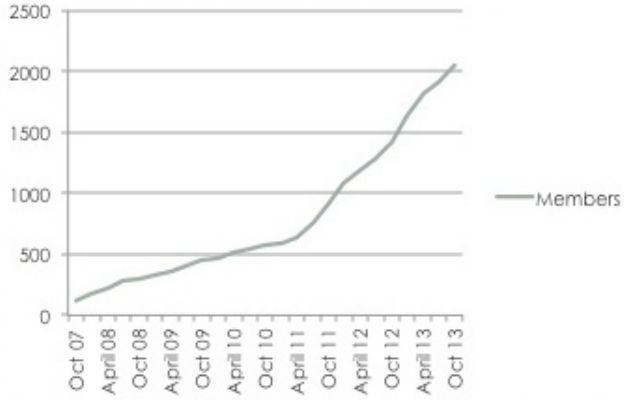
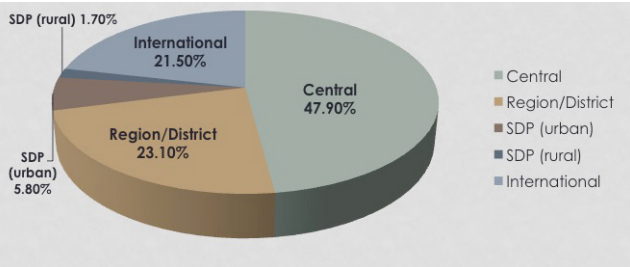


Figure 9. IAPHL Membership by Level of the Supply Chain



New Tool to Help Improve Human Resource Capacity in Rwanda and Zim babwe

The project applied the *Human Resources Capacity Development in Public Health Supply Chain Manage ment: Assessment Guide and Tool* in Rwanda and Zim babwe. Cross-functional collaborative teams used the tool's standardized data collection survey in focus groups and interviews to pinpoint strengths and weaknesses of human resource components that affect supply chain performance.

In Rwanda, the assessment provided a useful frame work for mapping staffing skills and competencies required for running an effective logistics manage ment office.

In Zimbabwe, the results of the assessment gener ated significant attention at the Ministry of Health. The assessment highlighted the need to improve employee motivation and retention rates to im prove consistency and performance; this is now a priority for the Ministry of Health.

Improving Global Access to Logistics Training

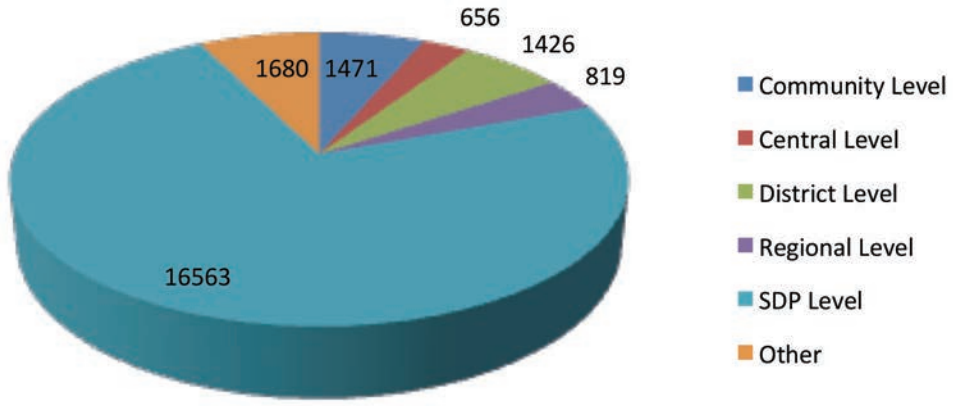
Ensuring access to supply chain trainings for logisticians in low-income countries is a critical element of the project's approach to building a strong healthcare workforce capable of maintaining a secure supply of health commodities. Learning opportunities, whether online, in-person, or as part of a professional association, must be available for logisticians to increase their skills and further their careers.

Through the Regional Institute (RI) initiative, the project has built the capacity of local regional training institutions to provide supply chain trainings to logisticians in their local languages and within their geographic areas. RIs include ESAMI in Tanzania, PRISMA in Peru, BIOFORCE in Burkina Faso; this year, S Buys (formerly known as RTT) in South Africa became the fourth RI to offer the Overview of Supply Chain Management course. The project also published a brief about the RIs: *Regional Training Institutes Become Long-term Sustainable Partners.*

The online course, Lessons in Logistics Management for Health Commodities, continues to engage learners from around the world who want to increase their knowledge and build their skills in SCM. Through eight in-depth modules, the course increases the learners' understanding of the fundamentals of logistics management and strengthens their ability to implement improvements to basic elements of their own logistics systems. The course is free of charge via the JSI e-learning website (http://elearning.jsi.com) and the Learning Management System operated by LINGOs (http://www.lingos.org/ngos/courses.php). In FY2013, at least 591 interactive learning sessions were completed using the two online portals.

As part of our work to strengthen supply chains and build the ownership of health delivery systems in the countries where we work, the project continues to provide face-to-face trainings for SCM professionals. Trainings focus on expanding supply chain competencies; they vary in content and length depending on the target audience, During FY2013, the project trained 22,615 people from all levels of the supply chain (see figure 10).

Figure 10. Number of Staff Trained at Various Levels of the Supply Chain in All Project-Supported Countries



Improving Commodity Security Through Data-Driven Policy, Advocacy, and Planning

While systems strengthening and capacity building activities offer vital support when building the infrastructure of in-country health supply chains, contraceptive security focuses on the broader environment that may affect product availability. By expanding the knowledge base of financing and procurement solutions, coordinating with global partners to monitor and correct stock situations in various countries, and building capacity for advocacy to ensure adequate and sustainable funding, the project made strides toward contraceptive security (CS); which exists when every person is able to choose, obtain, and use quality contraceptives whenever they need them.

The project has been a leader in the area of CS, serving as a source of rigorous data, addressing gaps in research and evidence around promising practices, and providing resources and tools to help country and global partners ensure strong systems and an enabling environment for CS. Across all CS activities, the project strives to learn from, and where relevant, engage the private sector, and make the case for the importance of supply availability and SCM in achieving positive health outcomes.

Advocating for Better Financing and Procurement for Commodities and Supply Chains

Without adequate funding for commodities and the systems that deliver them, health supplies that families depend on will quickly dry up. To avoid stockout situations that result from a lack of funding for supplies and supply chains, the project works with country governments and donors at the global level to advocate for stable, continuous funding pipelines. Tightly aligned with funding is the need to estimate budget requirements and make appropriate investment decisions; in these areas, the project has demonstrated leadership by developing and applying new methodologies for finance tracking and supply chain costing, and introducing performance-based financing (PBF) schemes, based on lessons learned from the private sector.

To identify advocacy entry-points and to mobilize resources needed for contraceptives, new documentation on the project's approach to finance tracking enables

Commodity security brings focus to the broader environment of supply chains. It helps global and in-country partners apply advocacy and strategic interventions to ensure a sustainable flow of health commodities.

Contraceptive Security (CS) Indicators

43 countries surveyed on financing for contraceptives, methods offered, policies, coordination, and the strength of the supply chain.

91% of countries have a committee that works on CS

88% have a CS strategy

63% contribute government funds for contraceptives.

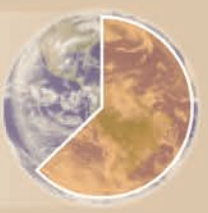
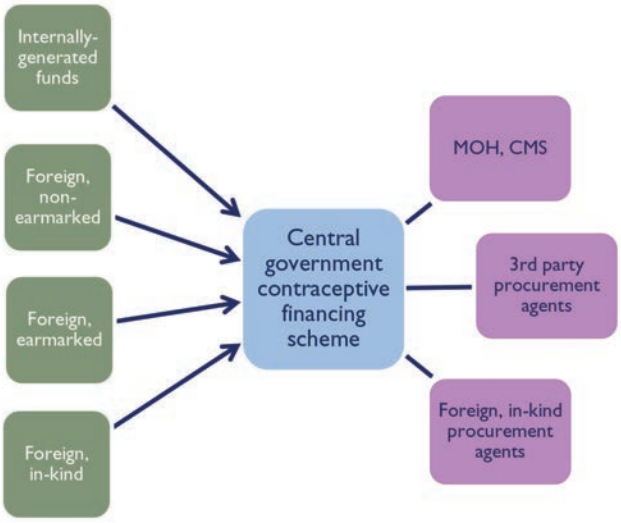


Figure 11. Example of a Financing Framework Diagram



stakeholders to better monitor government and donor financing processes and the amounts needed, committed, and spent on contraceptives. The documents include the guide, *Enhancing Contraceptive Security through Better Financial Tracking: A Resource Guide for Analysts and Advocates;* the report, *Uganda: Financial Tracking of Reproductive Health Commodities;* and an accompanying brief (see figure 11). The project collaborated with partners on financial tracking activities and the development of resources; the project's financing work was presented to the USAID/Global Health front office.

To expand the knowledge base on PBF, the project consulted with SCM experts from the commercial sector and published a technical brief—*Commercial Sector Performance-Based Financing Offers Lessons for Public Health Supply Chains in Developing Countries*—that summarizes PBF lessons learned in the commercial sector.

In the field, the project is applying its PBF expertise, as well. In Mozambique, the project continued its collaboration with the Health Financing and Governance (HFG) project (formerly HS2020) to design an evaluation of the country's current PBF scheme that supports productivity improvements in Mozambique's CMAM (CMSs). For example, to reduce leakage and improve stock storage and management, rewards are given if the amount of

randomly selected health products on the warehouse shelf matches the quantity posted in the computerized warehouse management system.

The project completed an assessment of the public-sector supply chain in Ghana to propose options for PBF schemes; in Guatemala, because of the project's advocacy and based on the results of an extensive costing exercise, the Ministries of Finance and Health agreed to include supply chain indicators in the PBF system, which will help set the groundwork for sufficient budget allocations to manage the public health supply chain.

Providing a basis for advocacy, the project modeled estimated total costs for supply chains to deliver essential medicines in the West Africa subregion (see figure 12). To demonstrate the value of this investment and methodology, these results were presented to policymakers at the Reproductive Health Supplies Coalition meeting in Paris in October 2012.

To determine supply chain costs associated with the four product categories that account for nearly 90 percent of Guatemala's public health supply chain, the project applied its field-tested approach to costing, in collaboration with staff from the Guatemala Ministries of Health and Finance. Preliminary results showed that supply chain-related costs total approximately 34 percent of the product value, which corresponds to findings from other countries. Findings and lessons from this and previous country applications—Nigeria, Rwanda, Zambia, and Zimbabwe—were shared with the project-hosted Supply Chain User's Group in March 2013; to disseminate the project's base of evidence and knowledge in supply chain costing, they were also included in the *Compendium of Supply Chain Costs.*

Logistics staff member takes physical inventory of DMPA during an End-Use verification (EUV) exercise in Mozambique.

To improve Ethiopia's family planning program, and to help implement its reproductive health commodity security strategy, the project and the Federal Ministry of Health (FMOH) initiated a participatory approach to market analysis. A two-day multisectoral workshop led to a better understanding of clients' preferences and the gaps in provision, and the need to use data to target underserved populations—e.g., urban youth and pastoralist populations. They also agreed to include the private sector more in the family planning and RHCS strategy and commitment by the family planning technical working group to better coordinate service provision.

Bottlenecks in the procurement process can result in supply chain failures, such as stockouts and shortages of essential commodities. To help stakeholders involved in

To avoid stockout situations that result from a lack of funding for supplies and supply chains, the project works with country governments and donors at the global level to advocate for stable, continuous funding pipelines.

Health commodities on the loading dock in El Salvador.

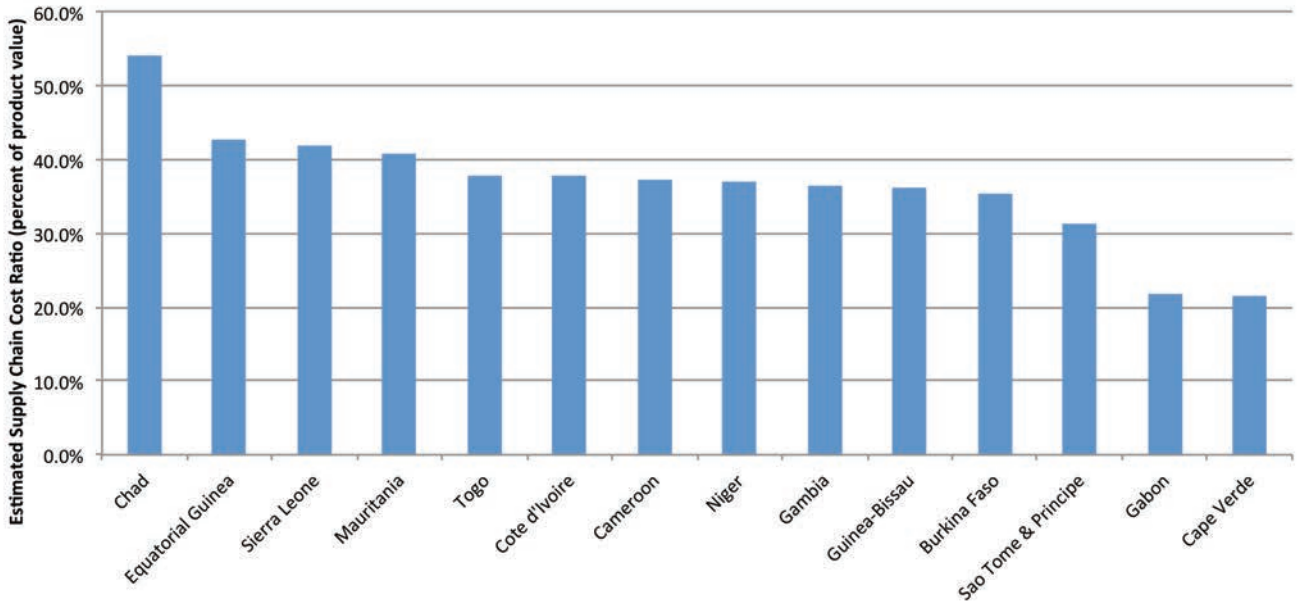
public health procurement with procurement bottleneck issues, the project captured and synthesized its global experience in resolving short-term and long-term procurement issues in *Addressing Procurement Bottlenecks: A Review of Procurement Bottlenecks in Public Sector Medicine Supply Chains and Practical Approaches Taken to Resolve Them.* The document presents 14 case studies from developing country settings in Africa, Asia, and Latin America and the Caribbean, identifying the bottleneck situation and environment, action to resolve the situation, and timeframe.

Fostering and Strengthening the Use of Data for Commodity Security

Access to accurate and up-to-date stock data is important at all levels of the supply chain—whether for programmatic, budgetary, policy, or advocacy decisionmaking. At the global level, the project continued to support the Procurement Planning and Monitoring Report (PPMR) to avert potential stockouts; new data collected for the CS indicators increased the evidence base that advocates need to garner support for health supply chains.

The PPMR monitors stock status and shipments of contraceptives for 32 countries, increasing the visibility of commodity data for decisionmaking by governments and donors. With PPMR data, the Coordinated Assistance for Reproductive health supplies (CARhs) group can coordinate responses to supply crises. In 2013, PPMR data prompted CARhs actions to execute 20 unplanned shipments to five countries to resolve or prevent stockouts; they also cancelled five shipments to three countries to reduce or avoid overstocks. In early 2013, CARhs organized a transfer of Microgynon from Ghana to Togo to

Figure 12. Estimated Predicted Supply Chain Costs as a Percentage of Product Value for West African Countries



rebalance their country-level supply levels; and identified and prioritized urgent Depo-Provera needs, coordinating donor shipments of Depo-Provera, accordingly, to ensure that country needs could be met in a context of limited supply availability.

Through close collaboration with peer organizations, the project supported the successful transition of the role of CARhs administrator from UNFPA to the Reproductive Health Supplies Coalition (RHSC); the West African Health Organization (WAHO) joined the CARhs, which increased and strengthened the geographic reach of the group.

In West Africa, the project is building ownership of the PPMR in 13 countries; MOH staff members are fulfilling the data collection and reporting role. Their participation strengthens global- and country-level coordination and the visibility of central-level stock data. As a result of the project's technical assistance, all 13 countries reported to the PPMR during the reporting period. Data from these countries prompted CARhs actions that created six new stop-gap shipments for Sierra Leone to avoid stockouts, and canceled or reduced the quantity of three shipments to Guinea-Bissau to avoid overstocks.

The Contraceptive Security (CS) Indicators give stakeholders an evidence base for contraceptive supply chains. The project completed the fifth round of data collection for the CS Indicators, with responses from 43 countries, predominantly USAID priority countries and project country offices. The survey measures indicators related to financing for contraceptives, methods offered, policies, coordination, and the strength of the supply chain. The most recent survey indicates that 91 percent of countries have a committee that works on CS, 88 percent have a CS strategy, and 63 percent contribute government funds for contraceptives.

The project's CS data and findings have been disseminated widely to various partners and are used for tracking progress, informing program planning, decisionmaking, and for evidence-based advocacy by organizations including Advance Family Planning Project, UNFPA, and Population Reference Bureau; the body of work has also been referenced in the *International Journal of Gynecology & Obstetrics.* The project also shared its CS knowledge base through the USAID Africa State of the Art, a UNFPA

The Procurement Planning and Monitoring Report (PPMR)

Preventing stockouts of contraceptives by monitoring stock status in **32 countries** and responding to supply crises.

Actions in 2013

20 unplanned shipments to 5 countries resolved or prevented stockouts

5 shipments to 3 countries canceled to reduce or avoid overstocks

A technical advisor from Bolivia visits Nicaragua to explore ways the two countries can learn from one another to strengthen CS.

Eastern Europe CS workshop, and project-led workshops in Paraguay and the Dominican Republic to engage health ministries in monitoring CS in these graduated countries.

Sharing Expertise and Strategically Leveraging Partnerships to Promote CS

Supply chain and contraceptive security communities can benefit from the unique perspectives and added value of diverse and numerous stakeholders. To share our expertise and to effect change beyond the boundaries of the project, we strategically engage partners to ensure that contraceptive security and supply chain strengthening are on the agenda of global and country initiatives. In turn, partners also rely on and seek out the project's expertise, contributions, and leadership. During FY2013, the project participated in a number of technical forums:

- The project served in leadership and coordination roles for the Systems Strengthening Working Group of the RHSC and provided evidence for advocacy messaging for the Advocacy and Accountability Working Group.
- To help ensure that SCM, supplies, and contraceptive security remain a priority in the family planning community, the project served on the Family Planning High Impact Practices Technical Advisory Group.
- To help bridge the gap between technical supply chain issues and advocacy efforts, the project has increased its engagement with advocacy groups, including presenting at the Advance Family Planning (AFP) partners meeting and collaborating with Population Action International (PAI) on relevant issues.
- The project was a key informant for numerous partner organizations, including the Clinton Health Access Initiative (CHAI), McKinsey & Company, Bill & Melinda Gates Foundation, and United Nations Population Fund (UNFPA)/AccessRH.
- By sharing relevant resources, experiences, and lessons, the project collaborated with FP2020 as it provides access to FP services and supplies for an additional 120 million women by 2010, and with the UN Commission on Lifesaving Commodities for Women and Children (UNCoLSC) to help achieve Millennium Development Goal (MDG) 5 through a commitment to maternal, neonatal, and child health (MNCH).

In Latin America and the Caribbean (LAC), the project supported high-level decisionmakers with a proposal at the December 2012 Council of Ministers of Health of Central America and Dominican Republic (COMISCA) meeting on the importance of strengthening public health supply chains and ensuring contraceptive availability. As a result, the ministers of health formally signed an agreement to jointly negotiate prices when procuring key essential medicines. In addition, the project's advocacy efforts led to the inclusion of contraceptives on the list of essential medicines that this initiative will prioritize.

To help public health procurement managers improve procurement system performance, the project published a procurement guide, *The Procurement Performance Indicators Guide—Using Procurement Performance Indicators to Strengthen the Procurement Process for Public Health Commodities.* It represents the first steps in moving from performance measurement to performance management. The guide suggests an initial set of 11 key indicators that address different aspects of performance across the procurement process; it is accompanied by the *Procurement Performance Indicators Dashboard,* a Microsoft Excel spreadsheet that captures performance data and summarizes the results in a dashboard format. During the quarter after publication, the guide and companion spreadsheet

were among the documents downloaded most frequently from the USAID | DELIVER PROJECT website.

The project is a global resource for performance monitoring for public health supply chains; it has contributed extensively to the global knowledge base in this area. For example, the project has worked this year with the UNCoLSC to develop a core set of supply chain performance indicators for that global effort. The project also supported FP2020 and the Reproductive Health Supplies Coalition's Stockout Initiative and System Strengthening Working Group Stockout Indicator workstream in developing a core set of key stockout measures for the global community, based on decades of project experience.

New research carried out by the project this year on the impact of contraceptive supply on use further emphasizes the value of our work to ensure a steady supply of health commodities. Using data from Malawi, the study attempted to answer the important question—Is availability of Depo-Provera associated with either demand for, or use of, injectable contraceptives among married women of reproductive age? Results from the study indicate that distance from a health facility and the reliability of the Depo-Provera supply at local health facilities does, in fact, influence the likelihood of use.

The analysis was carried out in collaboration with the MEASURE/Evaluation PRH Project and, for the first time, linked logistics and population-based data, both temporally and spatially, at the household level. These results underscore the importance of supply chains and logistics data for the success of family planning programs and to assist programs in identifying where to target interventions that will help support contraceptive use.

Knowledge Management and Dissemination

The project's strategic approach to knowledge management is a key tool in achieving client-centered supply chains; it drives utilization of project materials and places the project as a thought leader and primary resource within the commodity security and SCM communities. Expanding the supply chain knowledge base, and actively disseminating project documentation, enables the project to mobilize support among donors, partners, and in-country stakeholders. Building stronger links between health outcomes and improved commodity availability, as well as presenting the information in more visual and accessible formats, are enhancing the project's ability to reach target audiences.

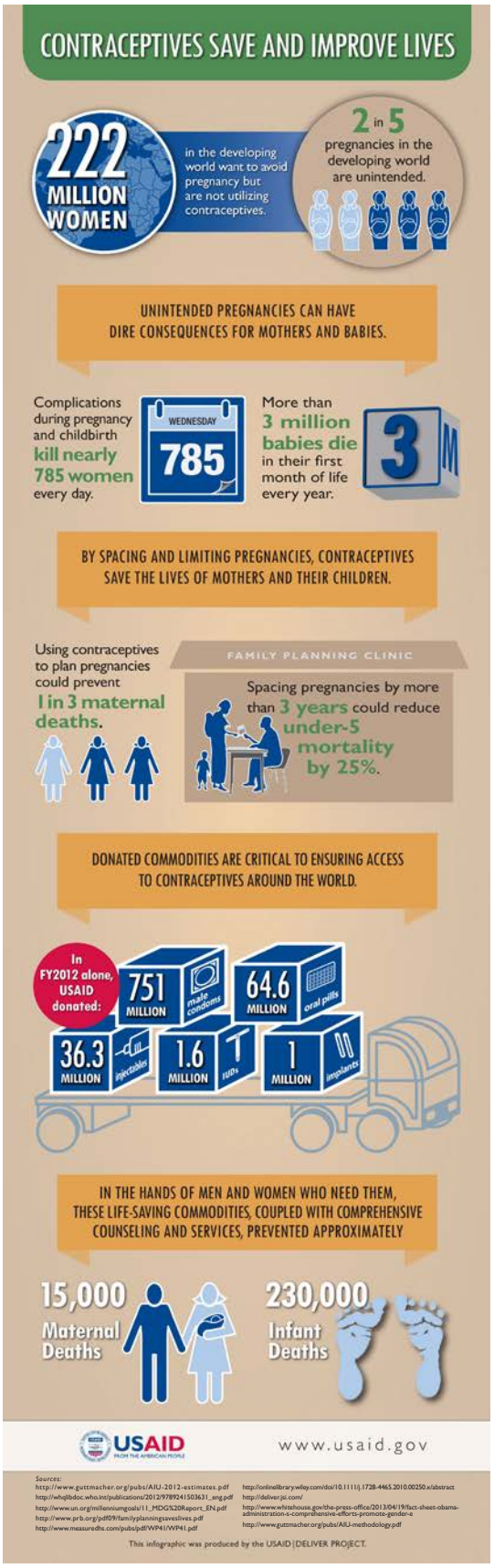
Knowledge management initiatives help guide the development of the advocacy and documentation products that make up the project's knowledge base. Advances in technical knowledge are shared internally and externally through multiple communications channels, allowing staff and partners, as well as the greater health supply chain community, to benefit from innovations implemented by the project. The project continues to look for opportunities to broaden dissemination and reach a larger public health audience.

Using Concise Visual Products for Stronger Impact

A focus on developing more visual and concise products to communicate the value of the project's work, and the importance of supply chain investments, spawned a number of new products, including infographics, maps, fact sheets, and dashboards. The family planning infographic, Contraceptives Save and Improve Lives (USAID 2013b), was adopted by USAID and launched at the Women Deliver conference; it was widely disseminated and posted on www.usaid.gov (see figure 13). The infographic highlights the potential impact of commodities delivered on unwanted pregnancies, maternal deaths, and infant deaths.

To make the case for building strong supply chains, it is increasingly important to link health outcomes to commodity availability. Several products, aside from the family planning infographic, illustrate this relationship. They include an infographic on the positive impact that

Figure 13. The Infographic Contraceptives Save and Improve Lives



USAID-funded contraceptives have had on the prevention of unintended pregnancies and infant and maternal deaths in Pakistan (USAID | DELIVER PROJECT 2013b) and a poster showing the link between access to family planning commodities and improved maternal and child health (USAID | DELIVER PROJECT 2013c), which won the ESC 2013 Global Award among all the posters presented at the European Society of Contraception and Reproductive Health (ESC) Global Conference.

Infographics were also used as advocacy tools. In Nigeria, a quantification exercise revealed a funding gap for a number of commodities. To help advocate for increased funding, an infographic with projections of lives saved (USAID | DELIVER PROJECT 2013a)was launched and presented by the MOH in Nigeria at a meeting that was part of a broader donor initiative.

Promoting Project Resources with Targeted Dissemination

A systematic approach to dissemination and sustained outreach through social media has helped boost utilization of the project's resources. Our comprehensive dissemination strategy comprises the project's website, a Facebook page, Tumblr photoblog, Twitter account, Google Plus page; and postings on a broad range of public health outlets, including various social media channels, as well as internal dissemination. Dissemination channels external to the project include listservs, such as IAPHL, E-Drug, Afronet, and HIPNet; USAID and JSI's social media outlets; the USAID Impact Blog; multiple Linkedin groups; Tech-Net, the PSM Toolbox, and many others.

Using tagged links and Google Analytics, the project tracks the number of website hits generated by a specific channel, for a specific publication being promoted. With insight into how the project's materials are being used, we are able to effectively target audiences that can benefit the most from the project's resources.

With comprehensive messaging through all our outreach channels, World Population Day and World Contraception Day became opportunities for the project to focus on

the importance of family planning and the role the supply chain plays in improving access to contraceptives.

Strategically placed blogs made for effective outreach, coupled with the project's own dissemination. In connection with two important family planning events—the Women Deliver conference and the ESC Global Conference—a blog post by the Indefinite Quantity Contract (IQC) director Edward Wilson appeared on the USAID Impact Blog (USAID 2013a). As the project issued new publications for performance-based financing, we placed a blog post on the World Bank's widely read and influential, All Things Results-Based Financing Blog, which continues to attract interest. Other blogs, including powerful narratives directly from the field, were posted on the Maternal Health Task Force website and JSI's The Pump.

Submissions to peer-reviewed journals are becoming increasingly important as a way to share the project's innovations, especially the introduction of the journal *Global Health: Science and Practice* (GHSP). The commentary, "Multiplicity in public health supply systems: a learning agenda," was published in GHSP in June 2013 by Alan Bornbusch of USAID and Jim Bates of the USAID | DELIVER PROJECT (Bornbusch and Bates June 2013).

In December 2012, we submitted an article, "A Decade of Monitoring Contraceptive Security and Measuring Successes and Opportunities around the World," for a special edition of The Lancet, in connection with the Women Deliver conference in Kuala Lumpur, Malaysia, in May 2013. The article, "Vendor Managed Inventory Models for Public Health Supply Chains in Developing Countries," was submitted to the journal *Health Affairs* in February 2013.

Conference and meeting attendance also contributed to the dissemination of the project's work. Project staff attended 33 conferences during the year, making 18 presentations on various supply chain and commodity security topics.

A number of other infographics, briefs, guidance documents, and tools—many mentioned elsewhere in this report—were published during this reporting period; they include an infographic about pre-service training (USAID | DELIVER PROJECT, Task Order 5 2013) in Rwanda, Pakistan, Zimbabwe, Zambia, and Malawi;

Raising awareness of the importance of health supply chains and sharing the technical knowledge needed to improve them is critical to building stronger supply chains.

USAID | DELIVER PROJECT
website traffic in FY 2013

41,192 unique visitors from **199 countries**

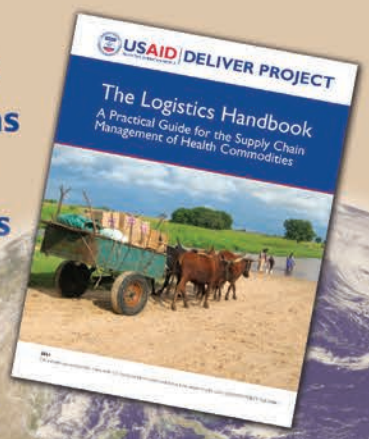
80,000 visits

352,689 page views

44,545 documents downloaded

43% of visitors came from **Africa**, **Asia**, and **Latin America**.

More than **2,900 print publications** distributed in **32 countries**



and dashboards for the *Contraceptive Security Index 2012* (USAID | DELIVER PROJECT, Task Order 4 2012), CS Indicators, and procurement performance indicators.

Knowledge management support was instrumental for technical and country teams in initiating and shaping documentation that could reach the intended audience and, in some cases, spawn specific actions. With knowledge management support, several country teams, including Pakistan and Ghana, developed communications and documentation plans; and many other country and technical teams were able to present their work in a more visual and accessible way. The project also broadened access to its resources by translating selected documents to French and Spanish, specifically *The Logistics Handbook* (USAID | DELIVER PROJECT, Task Order 1 2011) and the CS Index.

Dissemination through the Project's Website and Print Publications

During FY2013, 41,192 unique visitors made 80,000 visits to deliver.jsi.com, with a total of 352,689 page views. The distribution of hits for each major section of the website indicates the critical nature of supporting procurement operations, as well as the strong interest in the project's publications and tools, which can be found in the Resources section (see table 1).

A majority of users, 57 percent, accessed the USAID | DELIVER PROJECT website from outside of the United States, for a total of 199 countries. Forty-three percent of all visits came from North America, 21.8 percent from Asia, 20.6 percent from Africa, 8.2 percent from Europe, and one percent from Latin America (see figure 14).

Table 1. Number of Page Hits for Each Section of the Website

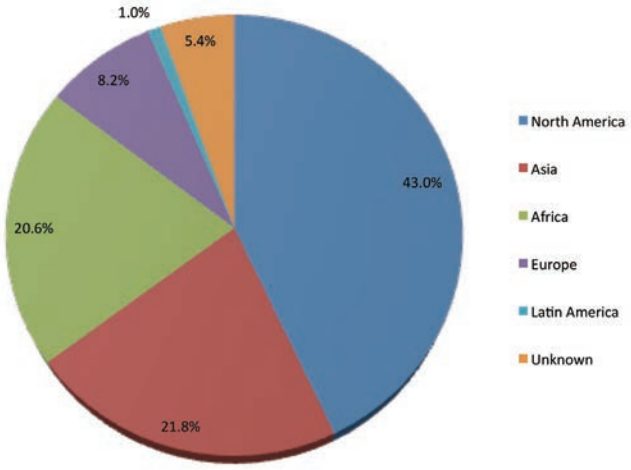
Website Section	Page Hits
My Commodities	55,792
Resources	34,506
Procurement News	29,401
Where We Work (Countries)	15,434
What We Do	14,554
Health Areas	6,438

Most of the project's technical resources are published as PDF documents; the number of downloaded documents, which totaled 44,545 for the year, reflects the usage of project SCM knowledge. The project also fulfilled more than 2,900 orders for print publications, including tools and software. Print publications were distributed to individuals and organizations in more than 32 countries.

Knowledge management and dissemination will continue to be key in connecting logisticians, supply chain managers, and other stakeholders with the knowledge they need to improve their health supply chains. As a leader in its field, the project contributes significantly to the greater health supply chain body of knowledge.

Expanding the supply chain knowledge base, and actively disseminating project documentation, enables the project to mobilize support among donors, partners, and in-country stakeholders.

Figure 14. Location of Visitors Accessing the USAID | DELIVER PROJECT Website



Conclusion

During the past year, the project has received many new requests from USAID missions—including India, South Sudan, and Yemen—which demonstrates the extent to which the USAID | DELIVER PROJECT has become a trusted source for commodities and expert technical assistance for health supply chains. The project's body of knowledge, including the experience from predecessor projects and the various task orders, enables us to quickly deploy a suite of best practice tools and innovative solutions tailored to local needs.

In addition to working in new countries, the project is expanding its mandate in places like Pakistan, where we now support improvements to the vaccine supply chain. Automation of LMISs is an important focus of our work in a number of countries: Rwanda, Ethiopia, and Pakistan. As front runners in eLMIS development, Tanzania and Zambia, with support from the project, collaborated to implement an open source solution that can be a model for other countries to carry out similar systems.

In FY2013, TO4 made significant improvements in many countries, advancing health supply chains and strengthening environments for commodity security. At the global level, the project helped mobilize partners to take action against stockouts and to elevate the importance of funding for health products and the supply chains that deliver them to clients. Infographics and social media have helped increase the visibility of health supply chain needs and to advocate for our work, generating positive effects, both in-country, as well as within USAID.

The positive impact of the project's work is encouraging both national governments and international donors to apply their own funding to expand initiatives started by the project. In several states in Nigeria, the project successfully piloted the Review and Resupply model for last mile distribution of family planning commodities. In collaboration with the Nigerian FMOH, the project convened a conference of all state family planning officials, which led to the model being funded by the Lagos state government in Lagos and by UNFPA in the states not supported by the project. Also, a sign of increasing government commitment to health programs, beginning in 2012, the FMOH procured family planning commodities for the first time, at a level of U.S.$3 million per year.

The FMOH is committed to the same annual funding level through 2015.

As the project moves into its final year, we continue to emphasize sustainability by instituting pre-service training and by partnering with governments, NGOs, and the private sector for a total market approach. Increasing data visibility throughout the supply chain remains a major focus to enable managers to take action against stockouts. Our goal is to build integrated logistics systems that are robust and sustainable, enabling countries to deliver life-saving health supplies to their people.

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Appendices

The TO4 Performance Monitoring Plan (PMP) outlines key performance indicators, based on the main themes that drive our technical assistance:

- system strengthening
- building local capacity and ownership
- strengthening environments for commodity security
- knowledge management and communications.

Our field offices are the source for most of the data reported on the PMP, although some is also collected centrally. During FY2013, Task Order 4 (TO4) had a presence in 21 countries. Because the Bolivia office closed after the second quarter, and data for indicators that are only collected annually are collected at the end of the fiscal year, this report refers to 20 presence countries for those indicators.

Appendix A

Ensuring Commodity Availability

The strategic objective of TO4 is to strengthen in-country supply chain performance by improving commodity availability at service delivery points. The key metrics for measuring overall performance are stockout rates and reporting rates. These core results are presented below.

PMP Indicator 1.1 Stockout Rates

Since FY2007, the project has routinely monitored contraceptive availability at the central- and facility levels in most of the project-presence countries that receive TO1 and TO4 funding. The project also monitors contraceptive availability for a larger number of countries through the Procurement Planning and Monitoring Report (PPMR); that data is used by the global Coordinated Assistance for Reproductive health supplies group (CARhs). This year, to balance staff time and resources, the CARhs group is undertaking a strategic planning process, which will result in a policy for when and how new reporting countries should be added to the PPMR. In the past, new countries were added as soon as an agency or ministry willing to provide data was identified.

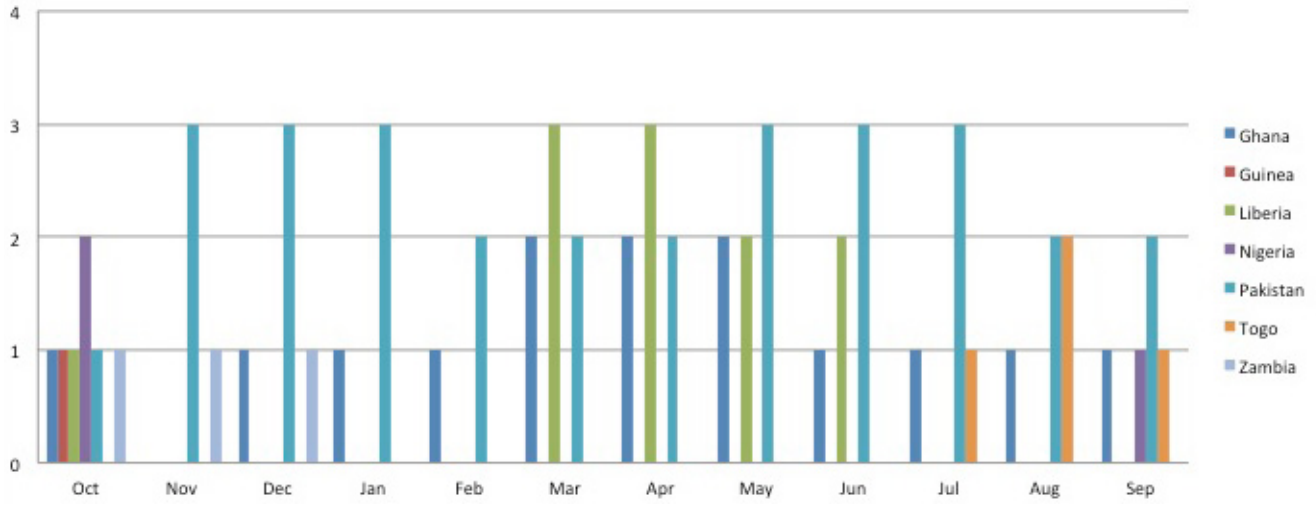
As a result, no new reporting countries were added in FY2013, although new programs from already-reporting countries were added during the reporting period. Including reports from multiple programs enables the PPMR to present a clearer picture of the contraceptive supply situation in the entire country, not just the public sector.

Thirteen of the 32 reporting countries are project-presence countries.[1] Data from the 32 reporting countries include 46 separate programs—for example, social marketing and International Planned Parenthood Federation (IPPF) member associations (MAs). Notably, the Society for Family Health (SFH) (the Population Services International [PSI] affiliate in Nigeria) began reporting late in the fiscal year. SFH receives all the USAID's commodity support to Nigeria; also, it is one of the major recipients of USAID family planning commodities in the world—based on volume.

In FY2013, seven project-presence countries reported central-level stockouts in the PPMR. (Eleven non-presence countries also had central stockouts during the same period.) The six project-presence countries that did not report stockouts were Burkina Faso, Ethiopia, Mozambique, Rwanda, Tanzania, and Zimbabwe. The countries reporting stockouts, and number of stockouts per country per month are shown in figure 15.

1 Burkina Faso and Togo, which only recently established TO4 presences, are included in the count of project presence countries. Other included countries are Ethiopia, Ghana, Guinea, Liberia, Mozambique, Nigeria, Pakistan, Rwanda, Tanzania, Zambia, and Zimbabwe.

Figure 15. PPMR-Reported Number of Central-Level Stockouts in Project-Presence Countries

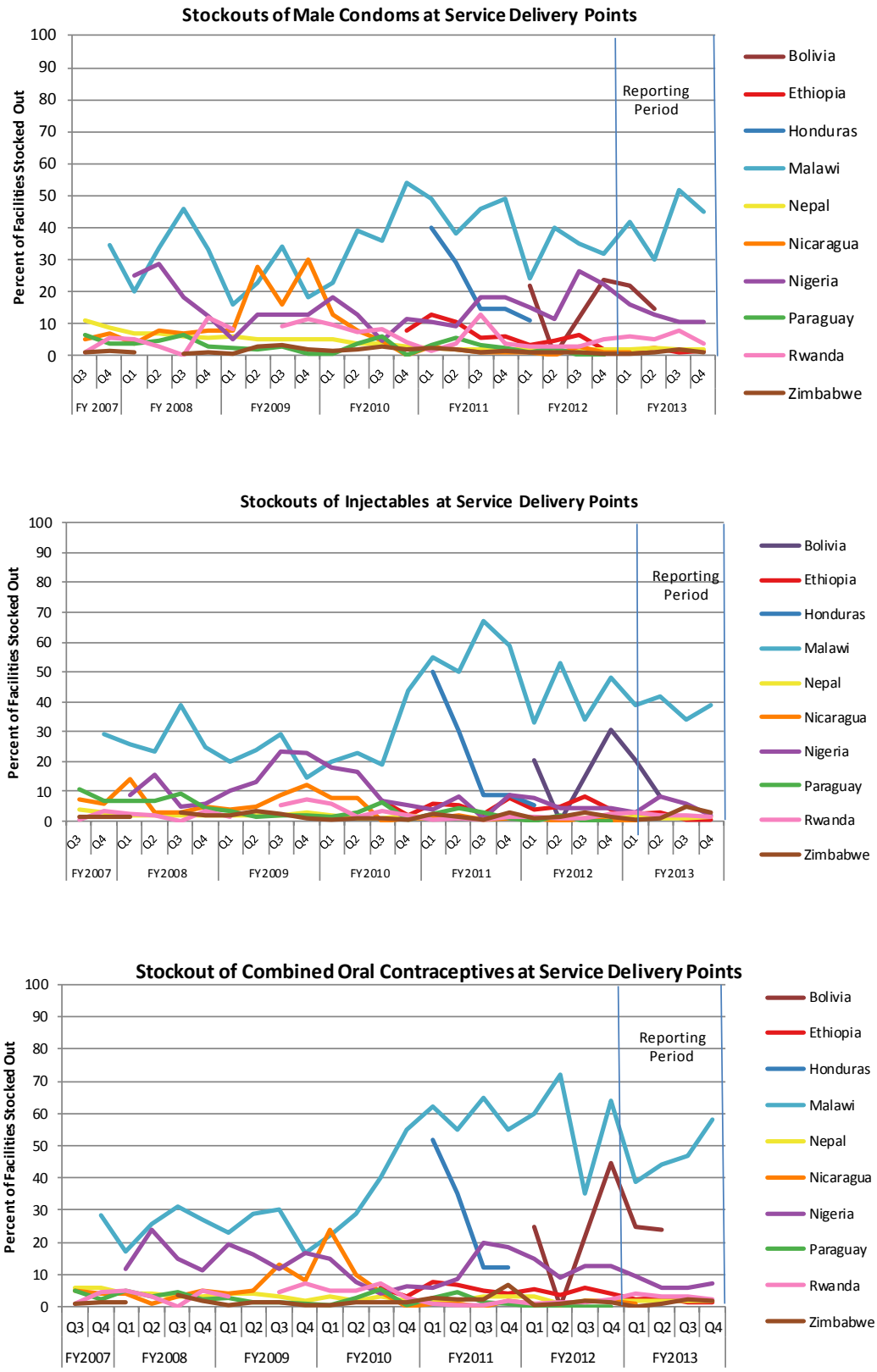


Both Ghana and Pakistan had stockouts of multiple products during FY2013. In Ghana, EXP social marketing stocked out of no-logo male condoms for most of the year (branded condoms were in stock), while the Ministry of Health (MOH) had periodic stockouts of Norigynon, and a short two-month stockout of IUDs. Pakistan also had a long-term stockout of two-month injectables, as well as shorter-term stockouts of Depo-Provera, both multi-load IUD and Copper-T IUDs, and emergency contraceptives. During the stockouts of Depo-Provera and Copper-T IUDs, the PPMR notes that significant stocks were available below the central level, and shipments were already en route to replenish the central-level stocks.

The remaining five countries with central-level stockouts had far fewer than Ghana or Pakistan; Guinea had only one central-level stockout of Microlut. Togo reported one stockout of emergency contraceptive. In Zambia, Noristerat stocked out for a few months; while in Nigeria, three products—emergency contraceptives, female condoms, and Noristerat—stocked out for short periods of time. Liberia continued to report stockouts of emergency contraceptives because the donors were unwilling to commit to procuring them; the MOH policy on providing them outside post-sexual violence kits was unclear. Liberia also had short-term stockouts of cycle beads, Depo-Provera, and Microgynon.

As noted, using data from the in-country logistics management information system (LMIS), the project continues to routinely monitor contraceptive availability at the facility level in many project-presence countries. In addition, stockout data for Ethiopia are presented here, although these data are based on a sample of sites visited during supportive supervision. Contraceptive availability data from the middle of FY2007 through FY2013 are presented in figure 16 for male condoms, injectables, and combined oral contraceptives.

Figure 16. Stockout Rates for Male Condoms, Injectables, and Oral Pills, FY2007–FY2013



Notes: Ethiopia began reporting in late FY2010; these data are based on a sample of sites visited during supportive supervision. Nigeria data represent availability in project-focus states only: Bauchi and Sokoto.

These three high-demand resupply methods require a continuous and reliable supply to meet clients' needs. The three figures in figure 16 show that, most of the time, in reporting countries during this time period, these methods were routinely available to clients at service delivery points (SDPs); stockout rates were at or below ten percent for these methods, in most of the reporting countries.

For male condoms, half of all reporting countries have maintained very low stockout rates this year, well below 10 percent: Ethiopia, Nepal, Nicaragua, Rwanda, and Zimbabwe. In five TO4 presence countries—Nepal, Nicaragua, Paraguay[2], Rwanda, and Zimbabwe—rates remained well below 10 percent, on average, since routine reporting began in FY2007. In Nigeria, stockout rates for male condoms were significantly down this year, averaging just 12.5 percent for FY2013.

For the 18 months that the Bolivia office was operating under TO4[3], the average stockout rate for male condoms was just 16.5 percent. Honduras stopped reporting when the office closed in early FY2012; however, rates continued to plummet from FY2011 until the office closed, finishing at just 10.9 percent for male condoms. In Malawi, rates have remained consistently higher than in other countries.

For both injectables and combined oral pills, more than half of all reporting countries have also maintained impressively low stockout rates, well below 10 percent this year: Ethiopia, Nepal, Nicaragua, Nigeria, Rwanda, and Zimbabwe. Some countries have maintained these low rates since reporting began in FY2007: Nepal, Nicaragua, Paraguay, Rwanda, and Zimbabwe.

In Bolivia, stockout rates were higher for combined oral pills (average of 24 percent across the quarters for which we have data), than for injectables (average of 16 percent across reporting quarters). As with male condoms in Honduras, although stockouts were initially high for both injectables and pills, before the office closed in early 2012 rates dropped dramatically to around 10 percent or less for the last few reporting quarters. Finally, Malawi continued to struggle with high stockout rates for both injectables and pills, as well as condoms.

In addition to routine monitoring through the PPMR and countries' LMISs, the project has also collected a snapshot of commodity availability by regularly applying the End-Use verification (EUV) data collection tool for malaria, as well as contraceptive commodities in some countries. Although the EUV is used in only a sample of health facilities during the year, it allows for limited visibility into downstream supply availability in countries without a functioning national-level LMIS. This integration of efforts is occurring in a number of presence-countries—Ghana, Malawi[4], Mozambique, Tanzania, and Zambia.

2. The Paraguay field office closed at the end of FY2012.
3. The Bolivia field office opened at the beginning of FY2012 and closed after quarter 2 of FY2013.
4. Malawi collected data on contraceptives during the EUV exercises throughout FY2013; however, they stopped doing this in quarter 1 of FY2014.

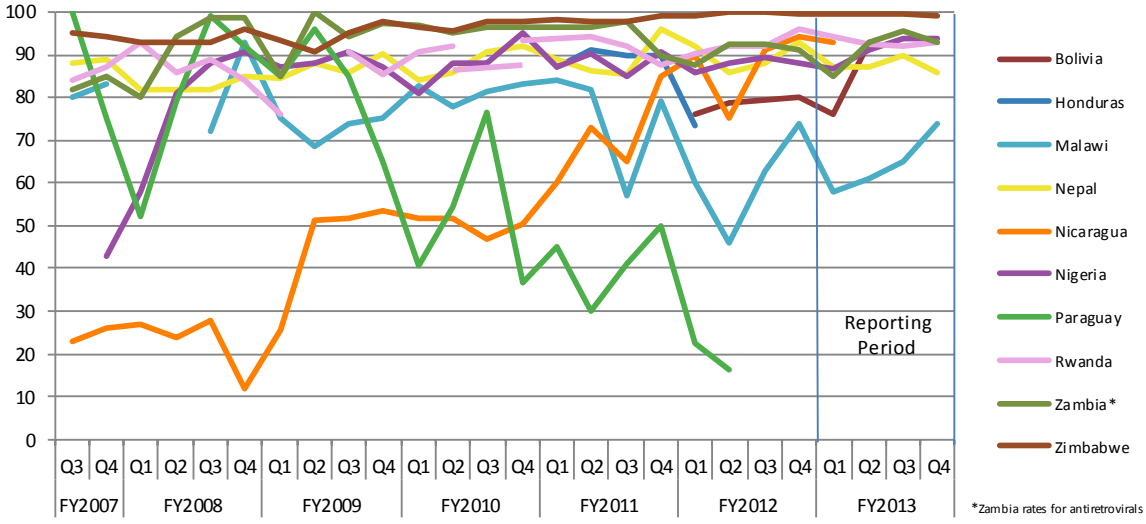
Appendix B

Strengthening Key Supply Chain Functions

PMP Indicator 1.9 SDP-level Reporting Rates

Nine TO4 project-presence countries also track reporting rates from the SDP level; they were available through each country's LMIS. Zambia's reporting rates for antiretroviral medicines from its LMIS are also included in figure 17, which presents SDP-level reporting rates from FY2007–FY2013.

Figure 17. Percentage of Facilities Reporting during Fiscal Years 2007–2013



In almost all countries, reporting rates have remained consistently high, averaging at or above 80 percent since the beginning of the USAID | DELIVER PROJECT. Since the start of TO4, the majority of all reporting countries have maintained an average of almost 90 percent, or even higher, reporting rates: Honduras, Nepal, Nigeria, Rwanda, Zambia (for antiretrovirals), and Zimbabwe.

The TO4 Bolivia office opened in FY2012 and was closed mid-way through FY2013, with average reporting rates of 81 percent during that period. In Nicaragua, reporting rates continued to rise over the past few years, increasing from an average of 71 percent in FY2011 to an average of 88 percent in FY2012, as they continued to roll out a national integrated LMIS. By the time the field office had to stop working with the Nicaraguan government in early FY2013, reporting rates were above 90 percent for three consecutive quarters. In Paraguay, reporting rates dropped drastically at the end of FY2009 when contraceptives were integrated with other health commodities; rates remained low, even as the office closed in the middle of FY2012. Finally, Malawi's reporting rates have remained low compared to earlier years, though they were on an upward trend in FY2013.

PMP Indicator 1.2 Number (and Proportion) of Project-assisted Countries with Supply Plans Reviewed and Updated Semi-annually for an Agreed List of Commodities

PMP Indicator 1.3 Number (and Proportion) of Project-assisted Countries That Submit Supply Plans for USAID-procured Contraceptives, Condoms, and Other Health Commodities without External Technical Assistance

Of the 21 countries with a TO4 project-presence, 13 completed quantifications in FY2013 and submitted supply plans.[5] The project assisted one additional west and central African country with no project-presence (Cameroon) in quantification. In FY2013, three countries that previously received technical assistance for forecasting (Ethiopia, Liberia, and Pakistan), for the first time, completed the exercise without home office assistance. In all, of the 13 TO4 project-presence countries that provided quantifications to the project, 11 completed the exercise without technical assistance from the home office. The two exceptions were Zambia, which received technical assistance in condom forecasting using funds from USAID's Office of HIV/AIDS (OHA); and Burkina Faso, where the home office provided technical assistance using funds from another project.

PMP Indicator 1.4 Forecast Accuracy for Contraceptives

Annually, the project compares the accuracy of forecasts for contraceptives in project-presence countries against the actual issues or consumption values recorded. The forecast accuracy measurement helps countries test the accuracy of their assumptions about product use, which are made during yearly forecast. For contraceptives, the *median* difference between the actual and the forecasted quantities during one year determines the forecast accuracy for each product. The absolute median error across all products forecasted in a country determines the contraceptive forecast accuracy for that country. This measure is the *mean absolute percentage error* (MAPE).

Optimum forecast error—i.e., the absolute percentage variation between the forecasted and the actual consumption of a contraceptive—should be 25 percent or less. The smaller the percentage, the better the forecast accuracy, which is consistent with the benchmark set by Smith (1997) for U.S.-based commercial industries.

In calendar year 2012, 10 TO4 project-presence countries recorded a median forecast error of 29 percent across the six most common products.[6] This represents a slight decrease of 1 percent from the percentage reported last year. Forecast error

5. Those completing supply plans were Burkina Faso, Ethiopia, Ghana, Guinea, Liberia, Mozambique, Nigeria, Pakistan, Rwanda, Tanzania, Togo, Zambia, and Zimbabwe. Those that did not complete supply plans in FY2013 were Bolivia, Guatemala, Indonesia, Malawi, Nepal, Nicaragua, South Sudan, and Yemen. Notes: The Bolivia office closed in the first half of the FY. In Guatemala, the USAID | DELIVER PROJECT does not work at the federal level. In Malawi, the MOH elected to complete its own quantification. Nepal closed in the FY (and has been doing quantification independently for some time). Nicaragua has not submitted supply plans for several years, as the ministry does not receive commodity assistance from USAID, and the field office is in the process of closing. Indonesia (under TO4), South Sudan, and Yemen were new project-presence countries and did not complete quantifications in the FY.
6. The six common products are combined oral pills, Depo-Provera, implants, IUDs, male condoms, and progestin-only pills.

increased for only two of the six common products (combined and progestin-only orals). Error was reduced for the second year for male condoms; it was also reduced for IUDs, Depo-Provera, and implants (both brands). Two of the six common products (male condoms and Depo-Provera) have a forecast error under 25 percent, and none of the six common products has an error higher than 32 percent. If additional products—such as female condoms, cycle beads, and emergency contraceptives—are included in the calculation, the error rate rises to 33 percent across all countries.

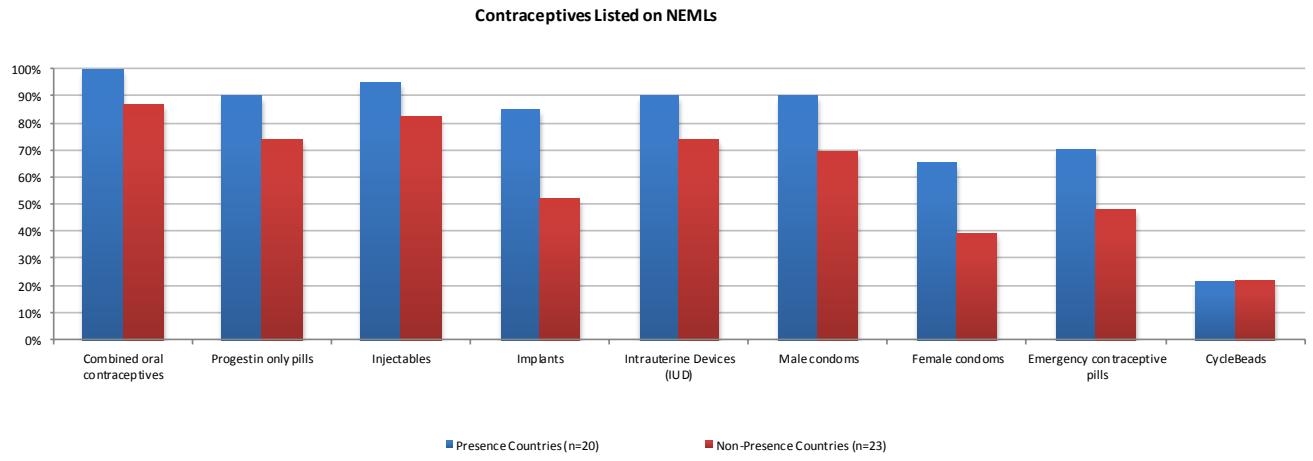
Three out of the 10 countries measured had an increase in error: Ethiopia, Ghana, and Pakistan. Three additional countries had error rates below the project's benchmark of 25 percent (Mozambique, Rwanda, and Zimbabwe); two others (Pakistan and Zambia) reported error rates just above the benchmark, at 26 and 27 percent, respectively. Seventy percent of countries had a decrease in forecast error, with significant declines in error in Liberia and Zambia, both of which actively used the project-developed forecast accuracy tool during their FY2012 quantifications. Malawi's data were unavailable in FY2012 because of a ministry-lead change in forecasting procedure; Nigeria's MOH made its debut with an error rate of 30 percent.

Table 2. Median Forecast Error Rates (six common products) in Project-Presence Countries

Country	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)
Ethiopia						17	64
Ghana	33	63	34	28	33	16	31
Liberia				57	80	63	32
Mozambique	151	15	15	18	102	27	13
Nigeria							30
Pakistan					11	5	26
Rwanda	17	12	8	3	7	26	18
Tanzania	22	13	30	35	21	52	44
Zambia			70	40	59	131	27
Zimbabwe					10	24	7

PMP Indicator 1.5 Number (and Proportion) of Countries with Key Contraceptives on National Essential Medicines Lists (NEML), by Method

Figure 18. Contraceptives Listed on NEMLs



PMP Indicators 1.6. 1.7, 1.8, 1.11, 1.12, 1.13 Number (and Proportion) of Project-assisted in-Country Organizations in Countries Where the Project Is Providing Technical Assistance That Have Documented and Approved Protocols/Procedures/Guidelines for the Following Supply Chain Functions or Systems

Table 3. Project-Presence Countries with Protocols for Core Supply Chain Functions

Country	Procurement of Health Commodities	Established Procurement Unit or Other Body Responsible for Procurement Of Health Commodities	LMIS That Routinely Reports Stock Status from the Service Delivery Point Level to the Higher Administrative Levels	Operational Warehouse Management of Health Commodities (manual or automated)	Transportation of Health Commodities (including documented distribution routes, procedures for vehicle maintenance, etc.)	Disposal of Medical Waste and Management of Expired, Damaged, and/or Recalled Products	Totals
Burkina Faso	Yes	Yes	Yes	Yes	Yes	Yes	100%
Ethiopia	Yes	Yes	No	Yes	Yes	Yes	83%
Ghana	Yes	Yes	Yes	Yes	Yes	Yes	100%
Guatemala	Yes	Yes	Yes	Yes	No	Yes	83%
Guinea	Yes	Yes	No	Yes	Yes	Yes	83%
Indonesia	Yes	Yes	No	Yes	Yes	Yes	83%
Liberia	Yes	Yes	Yes	Yes	Yes	Yes	100%
Malawi	Yes	Yes	Yes	Yes	Yes	No	83%
Mozambique	Yes	Yes	Yes	Yes	Yes	Yes	100%
Nepal	Yes	Yes	Yes	Yes	Yes	Yes	100%
Nicaragua	Yes	Yes	Yes	Yes	Yes	Yes	100%
Nigeria	Yes	Yes	Yes	No	Yes	Yes	83%
Pakistan	Yes	Yes	Yes	Yes	No	Yes	83%
Rwanda	Yes	Yes	Yes	Yes	Yes	Yes	100%
South Sudan	No	Yes	No	No	No	No	17%
Tanzania	Yes	Yes	Yes	Yes	Yes	Yes	100%
Togo	Yes	Yes	No	Yes	No	No	50%
Yemen	Yes	Yes	No	Yes	No	No	50%
Zambia	Yes	Yes	Yes	Yes	Yes	Yes	100%
Zimbabwe	Yes	Yes	Yes	Yes	Yes	Yes	100%
Totals	95%	100%	70%	90%	75%	80%	

Summarized from 20 project-presence countries:

- Ten countries (50 percent) have all six supply chain systems in place for sustainability: Burkina Faso, Ghana, Liberia, Mozambique, Nepal, Nicaragua, Rwanda, Tanzania, Zambia, and Zimbabwe.
- Seven countries (35 percent) have five of six supply chain systems in place for sustainability: Guatemala, Guinea, Indonesia, Malawi, Nigeria, and Pakistan.
- Two countries (10 percent) have three of six supply chain systems in place for sustainability: Yemen and Togo.
- One country (5 percent) has only one of six supply chain systems in place for sustainability: South Sudan.

PMP Indicator 1.10 Number (and Proportion) of Project-assisted in-Country Organizations with Supervision Guidelines and Tools for Routine Supervision of Commodity Logistics Functions

Out of 20 project-presence countries, 15 have supervision guidelines and tools for routine supervision of commodity logistics management functions (75 percent).

Appendix C

Building Local Capacity

PMP Indicator 1.14 Number (and Proportion) of Project-assisted in-Country Organizations in Project-assisted Countries with Established Positions/Units That Include Defined Responsibilities and Required Qualifications for SCM

Out of 20 presence countries, 16 have established positions that include defined responsibilities and required qualifications for supply chain management (80 percent).

PMP Indicator 1.15 Number of in-Country Staff Trained (Country, Level, Gender)

Table 4. Summary of In-country Staff Trained, by Level and Gender

Level	Women	Men	Undetermined	Total
Community-based distribution	956	515	-	1,471
Central	218	361	77	656
District	580	821	25	1,426
Region	456	363	-	819
SDP	8,253	6,584	1,726	16,563
Other	484	1,161	35	1,680
Total	10,947	9,805	1,863	22,615

Table 5. In-Country Staff Trained, by Country, Level, and Gender

Country	Women	Men	Undetermined	Total
Bolivia*	**369**	**185**	**5**	**559**
Region	61	3	-	64
District	117	80	5	202
SDP	191	102	-	293
Ethiopia	**523**	**1,814**	**-**	**2,337**
Central	5	17	-	22
Region	5	42	-	47
SDP	371	1,317	-	1,688
Other	142	438	-	580
Ghana	**3,005**	**1,844**	**38**	**4,887**
Central	4	7	-	11
District	85	179	-	264
SDP	1,885	993	38	2,916
Community	956	515	-	1,471
Other	75	150	-	225
Guatemala	**217**	**155**	**-**	**372**
Central	71	48	-	119
Region	81	77	-	158
District	65	30	-	95
Guinea	**4**	**20**	**-**	**24**
Central	2	7	-	9
Region	2	13	-	15
Liberia	**39**	**165**	**1**	**205**
Central	10	35	-	45
District	29	129	-	158
SDP	-	1	1	2
Malawi	**134**	**141**	**1,612**	**1,887**
Central			47	47
District	15	70	20	105
SDP	91	67	1,510	1,668
Other	28	4	35	67
Mozambique	**24**	**21**	**-**	**45**
Central	24	21	-	45
Nepal	**71**	**237**	**-**	**308**
District	61	203	-	264
SDP	10	34	-	44

Country	Women	Men	Undetermined	Total
Nicaragua	**641**	**260**	**-**	**901**
Central	67	44	-	111
Region	282	116	-	398
SDP	107	33	-	140
Other	185	67	-	252
Nigeria	**1,242**	**1,153**	**206**	**2,601**
Central	16	63	30	109
Region	5	37	-	42
District	3	-	-	3
SDP	1,164	551	176	1,891
Other	54	502	-	556
Pakistan	**167**	**137**	**-**	**304**
Central	7	53	-	60
Region	7	67	-	74
District	153	17	-	170
Rwanda	**864**	**973**	**-**	**1,837**
Central	4	16	-	20
SDP	860	957	-	1,817
Tanzania	**3,111**	**2,086**	**1**	**5,198**
Central	6	44	-	50
District	33	85	-	118
SDP	3,072	1,957	1	5,030
Zambia	**517**	**589**	**-**	**1,106**
District	15	17	-	32
SDP	502	572	-	1,074
Zimbabwe	**19**	**25**	**-**	**44**
Central	2	6	-	8
Region	13	8	-	21
District	4	11	-	15
Grand Total	10,947	9,805	1,863	22,615

Note: The data from Bolivia represent only six months of the year because the field office closed at the end of quarter 2 of FY2013.

PMP Indicator 1.16 Number and Percentage of Trainees at Regional and Central Levels in Project-Presence Countries Still Performing Functions Trained for by the Project (since October 1, 2010)

For this indicator, we are only reporting central-level turnover rates, because it has become too cumbersome for most field offices to follow up with the accrued numbers of staff trained at the regional level since the beginning of the project. Table 6 shows examples of the data from field offices that are tracking staff they trained, over the years, at the central level. This indicator is not a performance measure; it was developed for our field offices to use for project management; and, also, for monitoring retraining needs, if posts have been vacated.

Table 6. Examples of In-Country Staff Turnover Rates

	Total # of Women Trained at the Central Level	Total # of Men Trained at the Central Level	Central-Level Women Still Performing SCM Function for Which They Were Trained	Central-Level Men Still Performing SCM Function for Which They Were Trained	Percentage of Central-Level Women Still Performing SCM Function for Which They Were Trained	Percentage of Central-Level Women Still Performing SCM Function for Which They Were Trained
Malawi	10	32	9	20	90%	63%
Mozambique	55	43	55	42	100%	98%
Nepal	4	18	3	12	75%	67%
Nigeria	17	16	17	16	100%	100%
Pakistan	11	75	10	73	91%	97%
Rwanda	6	23	6	23	100%	100%
Tanzania	9	11	9	11	100%	100%

PMP Indicator 1.17 Number of Project-assisted Countries Adopting Pre-service Training in Supply Chain Management

The following nine field offices reported that they are supporting a pre-service training program in their countries: Ethiopia, Ghana, Mozambique, Nicaragua, Pakistan, Rwanda, Tanzania, Zambia, and Zimbabwe.

PMP Indicator 1.18 Number and Value of Subcontracts and/or Work Orders Issued with Local and Regional Institutions for Technical Services

Country	Name of Subcontractor	Value of Work Order (U.S.$)	Description of Work Order
Ghana	RTT Group Proprietary Ltd.—Mike Healy	$24,506	Assess storage facilities at Ghana's Central Medical Store, 10 regional medical stores; and 3 teaching hospital stores
Malawi	Cargo Management Logistics (CML)	$1,727,598	Supply chain management services, including storage and movement of health commodities
Malawi	IHS (RTT)	$2,223,975	Supply chain management services
Malawi	VillageReach	$8,893	Training for pharmacy assistants
Mozambique	Movie Cargo	$79,200	Road transportation of medicines belonging to MOH in Mozambique
Mozambique	NTS	$99,345	Road transportation of medicines to provincial capitals
Nigeria	Sunlite Integrated Services, Ltd.	$52,551.56	Renovation of Bauchi State Central Medical Stores
Nigeria	General and Health Logistics Ltd.	$75,904.54	Distribution of family planning; malaria; maternal, neonatal, and child health commodities
Pakistan	Population Council	$43,847	Conducting a rapid assessment to determine stock levels of contraceptive commodities up to SDPs in Pakistan
	Health Services Academy	$2,695	To build capacity of relevant government officials in supply chain management of health commodities (the activity was co-financed by Health Services Academy)
Rwanda	ESAMI	67,140	Training in quantification principles and software use
South Sudan	Achelis Uganda Limited	$423,572	Materials for storage warehouse
South Sudan	DMS Africa LTD South Sudan	$24,625	Pre-fabricated office
South Sudan	Tik Tok for trading & investment CO	$37,333	Comprehensive pest control program
South Sudan	Keizad Construction Company LTD	$19,447	Repair to CMS warehouses
Yemen	Ahmed Aklan		Assisted in development of standard operating procedures
Zambia	Express Mail Services (EMS)	$4,011.02	Courier service to transport report from district to Medical Stores Limited
Zimbabwe	Speedlink Cargo	21,287.06	Warehousing of male condoms
Total:		**$4,935,930**	

PMP Indicator 1.19 Number (and Proportion) of Field Office Staff Who Are Local or Regional Hires

Country	Regional Hires		Local Hires		Total Number Regional/Local Hire Technical Staff	Total Number Regional/Local Hire Admin/Finance/Support Staff	Total ALL Field Office Staff	Percentage of Total Regional/ Local Hires Field Office Staff	Percentage of Total Regional/ Local Hires Field Office Staff who are Technical	Percentage of Total Regional/ Local Hires Field Office Staff Who Are Admin/Finance/ Support Staff
	Men	Women	Men	Women						
Bolivia**			2	5	4	3	7	100%	57%	43%
Ethiopia			68	21	62	27	91	98%	70%	30%
Ghana	1		13	4	11	7	18	100%	61%	39%
Guatemala			1	3	3	1	4	100%	75%	25%
Guinea			3	0	2	1	3	100%	67%	33%
Indonesia			1	2	1	2	6	50%	33%	67%
Liberia*		1	5	2	5	3	8	100%	63%	38%
Malawi*	3		16	4	9	14	23	100%	39%	61%
Mozambique*			12	8	7	13	24	83%	35%	65%
Nepal***			3	4	2	5	7	100%	29%	71%
Nicaragua			2	4	4	2	6	100%	67%	33%
Nigeria*			41	30	44	27	75	95%	62%	38%
Pakistan			36	2	23	15	38	100%	61%	39%
Rwanda*	3	1	12	7	13	10	23	100%	57%	43%
South Sudan	1	1	1	1	3	1	4	100%	75%	25%
Tanzania*	1		17	15	26	7	33	100%	79%	21%
WARP	1		5	1	6	2	8	88%	86%	29%
Yemen										
Zambia*	1	0	98	33	60	72	138	96%	45%	55%
Zimbabwe*			6	6	2	10	13	92%	17%	83%
TOTAL	11	3	342	152	287	222	529	96%	56%	44%

*Some staff share time with other task orders or the Supply Chain Management System (SCMS).

**Bolivia office closed in August 2013.

***Nepal office closed in Sept. 2013.

Note: Total staff include expatriate staff.

Appendix D

Strengthen Environments for Commodity Security

PMP Indicators 2.1, 2.2, 2.4, 2.5

Table 7. Contraceptive Security Indicator Data

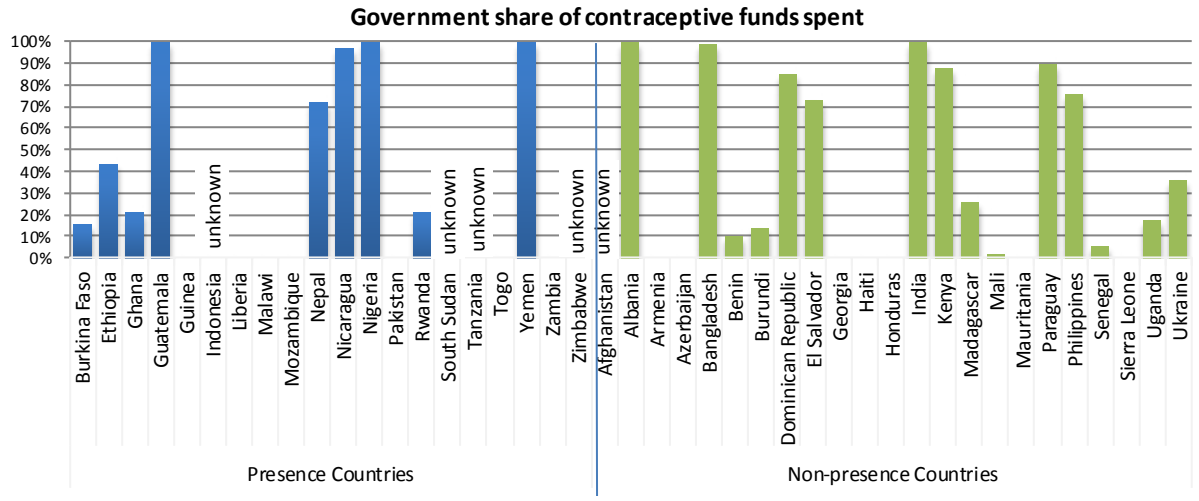
Indicator		Project-Presence Countries		Non-Presence Countries		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
2.1	Countries with active contraceptive security coordinating mechanism in place	20	100%	23	83%	43	91%
2.2	Countries with current commodity security strategies developed	20	90%	23	87%	43	88%
2.4	Countries with a government budget line item for procuring contraceptives	19	63%	23	65%	43	63%
2.5	Countries spending government funds on procuring public-sector contraceptives	18	39%	21	62%	43	47%

PMP Indicator 2.3 List of Project-assisted Countries Where Market Analysis Has Been Conducted and Disseminated Using the Most Recent Demographic and Health Survey or Reproductive Health Survey Data

Nigeria and Zambia are two project-presence countries that used the most recent Demographic and Health Survey (DHS) or Reproductive Health Survey (RHS) data in FY2013 to conduct and disseminate market analyses. A market analysis was also conducted for Sierra Leone and Uganda; all four studies were conducted under a JSI contract funded by the United Nations Population Fund (UNFPA).

PMP Indicator 2.6 Percentage of Total Funding Spent on Public Sector Procurement of Contraceptives that Comes from Government Funds, by Country

Figure 19. Government Share of Contraceptive Funds Spent, by Presence- and Non-Presence Countries



PMP Indicator 2.7 List of Instances Where Input or Support Provided to Global, Regional, and National Partners To Promote CS

PMP Indicator 2.8 List of Instances Where Project-collected Data Is Used for Advocacy and To Influence Decisionmaking

The results for indicators 2.7 and 2.8 can be found as examples and anecdotes throughout the body of the annual report.

Appendix E

Knowledge Management and Communications

PMP Indicator 3.1 List of Instances Where a Country Adopts or Adapts a Core or Field-funded Innovation or Tool

The results for indicator 3.1 can be found as examples and anecdotes throughout the body of the annual report.

PMP Indicator 3.2 List of Articles Submitted to Peer-Reviewed Journals by Project Staff

Project staff submitted several articles to peer-reviewed journals during FY2013.

- "A Decade of Monitoring Contraceptive Security and Measuring Successes and Opportunities around the World" was submitted for publication in *The Lancet's* special issue for the 2013 Women Deliver conference in December 2012. (not accepted)
- "Multiplicity in public health supply systems: a learning agenda." Alan Bornbusch and James Bates. August 12, 2013. *Global Health: Science and Practice*. Vol. 1 no. 2, pg. 154-159.
- "Vendor Managed Inventory Models for Public Health Supply Chains in Developing Countries" submitted to the journal *Health Affairs* in February 2013.

PMP Indicators 3.3, 3.4, 3.5, 3.6, 3.7

These five indicators relate to the project's website, use of social media, and print media. All results can be found in the *Knowledge Management and Dissemination* section of the report.

PMP Indicator 3.8 Number of Active IAPHL Members

The International Association of Public Health Logisticians (IAPHL) membership increased dramatically over the past year—from 1,418 in FY2012 to 2,051 in FY2013, a 45 percent increase. Of the 2,051 IAPHL members, the gender is known for 1,272 members: 62 percent are male, and 38 percent are female. Membership is detailed in table xx, by country.

Table 8. Active IAPHL membership

Country Name	Number of Members on 09/30/2013
Albania	1
Angola	2
Australia	9
Azerbaijan	1
Bangladesh	19
Barbados	1
Belgium	7
Benin	1
Bolivia	1
Botswana	12
Brunei	2
Burkina Faso	8
Burundi	1
Cameroon	18
Canada	1
Central African Republic	1
Colombia	2
Costa Rica	1
Democratic Republic of Congo	13
Denmark	9
Dominican Republic	1
East Timor	1
Ecuador	1
Egypt	1
El Salvador	1
Eritrea	1
Ethiopia	80
Fiji	2
Finland	2
France	32
Georgia	1
Germany	1
Ghana	33
Greece	1
Grenada	1

Country Name	Number of Members on 09/30/2013
Guatemala	2
Guinea	2
Guyana	3
Haiti	4
Honduras	8
India	24
Indonesia	13
Ireland	3
Italy	1
Ivory Coast	9
Kenya	28
Kuwait	1
Kyrgyzstan	1
Laos	1
Lesotho	1
Liberia	16
Madagascar	9
Malawi	30
Malaysia	3
Mali	5
Mauritius	9
Mexico	1
Mongolia	1
Morocco	1
Mozambique	12
Myanmar	7
Namibia	8
Nepal	14
Netherlands	10
Nicaragua	1
Niger	4
Nigeria	195
Norway	2
Oman	1
Pakistan	23
Palestinian Territory	1

Country Name	Number of Members on 09/30/2013
Papua New Guinea	6
Paraguay	3
Peru	4
Philippines	5
Poland	1
Portugal	1
Republic of the Congo	1
Romania	1
Rwanda	33
Saudi Arabia	1
Senegal	8
Sierra Leone	2
Somalia	1
South Africa	25
South Sudan	1
Spain	6
Sri Lanka	1
Sudan	5
Switzerland	9
Syria	1
Tajikistan	3
Tanzania	62
Thailand	7
Togo	2
Tunisia	1
Uganda	34
Ukraine	1
United Kingdom	34
United States	322
Uzbekistan	1
Vietnam	4
Yemen	2
Zambia	49
Zimbabwe	43
Not specified	648
TOTAL ALL COUNTRIES:	**2,051**

For more information, contact askdeliver@jsi.com or visit http://deliver.jsi.com.

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